Contributed Poster Presentations

Poster Session I

ALLERGY

DETERMINING THE MINIMAL CLINICALLY IMPORTANT DIFFERENCE FOR THE ESPRINT-15 QUESTIONNAIRE FOR PATIENTS WITH ALLERGIC RHINITIS

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OBJECTIVE: To determine the minimal clinically important difference (MCID) for improving interpretation of the recently validated Esprint-15 questionnaire, to measure health-related quality of life for patients with allergic rhinitis. METHODS: An observational multicenter study was carried out with allergic rhinitis patients to validate the Esprint questionnaire (15 items of symptoms, daily life activity, sleep and psychological impact). It uses 7-point response options. Global score range from zero (worst) to 5.8 (best). MCID was determined by applying the method previously used by Juniper et al. (1996) in the case of the Rhinocconjuntivitis Quality of Life questionnaire. Patients completed twice the Esprint-15 and assessed their change on health status in a 13-point scale from -6 (a very great deal worse) to 0 (no change) to +6 (a very great deal better). Patients were classified as "no change" (-1, 0 or +1), "MCID" (+3 or +2), "moderate change" (+4 or +5) and "large change" (+6).

RESULTS: Valid responses for the 2 visits were obtained from 245 patients (mean age 32, 62.2% women, average of moderate symptoms at inclusion, mean 7 years from diagnosis, 58% were following AR treatment) of which: 30 (12.2%) reported "large change", 86 (35.1%) reported "moderate change", 55 (22.4%) reported "MCID", 48 (19.6%) reported "no change" and 25 (10.2%) reported deterioration in health status. Mean (SD) increases in the Esprint-15 global score were: 0.2 (0.9) for patients with "no change", 1.1 (0.9) for patients at the "MID", 2 (1.1) for patients reporting "moderate change", and 2.9 (1.2) for patients reporting "large change". Because of the small sample size, results for patients reporting negative changes are not presented, although they suggest an attenuate but similar tendency. CONCLUSION: There is evidence that mean positive changes in global score from Esprint-15 questionnaire of about 1 or more may be considered of clinical importance.

ATTRIBUTES FOR PREFERENCE OF NEW FAST DISSOLVING TABLET (FDT) FORMULATION OF EBASTINE IN PATIENTS WITH ALLERGY

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OBJECTIVE: The main objective of the research is to understand the perceived key attributes and strengths of the FDT formulation of Ebastine. METHODS: The new formulation Ebastine FDT was tested using placebo both in patients (60) and physicians (82) throughout qualitative face-to-face interviews in Belgium, France, Finland, Germany and Italy. Patients suffering from chronic or acute/seasonal allergies regularly taking prescription antihistamines and physicians who are high prescribers of antihistamines were included. RESULTS: The key attributes for preference of the new FDT formulation are convenience and ease of use (can be taken everywhere, not water is needed) and the perception of faster onset of action. After tasting there’s a positive evaluation for the majority (57 patients out of 60 and 75 physicians out of 82) on most FDT formulation attributes (correct texture, appearance, colour and size and very rapid dissolving). Taste evaluation was controversial (mint flavour) and patients difficulties handling the blister disappeared when instructed. The FDT formulation is perceived as suitable for any type of patients, particularly those with acute episodes, active lifestyle, difficulties to swallow and gastrointestinal problems according to patients; and those with an active lifestyle according to physicians. Most patients consider that the new formulation can improve compliance (45 out of 60). The likelihood of taking/prescribing Ebastine FDT is quite high, rating 7.9 (4.2) and 7.6 (3.7) respectively for patients and physicians on a 1–10 scale (1–7 scale in Finland). Most patients (47 out of 60) and physicians (54 out of 82) preferred the new FDT formulation.

CONCLUSIONS: The new FDT formulation is preferred by both physicians and patients, because it’s easier to comply, more convenient and it’s associated with a perception of faster onset of action.

DEVELOPMENT, PILOT TESTING, SCORING AND VALIDATION OF A MANAGEMENT TOOL FOR PATIENTS UNDERGOING SPECIFIC IMMUNO-THERAPY

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OBJECTIVE: Clinicians in charge of allergic rhinitis patients miss specific questionnaires assessing patients’ expectations, satisfaction, adherence, persistence, attitudes toward Specific Immuno-therapy (SIT). Our aim was to provide them with a specific instrument allowing better adapting care to the patient’s characteristics, perceptions and behaviour. METHODS: A conceptual model was identified from a literature review, 5 clinician and 21 patient interviews. A test version of the questionnaire was developed and independently validated by an Advisory Committee (AC). Five patients suffering from allergic rhinitis and treated by SIT completed the questionnaire and were asked to comment the questionnaire in-depth. It was redrafted and included in a pilot study (10 clinicians, 30 patients) in real conditions of use. A revised questionnaire was administrated by 211 clinicians to 571 patients (380 having a SIT and 191 about to...
between February and May 2005 in a cross-sectional, observational study. RESULTS: Fourteen global and 57 detailed concepts were included in the conceptual model. The test questionnaire contained 64 items. After cognitive debriefing, 7 items were excluded. The questionnaire was well-accepted by the patients in the pilot study. Clinicians were delighted to have a helpful patient-management tool. The pilot questionnaire contained 52 items in 10 sections (symptoms, allergy in daily life, motivations for SIT, advantages, disadvantages, intake, outcomes, satisfaction, intention, information). The majority of the 211 clinicians reported high patient acceptability and major interest in using the questionnaire routinely. The items presenting missing data, not clearly related to a specific domain, or redundant were not selected for final format and score calculation. The scores were assessed for internal consistency reliability, construct validity and predictive validity. CONCLUSION: This instrument covers the major domains impacting the patient’s persistence in SIT. It is a promising patient-management tool for use in clinical practice.

ARTHRITIS

COSTS AND EFFECTS OF CELECOXIB IN THE TREATMENT OF PATIENTS WITH RHEUMATOID ARTHRITIS AND OSTEOARTHRITIS IN THE NETHERLANDS

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OBJECTIVE: To assess the balance between costs and upper GI side effects of treatment with celecoxib (a COX-2 specific inhibitor) compared with nonspecific NSAIDs alone, nonspecific NSAIDs plus misoprostol, nonspecific NSAIDs plus histamine-2 receptor antagonists (H2RA), nonspecific NSAIDs plus proton pump inhibitors (PPI), and Arthrotec, in The Netherlands. METHODS: A model was used to convene data from various sources. The probabilities of upper GI side effects for celecoxib and nonspecific NSAIDs alone were derived from trial data, while all other probabilities were derived from published sources. Resource use was derived from databases and an expert panel. Calculations were based on 6 months of treatment, and were from a societal perspective but were limited to direct medical costs (2004 Euros; €). Distinction was made between risk groups based on risk factors such as older age, use of corticosteroids and history of GI events. RESULTS: Treatment with celecoxib was associated with the lowest number of GI side effects and related deaths. Assuming an average patient, the total costs per 6 months of therapy were: celecoxib €212, nonspecific NSAIDs alone €151, NSAIDs plus misoprostol €227, NSAIDs plus H2RAs €268, NSAIDs plus PPIs €269, and Arthrotec €171. Incremental costs per life-year saved for celecoxib compared with nonspecific NSAIDs alone were €12,417 for all patients, and €760 for high-risk patients. Comparing celecoxib and Arthrotec, the incremental costs per life-year saved were €32,757 for all patients and €7759 for those at high-risk of GI events. CONCLUSION: Celecoxib is a more effective and less costly treatment than nonspecific NSAIDs plus misoprostol, NSAIDs plus H2RAs, and NSAIDs plus PPIs. It is cost-effective compared with nonspecific NSAIDs alone for patients at medium- to high-risk of GI events, and also for high-risk patients. Compared with Arthrotec, celecoxib showed an improving cost-effectiveness profile with increasing GI risk.

METAL ON METAL (MOM) HIP RESURFACING (BIRMINGHAM HIP RESURFACING (BHR)) IN YOUNG PATIENTS WITH SEVERE HIP DAMAGE—A COST UTILITY ANALYSIS

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OBJECTIVES: Total Hip Replacement (THR) is regarded as gold standard treatment for degenerative hip disease in elderly patients. Young, active patients, however, are a more challenging group for THR due to the high risk of revision and associated complications. In 2002, the National Institute for Health and Clinical Excellence (NICE) recommended MoM hip resurfacing as a treatment option for this patient group. An alternative treatment for these patients is watchful waiting (WW) whereby patients are maintained on drug-based regimes until they are old enough to warrant a THR. The aim of this study was to evaluate the cost-effectiveness of BHR vs. WW in 45–55 year old patients with severe hip damage. For completeness the cost-effectiveness of BHR vs. THR was assessed in the same patient group. METHODS: A health economic model was constructed to assess the efficacy, cost and health-related quality of life associated with BHR, WW and THR treatments. Efficacy data for BHR were obtained from a large, prospective database (n = 4424), which provided up to 5 years follow-up for individual BHR patients. Resource use and utility data were obtained from published sources. The primary outcome from the model was the cost per quality-adjusted life-year (QALY). RESULTS: Preliminary results demonstrate that at year 5 BHR has an incremental cost/QALY (ICER) of £1,101 compared to WW and an ICER of £13,125 compared to THR. Over time the ICER decreases and BHR becomes dominant (i.e. it is more effective and costs less) compared to WW and THR by year 20 and 15, respectively. CONCLUSIONS: This study demonstrates that in patients aged 45–55 years with severe hip damage, BHR offers an extremely cost-effective alternative to WW with an equivalent improvement in quality of life to THR. Patients treated with BHR will benefit from significant health gains at an acceptable cost.

PRODUCTIVITY BENEFITS FROM CONTROLLED-RELEASE VS SHORT ACTING OPIOIDS FOR TREATMENT OF PERSISTENT MODERATE TO SEVERE OSTEOARTHRITIS (OA) PAIN OF THE HIP/KNEE

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OBJECTIVES: OA is associated with significant disability, reduced productivity, decreased HRQoL, and increased health care costs. The objective was to evaluate the cost-effectiveness of controlled-release oxycodone (CRO) from a societal perspective incorporating time loss (paid and unpaid work for patients and friends/relatives). METHODS: Open-label, active-controlled, randomized, naturalistic 4-month study of effectiveness and cost-effectiveness of CRO vs. short-acting opioids. Outcomes, resource utilization and time loss were collected by telephone. Quality-adjusted-life-years (QALYs) were calculated from HUI3 scores. Cost-effectiveness was measured as cost/QALYs gained and cost/patient improved. RESULTS: Patients treated with CRO compared to short-acting opioids were more productive
Abstracts

PAR3

OSTEOARTHRITIS: CHONDROITIN SULFATE LONG TERM UTILIZATION IS COST-SAVING
Taieb C1, Huichard C1, Labeled D2, Myon E3
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OBJECTIVE: To demonstrate that the long term use of chondroitin sulfate (CS) for patients suffering osteoarthritis (OA) is cost-saving.
METHOD: Two groups were compared, patients treated less than 6 consecutive months (short term) with CS and patients treated more than 6 consecutive months (long term) with CS during 2001–2002 on the IMS Disease Analyzer database. The objective was to compare the co-prescriptions related to OA for both groups of patient in the 12 months following the study period. In our analysis, medical consultations for OA and OA prescriptions including CS, NSAIDs, analgesics, coxibs and gastro-protective agents were taken into account.
RESULTS: We obtained two groups of respectively 56,525 and 24,732 patients treated with CS for their OA in the short and long term groups. In the follow up period, patients with short term and long term treatment had respectively in term of co-prescriptions 37% vs. 38% of NSAIDs, 75% vs. 71% of analgesics and 21% in both groups of coxibs. But the mean length of treatment’s days by co-prescriptions were respectively of 40 vs. 37 for NSAIDs, 82 vs. 68 for analgesics and 79 vs. 59 for coxibs (p < 0.01). CONCLUSION: The results of this survey allowed us to conclude that in addition to the fact that the use of CS in OA is more efficient with long term treatment, it was also safer compared to short term treatment. A long term treatment reduces the length of treatment of each co-prescriptions. The saving of 20 days of coxibs treatments, 3 days of NSAIDs and 14 days of analgesics demonstrated that the long term use of CS confirmed that in real life the efficiency and the safety profile made it a safe approach taking into consideration the high risk profile (Gastro-intestinal, cardiovascular, etc.) of the other OA symptomatic treatments.

PAR4

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Taieb C1, Huichard C1, Labeled D2, Myon E3
1Pierre Fabre, Boulogne-Billancourt, France; 2IMS Health, Puteaux, France
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METHOD: Two groups were compared, patients treated less than 6 consecutive months (short term) with CS and patients treated more than 6 consecutive months with CS during 2001–2002 on the IMS Disease Analyzer database. The mean cost per patient and per month was calculated using the total cost of treatment of the period divided by the number of patients and the mean duration of the period (12 months for the follow up, less or more than 6 months in the treatment period). All the analyses were performed within a French NHS perspective.
RESULTS: We obtained two groups of respectively 56,525 and 24,732 patients treated with CS for their OA in the short and long term groups. In the follow up period, 12 months in each group; the mean monthly cost per patient was €24,732 vs. €26,792 and €8.18 for the long term group. This saving of almost €11.1 per year and per patient could induce an important saving of almost €627,427.5 for the French NHS if all treated with CS on a short term were treated on a long term. In the follow up period, patients with short term treatment cost patients with short term treatment cost 36% more in coxibs and 42% more in NSAIDs and 190% more in analgesics (p < 0.05).
CONCLUSION: The use of CS in OA is more efficient with short term treatment, demonstrating an important cost-saving versus short term treatment. Our economical evaluation confirmed the previous clinical demonstration of the relevance of long term use of CS in OA.

PAR5

OSTEOARTHRITIS: CHONDROITIN SULFATE LONG TERM UTILIZATION REDUCES CONSUMPTION OF COXIBS, NSAIDS & ANALGESICS
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OBJECTIVE: To demonstrate that the long term use of chondroitin sulfate (CS) for patients suffering osteoarthritis (OA) induced less co-prescriptions.
METHOD: Two groups were compared, patients treated less than 6 consecutive months (short term) with CS and patients treated more than 6 consecutive months (long term) with CS during 2001–2002 on the IMS Disease Analyzer database. The objective was to compare the co-prescriptions related to OA for both groups of patient in the 12 months following the study period. In our analysis, medical consultations for OA and OA prescriptions including CS, NSAIDs, analgesics, coxibs and gastro-protective agents were taken into account.
RESULTS: We obtained two groups of respectively 56,525 and 24,732 patients treated with CS for their OA in the short and long term groups. In the follow up period, patients with short term and long term treatment had respectively in term of co-prescriptions 37% vs. 38% of NSAIDs, 75% vs. 71% of analgesics and 21% in both groups of coxibs. But the mean length of treatment’s days by co-prescriptions were respectively of 40 vs. 37 for NSAIDs, 82 vs. 68 for analgesics and 79 vs. 59 for coxibs (p < 0.01). CONCLUSION: The results of this survey allowed us to conclude that in addition to the fact that the use of CS in OA is more efficient with long term treatment, it was also safer compared to short term treatment. A long term treatment reduces the length of treatment of each co-prescriptions. The saving of 20 days of coxibs treatments, 3 days of NSAIDs and 14 days of analgesics demonstrated that the long term use of CS confirmed that in real life the efficiency and the safety profile made it a safe approach taking into consideration the high risk profile (Gastro-intestinal, cardiovascular, etc.) of the other OA symptomatic treatments.

PAR6

GASTROINTESTINAL (GI) EVENTS, MEDICATION USE AND HEALTH CARE COSTS FOR NEW USERS OF CYCLOXYGENASE (COX)-2 INHIBITORS AND NONSELECTION NONSTEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS)
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OBJECTIVE: To evaluate upper GI (UGI) events, use of GI medications, and health care costs among arthritis patients in a managed care setting. METHODS: Commercial claims data for three million health maintenance (HMO) and preferred provider organization (PPO) members in Southeast U.S. were used to identify new users of COX-2s and NSAIDs in 2002. Patients had ≥1 arthritis-related claim followed by an index claim for COX-2 (rofecoxib, valdecoxib or celecoxib) or NSAID (ibuprofen, naproxen, diclofenac, and nabumetone) and were continuously enrolled for ≥1 year pre- and post-index date. Patients dispensed either a COX-2 or NSAID during one year pre-index and patients with claims for both COX-2s and NSAIDs were excluded. Multiple logistic regression was used to model UGI events (ulcers and bleeds) and GI medication use (proton pump inhibitors and H2-antagonists), and a log transform model was used for total health care costs (medical and prescription) at 1 year controlling for age, gender, health status, medication persistence, and baseline utilization. RESULTS: In total, 3449 arthritis patients were included: 47% COX-2 (26% rofecoxib, 15% celecoxib, 7% valdecoxib) and 53% NSAID. Patients in the COX-2 group were significantly older, taking more medications and more persistent, more likely to be female or belong to a PPO, and had more comorbidities, GI events, and higher costs

PARS

OSTEOARTHRITIS: CHONDROITIN SULFATE LONG TERM UTILIZATION IS COST-SAVING
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CONCLUSION: The use of CS in OA is more efficient with short term treatment, demonstrating an important cost-saving versus short term treatment. Our economical evaluation confirmed the previous clinical demonstration of the relevance of long term use of CS in OA.
at baseline compared to the NSAID group. After adjusting for these factors, no significant differences were observed in the rate of GI events (1% overall), rate of GI medication use (5%) total health care costs (mean = $1712), or medical costs (mean = $1513) after 1 year. Prescription drug costs were 38% and 51% higher for rofecoxib and celecoxib patients respectively compared to the NSAID group (p < 0.0001). CONCLUSION: In contrast to initial marketing information, in this observational study, we found no significant difference in GI-related outcomes or total health care costs between the two groups.

**PAR7**

HEALTH CARE UTILIZATION AND EXPENDITURE OF TWO PROGRAMS FOR OSTEOARTHRITIS OF THE KNEE AND HIP: ASSESSMENT AND IMPACT IN REAL-LIFE CONDITIONS

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OBJECTIVE: To assess in real-life conditions after previous randomized controlled trials the impact on health care utilization and expenditure of two self-management programs for older adults with osteoarthritis (OA) of the knee and hip. METHODS: Eighteen primary health-care providers were recruited to carry out a Knee or Hip program. Study participants were older adults (>55 years) with diagnosed OA of knee or hip. Self-reported data were collected with pre-test/post-test questionnaires (consultation of the general practitioner, physiotherapeutic treatment, consultation of the medical specialist, and use of OA medication). Pre-test/post-test data of four health insurance companies were collected on expenditure for physiotherapy and OA medication. RESULTS: Providers delivered 20 Knee and 20 Hip programs. Background variables of program participants were comparable with background variables in the RCTs. Significant fewer participants of the Knee program (n = 157) reported receiving physiotherapy after completion of the program (P = 0.00). In the Hip program (n = 132), the self-reported frequency of visits to physiotherapists (P = 0.00) and medical specialists (P = 0.03) decreased. The self-reported use of OA medication had decreased in both programs (P = 0.00). No effect was observed for consultations of the general practitioner. The outcomes were comparable with the outcomes of the RCTs. Expenditure for physiotherapy and OA medication could not be assessed, due to difficulties in obtaining sufficient reliable data. Expenditure were not measured in the RCTs. CONCLUSION: Considering the limitations of the study, both programs indicate ecological validity as to health care utilization. Compared to the RCTs, the programs produced similar outcomes in real-life conditions. The combination of the self-reported reduction in the use of physiotherapy and the self-reported reduction in the use of OA medication indicate also improved OA symptom control. A guideline for accurate data collection on OA expenditure is recommended. Cost-utility and cost-effectiveness analysis is recommended, once large-scale dissemination in the primary health care system is realized.

**PAR8**

COST COMPARISON OF THE COMBINATION TRAMADOL PLUS PARACETAMOL VERSUS NSAIDS PLUS PROTON PUMP INHIBITORS IN THE TREATMENT OF OSTEOARTHRITIS IN THE NETHERLANDS

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OBJECTIVES: Non-steroidal anti-inflammatory drugs (NSAIDs) are often used as first-line treatment in osteoarthritis (OA). Due to the increased risk of gastrointestinal (GI) side effects with NSAIDs, proton pump inhibitors (PPIs) are often prescribed concomitantly, but cannot entirely prevent these complications. Since the combination of the weak opioid tramadol plus paracetamol has shown to be an alternative treatment in OA we aimed to compare the costs of six months’ treatment of OA with NSAIDs plus PPIs with the tramadol/paracetamol combination (Zaldiar®) in the Dutch health care setting. METHODS: A cost comparison of the direct medical costs was appropriate since both treatments have been shown to be similarly efficacious in treatment of OA pain of comparable intensity. We combined the Celecoxib Outcomes Measurement Tool (COMET) for evaluation of cost consequences of NSAIDs plus PPIs with a modified model for cost consequences of the tramadol/paracetamol combination presented previously. The NSAIDs under study were diclofenac and ibuprofen and the PPIs were omeprazole and pantoprazole, representing 75% and 85% of the respective market shares (by units) in The Netherlands. Probabilities were derived from published literature. Resource utilization data were obtained from published literature, Delphi panel and official price and tariff lists (Dutch costing manual). The perspective taken was that of the health insurance. RESULTS: Costs of six months’ treatment of OA pain with the tramadol/paracetamol combinations were €244.45. Savings compared with NSAIDs plus PPI treatment were €72.87. Taking into account the rare, but very cost-consuming, renal side effects of NSAIDs, savings were €414.79 for six months’ treatment (costs of NSAIDs plus PPI treatment: €317.32, including renal side effects: €659.24). Sensitivity analyses confirmed the robustness of the model. CONCLUSION: The tramadol/paracetamol combination offers a cost-saving alternative treatment of OA that is not associated with severe GI or renal complications.

**PAR9**

A MODEL TO ESTIMATE HEALTH UTILITIES INDEX MARK 3 UTILITY SCORES FROM WOMAC INDEX SCORES IN PATIENTS WITH OSTEOARTHRITIS OF THE KNEE


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OBJECTIVE: To develop a model to translate WOMAC scores collected in clinical trials of patients with osteoarthritis (OA) into Health Utilities Index Mark 3 (HUI3) utility scores for application in economic evaluation. METHODS: Data from a previously published open-label randomized controlled trial of appropriate care with hylan G-F 20 vs. appropriate care without hylan G-F 20 in 255 outpatients with knee OA. We estimated linear regression models of HUI3 scores using various functions of WOMAC, demographics and clinical variables. Out of sample predictive performance of the models was assessed using the mean absolute error and several other criteria. RESULTS: The preferred model included WOMAC pain, stiffness, function subscales, and demographic variables; it accounted for almost 40% of the variation in the HUI3 utility scores. At the group level, absolute differences between predicted and actual overall HUI3 utility scores was <0.001 and not statistically significantly different from zero. CONCLUSION: A model appropriate for retrospective analyses of data sets in which utility scores were not collected was developed to estimate HUI3 scores from WOMAC
scores for application in OA. Researchers can estimate overall utility scores, compute QALYs, and perform cost-utility analyses within a defined range of uncertainty.

**PAR10**

**ARE THEY RELEVANT? A CRITICAL EVALUATION OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH CORE SETS FOR OSTEOARTHRITIS FROM THE PERSPECTIVE OF PATIENTS WITH KNEE OSTEOARTHRITIS IN SINGAPORE**

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**OBJECTIVES:** To determine the extent to which health items identified from the perspective of patients with knee osteoarthritis can be linked with the ICF; and to critically evaluate the ICF Comprehensive and Brief Core Sets for osteoarthritis.

**METHODS:** Items identified from a focus group study were linked independently by two researchers based on the 10 a priori linking rules. Both percentage agreement and kappa statistics were calculated to measure inter-observer agreement. Any disagreements were resolved by reaching a consensus among the researchers. The categories linked with all items were compared with the Comprehensive Core Set for osteoarthritis, while the categories linked with those items reported as important by over 30% of subjects within each of 3 local ethnic groups (i.e. Chinese, Malay, and Indian) were compared with the Brief Core Set. Both comparisons were made only at the second level of the ICF.

**RESULTS:** Totally 74 items were linked with 44 different ICF categories through 105 linkages with generally very good inter-observer agreement. The 69 items were linked with the ICF at the third or fourth levels. Both commonalities and disparities were found through comparison between the categories linked with these items and both Core Sets for osteoarthritis. The ICF Comprehensive Core Set demonstrated general conceptual validity, while the Brief Core Set needs to be supported by more empirical evidence in various socio-cultural contexts. This study specifically complemented the development and refinement of both Core Sets from the perspective of patients with knee osteoarthritis.

**CLUSIONS:** In this study, all items could be successfully linked with the ICF. The ICF Comprehensive Core Set demonstrated general conceptual validity, while the Brief Core Set needs to be supported by more empirical evidence in various socio-cultural contexts. This study specifically complemented the development and refinement of both Core Sets from the perspective of patients with knee osteoarthritis.

**PAR11**

**VALIDITY STUDIES AND SATISFACTION THRESHOLD OF THE ARTHRITIS TREATMENT SATISFACTION QUESTIONNAIRE (ARTS)**

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**OBJECTIVE:** The 18-item ARTS questionnaire measures 4 dimensions relative to satisfaction with osteoarthritis treatment: Effectiveness, Convenience, Tolerability, and Medical Care. Validity studies and discriminant properties are reported in order to establish a clinical relevant difference in the overall score and a satisfaction threshold. Two samples are compared: a normative group of 163 used for linguistic validation and an unsatisfied group of 1750 patients derived to a more tolerant treatment with COX-2. Groups are compared using t-test, ANOVA and Tukey’s HSD. Sensitivity and related figures are estimated using the ROC curve using as criteria the patients’ need of change in treatment (judged by the clinician).

**RESULTS:** The normative group renders a normal distribution of scores (65.4 ± 13.4, mean ± SD), slightly biased above the 0–100 scaled mid-point. The total score mean value for the unsatisfied sample (52.5 ± 11.1) was significantly lower (p < 0.001) than for the normative group, and much lower than the satisfied subgroup (76.5 ± 13.9). By dimensions, the larger difference between the satisfied subgroup and the rest of patients who needed change was observed in the Effectiveness dimension (dif = 34.1, t = 11.3), followed by Convenience (dif = 27.3, t = 10.1), Tolerability (dif = 26.5, t = 5.3), and Medical Care (dif = 14.0, t = 5.7). No differences were found between genders, neither in the normative group nor in the unsatisfied group. Sensitivity = 72%, specificity = 77%, positive predictive value = 89% and negative predictive value = 53% are obtained using a cut-off point of 69.18 determined from the clinical judgment of a need of change in treatment (threshold value). Significance differences in mean score are also found between groups differing in tolerance to actual treatment. The ARTS is a sensitive instrument and can be used to detect differences in the patients’ satisfaction with osteoarthritis treatment. Differences between groups of known satisfaction level are significant and meaningful, although it should be noted that the normative mean score is above the scale midpoint.

**PAR12**

**IMPROVEMENT IN HEALTH UTILITY IN PATIENTS WITH PSORIATIC ARTHRITIS TREATED WITH ADALIMUMAB (HUMIRA®)**

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**OBJECTIVES:** To estimate change in quality of life (QoL) in patients with psoriatic arthritis (PsA) receiving adalimumab vs. placebo, as measured by the health utility measurement Short Form 6D (SF-6D).

**METHODS:** In a placebo-controlled, Phase III trial of adalimumab (ADEPT), patients with active PsA received adalimumab 40mg every other week (eow) or placebo for 24 weeks. The SF-6D was estimated at baseline, 12 weeks and 24 weeks using responses to the Short Form 36 (SF-36) patient questionnaire. Multiple linear regression models were estimated to explore the effects of age, sex, disease duration, concomitant therapies, baseline Health Assessment Questionnaire Disability Index (HAQ DI), and the Psoriasis Area and Severity Index (PASI). Patients were further differentiated as responders or non-responders using the Psoriatic Arthritis Response Criteria (PsARC) and an improvement in the PASI by 75% (PASI 75).

**RESULTS:** Baseline SF-6D values were 0.66 and 0.65 for the adalimumab and placebo arms respectively. Overall, adalimumab improved health utility by 10.6% (SD = 18.9) in comparison to 2.9% (SD = 16.2) for placebo. Adalimumab was particularly efficacious in patients with skin involvement (13.7% (SD = 20.9) versus 0.3% (SD = 17.0)). PsARC response was a significant predictor of utility improvement, and, for patients with skin involvement, PASI 75 was also important. These findings demonstrate that adalimumab was efficacious in improving PsA patients’ quality of life; and this efficacy was observed to an even higher degree in patients with more skin involvement. Health utilities, when modeled with associated costs over a patients’ lifetime, will facilitate the economic evaluations of adalimumab.

**PAR13**

**THE DIRECT MEDICAL COST OF RHEUMATOID ARTHRITIS IN HONG KONG**

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OBJECTIVE: To evaluate the direct medical cost in the management of rheumatoid arthritis (RA) as well as the extent of resource use in current practice from the perspective of public health organization in Hong Kong. METHODS: This study was a retrospective design. Subjects recruited must have RA diagnosed and attended the follow-up visits, receiving RA treatment in the Prince of Wales Hospital (PWH) between the period of 1st January 2002 to 31st December 2002. Data was collected by medical chart review. The direct medical costs included inpatient care, outpatient visits, laboratory monitoring, radiological procedure, drug cost and side effects management. RESULTS: A total of 147 patients were included in our study. The average age and the duration of disease of our subjects were 54.7 years old (SD: 10.9) and 12.6 year (SD: 7.0) respectively. The annual direct medical cost per each RA patient was HK $18,657 (US $1 = HK $7.8). The inpatient care contributed 43.8% of the total, which was the highest. The cost for laboratory monitoring was the second (19.2%) where the outpatient cost ranked the third (15.4%). The cost for RA-related drugs accounted for 9.8%. The cost for the management of the side effects shared 3.1% of the total. Based on a local epidemiological study, the RA prevalence rate was 0.3%. The annual direct medical cost for the management of RA in Hong Kong would be HK $443 million, which shared 1.4% of the total health care budget in 2002. CONCLUSION: This study demonstrated that RA was a significant economic burden to the health care budget of Hong Kong.

PAR14

EVALUATION OF ACCESS TO HIGH-COST MEDICINES IN AUSTRALIA USING NATIONAL CLAIMS DATA
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Effective high-cost medicines, for example, tumour necrosis factor inhibitors (TNFIs), are subsidised in Australia under the Pharmaceutical Benefits Scheme (PBS), but access is restricted to ensure cost-effective use. An application for initial or continuing access to TNFIs requires detailed information on each patient, including laboratory markers and previous pharmacotherapies. OBJECTIVES: To examine the access to TNFIs in Australia for treating rheumatoid arthritis. METHODS: Both aggregated, and individual de-identified information were requested from the Health Insurance Commission (HIC) including the number of applications received and approved, patient demographics, use of other disease-modifying anti-rheumatic drugs, changes in clinical outcomes, the time interval between application and decision to approve, and geographical pattern of usage. Prescription and expenditure data (August 2003–March 2005) for the TNFIs, etanercept, infliximab, and adalimumab, were examined. RESULTS: The detailed clinical information submitted with the applications was not captured by the HIC database. A total of 19,629 prescriptions was reimbursed: etanercept (15,675), infliximab (570), and adalimumab (3384), at a total cost of AUD$43.5 million. The uptake of these agents was considerably lower than expected. The number of patients using a TNFI under the PBS could only be approximated from these aggregated figures—more than 2,000 patients had been commenced on TNFIs. The proportion of patients that were approved to continue or switch between TNFIs was not available. CONCLUSION: The HIC is positioned to capture subsidised prescription-drug usage and clinical outcome data on a national basis. Unfortunately, it is impossible to access detailed data. Information on utilisation of TNFIs is far from adequate. Comprehensive drug usage and patient health outcome data need to be accessible in order to define the most appropriate use and access to these agents. Update of, and arrangements for access to the HIC database are encouraged.

PAR15

TARGETED ACCESS TO HIGH-COST MEDICINES IN AUSTRALIA: EARLY ANALYSIS FROM A QUALITATIVE STUDY
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Access to high-cost medicines such as to the tumour necrosis factor inhibitors (TNFIs) for the treatment of rheumatoid arthritis is tightly regulated under Australia’s Pharmaceutical Benefits Scheme (PBS) to ensure their cost-effective use. OBJECTIVES: To explore stakeholders’ perceptions and experiences associated with the restricted access to TNFIs and the process of collaboration between key stakeholders who formulated the access criteria. METHODS: Thirty-three, in-depth semi-structured interviews were conducted between 2004 and 2005. Participants included rheumatologists, patients treated with TNFIs, consumer representatives, government health advisors, public servants, and representatives from pharmaceutical companies involved in formulating and implementing the access restrictions. Participants were asked to comment on the access restrictions that have applied since August 2003, and their views on the collaboration between stakeholders were collected. Interviews were recorded, transcribed verbatim, and thematically analysed. RESULTS: The principle of “controlled access” to TNFIs was in general accepted by all, despite the different perspectives each person represented. However, there were concerns regarding some of the specific PBS criteria. Overall, the collaborative approach that was taken to formulate the criteria for access to TNFIs was perceived by key stakeholders as a valuable advance and has set a new paradigm for subsequent PBS subsidy decisions. However, a wider and more transparent decision-making process, and a more structured and continuing communication between stakeholders were judged desirable. Some degree of flexibility with respect to physician prescribing, and a need to increase education to health care professionals and the community were proposed. CONCLUSION: Targeting access to high-cost medicines through a national subsidy system was agreed to be practical and equitable. Increased transparency, communication and education were identified as the main elements needed to secure support of the final access criteria by all involved. In order to confirm these primary themes, further interviews are being undertaken until data saturation is achieved.

PAR16

POTENTIAL PROBLEMS IN USING RCT DATA TO ESTIMATE COST-EFFECTIVENESS: RESULTS FROM AN ANALYSIS OF ETANERCEPT USE IN RHEUMATOID ARTHRITIS
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Data from randomized controlled trials (RCTs) are often used in economic evaluations when estimating cost-effectiveness. The data generated from RCTs represent ideal experimental conditions (efficacy) and the applicability of this data to real world settings (effectiveness) may be questionable. OBJECTIVES: 1) To conduct an economic evaluation of etanercept (a competitive inhibitor of TNF-a) use in rheumatoid arthritis patients in Canada, and 2) To compare the results of a cost-effectiveness analysis conducted with efficacy data obtained from a RCT, to results derived by using effectiveness data obtained from community-based clinical practice. METHODS: The data used to perform the analyses were obtained from a trans Canadian community-based cohort study conducted between 1999 and 2003. A cost-utility analysis was preformed and incremental cost-effec-
tiveness ratio (ICER) was calculated as cost ($CDN) per QALY gained. QALYs were derived from the health assessment questionnaire (HAQ) scores collected prospectively on patients.

RESULTS: With the effectiveness-based analysis, the QALYs gained during the 12-month monitoring period were estimated to be 0.45 and 0.35, for the treatment and control groups respectively. The resulting ICER was $167,282 (CDN) per QALY. Using boot-strapping techniques and cost-effectiveness acceptability curves the 95% confidence interval (CI) for the ICER was $119,500 to $285,000 per QALY. For the efficacy-based analysis, the incremental QALYs gained were 0.56 and 0.35, for the treatment and control groups respectively. This resulted in a substantially lower ICER, $81,213 per QALY [95% CI = 66,500, 103,430].

CONCLUSION: Depending on the data used for the analysis, the resulting ICER was very different ($167,282 versus $81,213 per QALY). This study highlights some of the potential limitations of cost-effectiveness evaluations.

Several cost-effectiveness studies have shown that the innovative highly effective, but costly new biological therapies are within acceptable ranges in rheumatoid arthritis (RA). The transferability of international results is limited. Country-specific data, standardised methodologies are needed to study the adaptability of cost-effectiveness models and to obtain comparable economic evaluations.

OBJECTIVES: The aim of our study was to assess the burden and costs of the Hungarian RA population for the purpose of further cost-effectiveness studies and modeling of biological therapies.

METHODS: A cross sectional questionnaire survey was performed in 2004 in 6 rheumatology centres focusing on clinical characteristics, resource utilisation, EQ-5D and HAQ were also used. A systematic search was performed in the National Health Insurance Found database. RESULTS: A total of 255 consecutive RA out-patients involved, mean age 55.3 years, females 86%, disease duration 9.12 years, HAQ 1.38, DAS28 5.09, EQ-5D 0.46, DMARD therapy 87.9%, steroids 48%. Progression in HAQ correlates with utility (EQ-5D: 0.78–0.19). Costs: 55% indirect costs (early retirement: 49%); direct medical costs 28% (hospital admissions 11%); direct non-medical costs 17% (informal care givers 15%). In 2000, 117,336 out-patient visits occurred with RA diagnosis. A total of 5089 patients were hospitalized because of RA (63,528 bed-days, mean duration 12.4 days), leading to about €1,340,000 consumption of reimbursement.

CONCLUSIONS: Our study investigated Hungarian RA patients’ characteristics, health-care consumption and burden of illness. The questionnaire survey included patients with characteristics of target patients for biological therapy. Health status utility decrease and costs increase consistently with functional disability progression, early retirement and informal care have major impact. Biological therapies are not reimbursed yet in Hungary though arthritis centres network and guidelines has been established. Our study offers standardized data for economic analysis focusing on the adaptability of international cost-effectiveness studies and models of biological therapies in the Hungarian context.
received: adalimumab 40mg every other week (eow) + MTX; adalimumab 40 mg eow; or MTX monotherapy. The Short Form 36 (SF-36) was used to assess 8 domains of HRQOL at baseline, and after 12, 26, 42, 52, 76, and 104 weeks of therapy (higher scores indicate improvement). Scores for 4 physical and 4 mental health concepts were aggregated into Physical Component Summary (PCS) and Mental Component Summary (MCS) scores. A minimum clinically important difference (MCID) is 2.5–5.0 for PCS and MCS. Criteria-based interpretation of the PCS evaluated relationships between clinically and socially meaningful variables. RESULTS: Baseline scores for the 799 patients were comparable between all 3 groups, and post-baseline results were comparable for the 2 monotherapy groups. Mean baseline PCS for the adalimumab + MTX (n = 256) and MTX monotherapy (n = 247) groups were 31.7 and 32.2. Mean PCS for the combination therapy group at Week 12 had improved to 42.2 vs. 38.2 for the MTX group. The 4.5 difference in mean change from baseline was clinically meaningful and sustained through 2 years (5.1) (p < 0.0001). Based on criteria-based interpretation of the SF-36, differences in PCS scores between the 2 groups indicate patients on MTX alone had an increased likelihood of using more health resources and not being able to work. CONCLUSIONS: Adalimumab + MTX were superior to MTX alone in providing significant and clinically meaningful improvements in HRQOL in early RA. Significantly lower PCS at 2 years in the MTX group may mean patients on MTX alone have greater health care utilization and substantially greater job loss than patients on combination therapy.

**EFFECTS OF LONG-TERM ADALIMUMAB THERAPY ON HEALTH UTILITY AND FATIGUE IN PATIENTS WITH LONG-STANDING, SEVERE RHEUMATOID ARTHRITIS (RA)—RESULTS FROM A 3-YEAR FOLLOW-UP STUDY**

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OBJECTIVES: To investigate the ability of adalimumab therapy to provide simultaneous, sustained long-term improvement in two important patient-reported outcomes (health utility and fatigue) in patients with severe RA who had failed at least one DMARD. METHODS: The Health Utilities Index Mark 3 (HUI3) and Fatigue (FACIT-F, validated in RA) were simultaneously measured in a health economics companion trial to an adalimumab pivotal study (DE011). For the first 26 weeks patients were followed under double-blind, randomized conditions before rolling over into a long-term, open-label extension (OLE) (n = 99). A subset of patients receiving adalimumab 40 mg every other week was evaluated for up to 170 weeks. The HUI3 scale is 0–1, with “1” denoting perfect health and “0” denoting death. FACIT-F scores range from 0–52, with higher scores representing less fatigue. Changes in HU13 of ≥4 are considered clinically meaningful. RESULTS: Baseline patient characteristics were: female, 80%; age, 53 years; previous DMARDs: 4 (all mean values except % female). RA patients’ baseline utility and fatigue scores were comparable (vs. placebo) and approximately one-third of the population norm. At week 26, mean changes from baseline in adalimumab-treated patients were 0.18 for HUI3, and 8.54 for FACIT-F (both p < 0.001 vs. baseline). These improvements were sustained throughout the 170 weeks. CONCLUSIONS: Adalimumab provided clinically important, simultaneous improvements in health utility and fatigue in patients with severe, active RA who had failed at least one DMARD. These improvements were sustained over the 3-year observation period.

**ASTHMA**

**COMPARISON OF TREATMENT WITH BUDERONIDE/FORMOTEROL (BUD/FM) PLUS BUD/FM PRN AS SINGLE INHALER TREATMENT VERSUS REGULAR BUD AND FM PLUS FM PRN AS MONOPRODUCTS IN PATIENTS WITH ASTHMA IN GREECE**

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OBJECTIVE: To compare the efficacy of regular treatment with BUD/FM plus BUD/FM prn vs regular treatment with budesonide (BUD) and formoterol (FM) plus FM prn in the treatment of asthmatic patients in Greece. METHODS: Moderate asthmatic (mean FEV1 76% pred.) patients were recruited from 14 centers in Greece to participate in an open-label, randomized prospective clinical trial. The duration of the study was seven months with four scheduled visits: baseline, first month, third month and seventh month. Patients were randomized in 2 groups: Group A: BUD/FM 160/4.5 mcg bid plus BUD/FM prn and Group B: BUD 200 mcg and FM 9 mcg bid plus FM prn. Outcome measures included lung function, number of exacerbations and relief inhalations, symptom control using the Asthma Control Questionnaire (ACQ) and quality of life using the Asthma Quality of Life Questionnaire (AQLQ). In addition, the use of health services and side effects were recorded. RESULTS: A total of 133 patients were recruited, 68 in Group A, and 65 in Group B. Both groups showed a significant improvement in ACQ at the end of the study (p < 0.0001). Relief inhalations were significantly less in Group A (p < 0.0001) during the last study period, between 3rd and 7th month. No statistically significant differences were found in the other outcome measures. CONCLUSIONS: BUD/FM therapy plus BUD/FM as needed demonstrated similar effectiveness in asthma control and quality of life compared to treatment with BUD and FM plus FM as needed. Since fewer relief inhalations were recorded in Group A, BUD/FM plus BUD/FM prn treatment seems preferable for patients with asthma.

**FLUTICASONE PROPIONATE/SALMETEROL COMBINATION IMPROVES HEALTH OUTCOMES AND QUALITY OF LIFE IN CHILDREN WITH POORLY CONTROLLED ASTHMA IN IRELAND**

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OBJECTIVE: To investigate whether salmeterol/fluticasone propionate 50/100 mcg (SFC) improves quality of life, physical functioning and asthma symptoms in children with uncontrolled asthma in primary care. METHODS: A prospective open label study of children seven to twelve years old attending their GP with uncontrolled asthma. SFC bd was taken for 16 weeks (w) from enrolment. Peak expiratory flow rate (PEFR) was measured at baseline, w4 and w16, when the Paediatric Asthma Quality of Life Questionnaire (PAQLQ) was completed. Patient diaries
recorded symptom scores, use of rescue medication, and time off school and parental time off work due to asthma. RESULTS: A total of 35 patients participated. Mean age: 9.8 yrs, mean time since diagnosis: 6.2 yrs. At week 16 compared with week 0: Mean PEFR increased by 59.2 L/min; all PAQLQ domain and overall scores improved >2 points; mean day and night time symptoms scores improved by 1.5 points and 1.6 points respectively; patients reported a mean of 3.9 more days per week without asthma symptoms and 4.6 fewer days per week using short acting β2 agonist medication; children missed 1.6 fewer school days per month, and carers missed a mean of 1.2 fewer days per month from work. No treatment related adverse events were reported. CONCLUSION: SFC significantly improved asthma symptoms, quality of life and daily activities of uncontrolled pediatric asthma patients and their families. *P < 0.05

PAS3

ASThma CONTROL IN SPAIN. DOES TREATMENT PROFILE AND SEASON MATTER? Fueyo A1, Ruiz-Cobos MA2, Ancochea J3, Badia X4
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OBJECTIVE: The aim of this study was to assess the degree of asthma control in Spain in accordance with the GINA criteria.

METHODS: An epidemiological cross-sectional multicenter study was performed. A representative sample of consecutive patients with asthma over 18 years attending primary care and specialist offices were enrolled. Patients were seen in winter and spring and were asked on their asthma control in the four weeks prior to the visit according to the GINA criteria. Control was defined based on the patient’s day and night symptoms.

RESULTS: A total of 614 patients participated in the study. Patients presented every day or most days in the four weeks prior to the winter and spring visit daytime symptoms (40.3% vs. 22.5%) (p < 0.01), night-time symptoms (27.8% vs. 13.9%) (p < 0.01), severe exacerbation episodes (11.9% vs. 8.8%) and intolerance to exercise (32.9% vs. 35.5%). The proportion of patients with emergency visits in the four weeks prior to the visit was 9.1% vs. 4.2% (p < 0.01) respectively. The most frequently used treatment was the combination of inhaled corticosteroids and long-acting β2 adrenergic agonists (49.8% vs. 49%). There were a slightly higher number of inadequately controlled patients in winter than spring, 74.2% vs. 71.1% (p < 0.01) respectively. CONCLUSION: Asthma is poorly controlled in Spain, with the need for improvements in the management of the disease.

PAS4

THE COST OF ASThma EXACERBATIONS OF DIFFERENT SEVERITY LEVELS Dewilde S1, Rapatz G2, Turk F3
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OBJECTIVES: A literature search revealed only a few published retrospective database analyses in which the yearly cost of asthma was compared for patients with and without asthma attacks. This however does not allow estimating the health care utilization associated with a single exacerbation. In contrast, this study aims to analyze resource use collected during a randomized, double-blind trial and to estimate the costs of a mild and a severe asthma exacerbation. METHODS: The INNOVATE trial randomized severe persistent allergic asthma patients who were inadequately controlled despite inhaled corticosteroid (ICS) and long-acting β2-agonist (LABA) to continued standard therapy (N = 210) or to add-on therapy with omalizumab (N = 209). Resource use was recorded on the CRF and with daily patient diaries. Data from both treatment arms were pooled to calculate average resource use for clinically significant (worsening of asthma symptoms requiring systemic steroids) mild (PEF or FEV1 ≥ 60% of personal best) or severe (PEF or FEV1 < 60% of personal best) exacerbations from a UK NHS perspective. Patients were observed for a total of 36 weeks (including 8 weeks run-in). Standard unit costs (PSSRU, NHS Reference Costs, 2004) were applied to calculate the exacerbation-related cost. RESULTS: A total of 419 patients experienced 195 mild and 204 severe exacerbations during the observation period, lasting on average 12.8 days each. Resource use was measured in terms of GP surgery visits, ER visits, outpatient visits, hospitalizations and rehabilitation visits. The average cost of a clinically significant mild exacerbation is estimated to be £99, and of a severe exacerbation is £197. CONCLUSIONS: Exacerbations are costly and frequently occurring events in a severe persistent allergic asthma population. Decreasing the frequency and severity of exacerbations improves patients’ health outcomes and reduces resource use, which could be quantified with this approach.

PAS5

IMPACT OF MONTELUKAST THERAPY ON ASThma-RELATED HEALTH CARE RESOURCES USE IN MILD TO MODERATE ASTHmatic PATIENTS WITH SEASONAL ALLergic RHinitis IN SPAIN Pinto Blázquez JA1, Blasco Redondo R2, Sazonov Kocevar V3, Badia X4, Guilera M5, Caloto MT5, Nocea G6
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Montelukast is recognised to be an effective and safe therapy for the treatment of mild to moderate asthmatic patients with concomitant seasonal allergic rhinitis. OBJECTIVES: to evaluate asthma-related direct costs in patients with mild to moderate persistent asthma and seasonal allergic rhinitis (AR) in Spain, whose asthma was inadequately controlled and required the addition of montelukast as part of their routine care. METHODS: a multicenter, 12 months pre-post observational study was conducted, selecting mild to moderate asthmatic consecutive patients with previous inhaled corticosteroid (ICS) w/wo LABAs therapy, who initiated concomitant montelukast between January 1999 and December 2002. Asthma-related health care resource data was collected retrospectively, including medication, medical visits, ER visits and hospitalizations. For the costing calculations, natural units were multiplied by unit costs, and confidence intervals (CI) calculated using bootstrapping analysis. RESULTS: 212 patients (mean age 36.0 (SD 9.7), 56.6% female, 50.9% mild asthmatics) were recruited in 35 sites (54.5% Primary Care, 34.5% Allergologists and 11% Pneumologists) across the country. After initiation of montelukast therapy, all other asthma-related health care resource categories did show a significant reduction (p < 0.01) (mean reduction in 2004; 95% CIs): medication (146; 78.9–225.2); outpatient visits (57.5; 44.5–76.8); ER visits (61.1; 48.4–84.4) and hospitalizations (243; 86.2–875.4), total 508.3 95% CI 348.3–969.9. Additionally considering the montelukast treatment cost during 365 days, the reduction achieved in all other asthma-related health care resources would compensate for 92.7% of the montelukast cost. CONCLUSIONS: montelukast therapy was associated with a significant reduction in all other asthma-related health care resources use in patients with mild to moderate asthma and concomitant seasonal allergic rhinitis.
OBJECTIVES: As chronic asthma in Finland is mainly treated by general practitioners limited data is available on the natural course of the disease. We evaluated the burden of this disease on health care providers and the adherence to accepted treatment protocols in this retrospective study. METHODS: We examined the complete medical records of 30 asthmatic patients obtained from all reported health care providers (2000–05). Providers were registered according to site, location and personnel involved. Contact was specified as a visit, emergency room (ER) visit, phone call, prescription or procedure. The primary cause of contact labeled the event as asthma-(AR) or non-asthma related (NAR) according to clinical specifications. Data on all asthma medication and adverse drug reactions (ADR) were collected from medical records. RESULTS: Asthma was the main reason for contact with health care providers in 961 (52%) of all 1847 events recorded. The number of events ranged from four to 94 per patient with a mean of 23. The type of contact was typically a visit (61%) and provider a general practitioner. ER visits were found in 40% of the patients, 64% of these were AR. Longest period for hospitalization due to asthma was 23 days, but no intensive care treatment was necessary. All patients had short-acting beta-agonists and inhaled corticosteroids (CS) as first-line medication and 32% had no need for additional treatment during the follow-up. Long-acting beta-agonists were used by 53% at some point and 48% of all patients had acute exacerbations treated with oral CS. ADR were observed in 57% of all patients and in 2.5% of all asthma-related events. An alteration to medication was done in 45% of asthma-related visits. CONCLUSIONS: Reliable data were obtained from this evaluation of patient records regarding disease history. Non-responders can be identified as well as those prone to ADR.

THE HUMAN IMPACT OF SEVERE PERSISTENT ALLERGIC ASTHMA: RESULTS FROM A MULTINATIONAL STUDY
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OBJECTIVES: The human impact (symptoms, quality of life and overall wellbeing) of severe persistent allergic asthma is great owing to the chronic nature of the disease and the burden of exacerbations. We undertook the present study to examine the human impact of severe persistent allergic asthma in patients who remain inadequately controlled and how human impact varies according to disease severity. METHODS: Patients with asthma were enrolled in a large cross-sectional observational study and were stratified by disease severity (Global Initiative for Asthma [GINA] classification). Patients were recruited in the UK, Germany, France, Italy and Spain by physicians who were asked to recruit the next 6 patients presenting with asthma. Human impact was assessed using an extensive questionnaire, which included the EuroQol EQ-5D. RESULTS: Out of a total of 2802 patients, 1306 (47%) had allergic asthma. Of these, 985 patients (mean age 36.4 years; mean FEV1 89.6% predicted normal) had the following GINA asthma severity classifications: mild intermittent (3.2%); mild persistent (7.6%); moderate persistent (11.7%) and severe persistent (77.5%). Overall, 29% (n = 219) patients with severe persistent allergic asthma were inadequately controlled. These patients had more symptoms—including bronchospasm, nocturnal symptoms, difficulty breathing when resting and cough—than patients with moderate disease (all p < 0.01). Other human impact factors that were adversely affected included impaired mobility, nocturnal disturbance and impaired lifestyle (all p < 0.01 vs. moderate asthma). Quality of life was impaired in these patients: the mean EQ-5D score was 0.808 for severe persistent asthma that was inadequately controlled vs. 0.938 for moderate asthma (p < 0.01). CONCLUSIONS: The human impact of asthma increases according to disease severity; human impact is greatest in patients with severe persistent allergic asthma who remain inadequately controlled. Treatment options that aim to achieve adequate control will contribute to improved management of patients with severe persistent allergic asthma.
OBJECTIVE: To examine the responsiveness to change of the Spanish version of the Juniper Mini Asthma Quality of Life Questionnaire (Mini-AQLQ). METHODS: 253 patients with mild to moderate uncontrolled asthma (patients with symptomatology and/or need for short-acting f2-agonists) were included in the study (61% women, mean age 36 years). A full history and physical examination were performed and montelukast was added at the baseline visit. All subjects completed the Mini-AQLQ questionnaire twice: at recruitment and after two months. Differences in patient scores before and after the montelukast addition were analysed using paired t-test. Responsiveness was assessed by calculating the standardized effect size (SES). A within-subject change in score of 0.5 is defined as the minimal clinically important difference (MCID). RESULTS: The Mini-AQLQ was responsive to changes over a two-month period. All Mini-AQLQ global and domain scores significantly improved after montelukast addition (p < 0.01 for all comparisons). Mini-AQLQ score changes were significantly different for patients who improved and those that remained stable or deteriorated (p < 0.001). The global score effect size was 0.91, ranging from 0.5 to 1.0 for the domains. The percentage of patients with mild and moderate asthma who were considered to have experienced a MCID in global score was 57.5% and 71.4% respectively, with average baseline scores of 5.0 and 4.3 respectively. The domain that experienced the greatest number of patients experiencing a clinically important improvement was Symptoms, with 65% and 78% of patients with mild and moderate asthma respectively. CONCLUSIONS: The Spanish version of the Mini-AQLQ is suitable for use in longitudinal studies where it is appropriate to assess the impact of asthma on the quality of life of individual patients with mild to moderate asthma. A high proportion of patients experienced a clinically meaningful improvement in their Quality of Life after addition of montelukast to their asthma therapy.

CANCER

ECONOMIC IMPACT OF ADOPTING PEMETREXED PLUS CISPLATIN FOR MALIGNANT PLEURAL MESOTHELIOMA INTO SCOTTISH CLINICAL PRACTICE

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OBJECTIVE: To undertake cost-effectiveness evaluation of pemetrexed/cisplatin (pem/cis) compared to cisplatin (cis) for patients with advanced malignant pleural mesothelioma (MPM) in Scotland. METHOD: The efficacy of pem/cis versus cis was assessed in the first randomised phase III trial in patients with unresectable MPM (Vogelzang 2003). Emergent data early in the trial led to patients being fully supplemented with folic acid and vitamin B12. Survival benefit was assessed in fully vitamin-supplemented patients with advanced disease [FS (stage III/IV)]. A cost/life-year saved (LYS) analysis of FS (stage III/IV) cohort using the median survival gain from the clinical trial was undertaken. This cohort was chosen because it represented the most realistic use of pemetrexed in Scottish clinical practice: most MPM patients in Scotland have advanced disease at presentation (Aziz 2002) and vitamin supplementation is mandatory with pemetrexed treatment (ALIMTA SPC). Specific unit costs were applied to drug acquisition, administration, supportive care medication, hospitalisations for serious adverse events and post-study chemotherapy, with incidence derived directly from the clinical trial. A discount rate of 3.5% per annum was applied to all outcomes. RESULTS: The survival of pem/cis over cisplatin in this cohort was 13.2 versus 8.4 months (p = 0.003; HR 0.63 [95% CI 0.46–0.86]). The incremental per patient cost for pem/cis compared to cis was £8196. The incremental cost/LYS for this cohort is £20,844. The robustness of the model was tested using one-way sensitivity analyses on key variables affecting both cost and outcomes estimates in the cost-effectiveness model. Little variation in the incremental cost/LYS was found with the variables tested for the FS with advanced disease patients (£17,500–£25,000). CONCLUSIONS: The trial demonstrated clear survival gain for the cohort of fully supplemented pem/cis patients with advanced disease. This analysis demonstrates that the combination may be considered a cost-effective treatment for patients with advanced MPM.

LEAD TIME IN THE EVALUATION OF HISTORICAL SURVIVAL IMPROVEMENTS IN THE TREATMENT OF ADVANCED NON-SMALL CELL LUNG CANCER

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OBJECTIVES: Historical evaluations of patients in clinical trials suggest that patients with advanced nonsmall cell lung cancer (NSCLC) treated with chemotherapy can expect a two-week improvement of median survival. We postulated that, with the publication of randomized trials showing survival improvements, this apparent gain might be attributable to lead time effects; that is, patients being treated earlier in the natural history of their disease. METHODS: Patients with Stage IIIb and IV nonsmall lung cancer were identified from the SEER-Medicare database, and population-based cancer registry linked to Medicare claims. Survival for consecutive cohorts diagnosed between 1994 and 1999 was analyzed to determine differences from time of diagnosis to time of treatment and for overall time from diagnosis to death. RESULTS: During this period 11,995 patients were diagnosed with stages IIIb and IV NSCLC. The mean age was 75 years, 57% were males and distribution by race was: 82.4% white, 9.4% African Americans, 3.2% Asian, 1.2% Hispanic, and 3.7% others. 30% were treated with chemotherapy initiation is used as a starting point for survival analyses, as is frequently the case, researchers might erroneously conclude that survival is improving due to treatment, when in fact much of the apparent gains are simply due to patients receiving treatment earlier in the history of their disease.

POPULATION-BASED BUDGET IMPACT MODEL OF APREPITANT (EMEND) IN HIGHLY EMETOGENIC CISPLATINE-BASED CHEMOTHERAPY

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OBJECTIVES: To evaluate the economic impact of the introduction in the French market in 2003 of the new agent Aprepitant for the prevention of acute and delayed nausea and vomiting associated with Highly Emetogenic cisplatine-based cancer
COST OF CARE AND ECONOMIC IMPACT OF CETUXIMAB IN THE TREATMENT OF METASTATIC COLORECTAL CANCER IN SPAIN

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OBJECTIVES: The aim of this study was to estimate costs of care associated with metastatic colorectal cancer (MCCR) in current clinical practice and the potential impact on the Spanish health care budget of cetuximab prescription to patients with MCCR. METHODS: In order to describe treatment patterns and to analyse costs of MCCR, a cost of care treatment model was constructed. The economic impact of cetuximab was estimated by means of a treatment model for third-line use of the cetuximab combination after second-line irinotecan failure. Treatment patterns were obtained from questionnaires filled out by 14 Spanish hospitals and from an advisory board of 5 clinical experts. Treatment algorithms were constructed by using Tree Age Data Pro software. In order to estimate the unit costs, Diagnostic Related Groups were used for inpatient services, while outpatient services were calculated on daily based rates. Unit costs were obtained from national databases (€2004). The treatment costs were calculated from the perspective of the Spanish National Health System. The incidence of MCCR was obtained from epidemiological data. RESULTS: For a population of 10,350 patients with MCCR in Spain, the total cost (pharmacological and medical costs) was estimated in €151 million. In that scenario, the cost of care of patients at third-line therapy that had failed to irinotecan therapy amounted €1.5 million. With the introduction of cetuximab after second-line irinotecan failure, a maximum of 193 patients were estimated to be eligible for the new drug. In this scenario, the total cost of the third-line therapy would come to €4.7 million. CONCLUSIONS: Cetuximab in combination with irinotecan is the only third-line therapy indicated in MCCR after irinotecan failure. If the eligible patients in third-line therapy received cetuximab and irinotecan instead of current clinical practice, the economic impact of substitution would amount €3.2 million.

THE COST OF SECOND-LINE TREATMENT OF OVARIAN CANCER IN POLISH SETTINGS

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OBJECTIVES: To evaluate direct treatment cost associated with pegylated liposomal doxorubicin hydrochloride (PLD) and topotecan used as second line therapies for ovarian cancer in Poland. METHODS: The literature review showed topotecan and PLD have similar efficacy in platinum-refractory or platinum resistant advanced ovarian cancer but different adverse events profile. The cost-minimization analysis was performed from the payer's perspective. Only direct medical costs (i.e. drug acquisition costs, drug administration costs and managing adverse events costs) were included. Based on epidemiological data budgetary impact of PLD treatment in Poland was estimated. RESULTS: The acquisition and drug administration costs were estimated at €12,448 and €6935 for PLD and topotecan, while cost of managing adverse events at €134 and €1234 for PLD and topotekan, respectively. The total cost per patient summed up to €12,882 for PLD and €8169 for topotecan. 38% reduction in acquisition cost of PLD would balance topotecan associated costs. Epidemiological data indicated 985 platinum-resistant or platinum-refractory ovarian cancer patients in Poland were eligible annually for treatment with PLD, thus additional cost could be estimated at €4.64 million. CONCLUSIONS: PLD represents attractive treatment strategy in second line therapy of platinum-resistant or platinum-refractory ovarian cancer, although acquisition cost reduction is necessary were compared to topotecan in Polish settings.

POPULATION-BASED BUDGET IMPACT MODEL OF APREPITANT (EMEND) IN MODERATELY EMETOGENIC CHEMOTHERAPY (MEC)

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The clinical study phase III 071 has showed the new antiemetic Aprepitant in association with a standard therapy (corticosteroid plus a 5-HT3 receptor antagonist) increases significantly the complete response (no vomiting and no rescue treatment) by more than 10 points compared to the standard therapy used in MEC. OBJECTIVES: To evaluate the budget impact implied by the introduction of this new antiemetic on the French sickness funds. METHODS: The MEC were defined according to the recommendations of the Multinational Association of Supportive Care in Cancer (2004). A sample of patients was extracted from the ONCO IMS 2004 database. The inclusion criteria used were: to receive a MEC in association with an antiemetic one containing a corticosteroid and a 5-HT3 receptor antagonist and to have this treatment during the acute and delayed periods. Prices of the antiemetic treatments were taken from the GERS 2004 database. A budget impact model was implemented over a period of four years, based on a stable population and on different penetration and substitution rates of Aprepitant. RESULTS: The results are reported for 10,000 MEC cycles associated to the standard therapy. The penetration and substitution rates of Aprepitant increase over the period from 10% to 25% and from 70% to 95%, respectively. In 2004, the treatment cost is €46,600. The introduction of Aprepitant increases the cost of the acute phase but decreases it in the delayed one. In the ambu-
CANCER PATIENTS WITH MODERATE OR SEVERE TRASTUZUMAB TREATED COHORT:

OBJECTIVES: To evaluate the economic impact of trastuzumab treatment in Metastatic Breast Cancer (MBC). Trastuzumab therapy is initiated in MBC patients over-expressing HER2. The product is licensed in monotherapy for patients pre-treated with anthracyclines and taxanes, or associated with paclitaxel for patients pre-treated by anthracyclines. METHODS: HERMES is a phase IV multicentric prospective study funded by the French ministry of health, evaluating the clinical, biochemical and pharmacoeconomic aspect of trastuzumab treatment on MBC. HER2 status was determined by Immuno-histochemistry or FISH methods and H-ECD (HER2 Extra-Cellular Domain) status by ELISA technique. Only HER2 + or 2+ and FISH+ patients received treatment. Four protocols were administered: trastuzumab + paclitaxel weekly (TP1) or three weekly (TP3) and trastuzumab weekly (T1) or three weekly (T3). Responses were evaluated according to RECIST criteria then compared to H-ECD levels. Treatment costs were calculated by adding DGR costs (2004) and onerous drug reimbursed over DGRs.

RESULTS: In a 3-years period, 120 patients were pre-included and 88 included. In intention to treat there were 62 TP1, 25 TP3, and 1 T1. Time to Treatment Failure is 30 weeks (23–35). 81 patients stopped treatment: 67% for progression, 16% for cardiac toxicities. Overall survival is 60 weeks (48–80). Time to Progression is 34 weeks (27–43). After 2 months, on 27 patients, relative risk of progression is of 2.2 for patients with H-ECD increase. On 22 patients with H-ECD diminution, 20 were responding to treatment. Overall patient management cost is of €4,178,000. Average pre-inclusion screening cost is of €829 per patient. Average treatment cost on 36 weeks reaches €46,345 per patient including 72% for drug acquisition, 23% for administration, 1% for laboratory assessments, 3% for cardiac assessment, 1% for tumour volume assessment. CONCLUSIONS: From an economic perspective, HER2 assays are cost effective: they are less expensive than cytotoxic and/or trastuzumab treatments.

COST ANALYSIS OF 3-YEARS FOLLOW-UP OF A TRASTUZUMAB TREATED COHORT

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OBJECTIVES: To describe treatment patterns and determine direct medical costs of initiating transdermal opioid systems in Germany. The additional costs caused by the introduction of Aprepitant seem fair compared to the gain in terms of complete control of vomiting.

The total of treating NSCLC using intravenous and combined PE regimen was simulated basing on therapeutic guidelines. We assume that patient was given intravenous therapy on 1st day (in both schemes) and oral dose instead of intravenous the following days. Such combination let to reduce the number of hospitalizations due to cytostatics application. RESULTS: The total costs of PN scheme in intravenous and combined regimen for one patient was the same and amount to ZL23,416, which means the savings due to hospitalization were compensate by increased dose of oral vinorelbine. Despite the increased dose of oral etoposide the 1228zl difference between intravenous and combined application was found in PE scheme. The total costs of treating NSCLC using intravenous and combined PE regimen were 12,660zl and 11,432zl respectively. CONCLUSIONS: Our analysis showed that both combinations of intravenous-oral chemotherapy could be considered as alternatives for intravenous regimens.
PCN10
THE COST-EFFECTIVENESS OF POST-OPERATIVE RADIOTHERAPY AFTER BREAST CONSERVATION SURGERY IN STAGE-I-II BREAST CANCER IN SWEDEN
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OBJECTIVES: To analyse the cost-effectiveness of adding adjuvant postoperative radiotherapy (RT) to medical therapy after breast conservation surgery in Stages I–II breast cancer in Sweden. METHODS: A stochastic decision analytic model follows patients from primary breast conservation surgery therapy during adjuvant therapy and includes five possible events of local or regional events, metastases and death. Clinical data were taken from a randomised clinical trial (SweBCG 91-RT) including 1187 women aged 75 or younger who had received breast conservation surgery and axillary dissection in Sweden between 1991 and 1997 and with a median follow-up of five years. Data on health care costs were taken from a breast cancer register, a health care database including all hospital and primary care contacts in the West Health care Region. Costs for pharmaceuticals, hospice, homecare and values of utilities were taken from the literature. RESULTS: Model results show a ten years risk of local and regional event of 24.1 and 8.4 percent for the no RT and RT groups, respectively. There was a significant increase in average Quality Adjusted Life Years (QALYs) of 0.13 (from 7.60 to 7.73) but no significant difference in average life expectancy. Treatment costs increased from SEK97,467 (€10,800) to SEK101,453 (€11,300) per patient. RT shows an incremental cost per QALY of SEK 32,000 (€3,600). Model applications for 15 and 20 years results in cost savings due to a larger amount of prevented relapses. Considering RT as an add-on to novel adjuvant medical treatments regimens will however, reduce the incremental benefit of radiotherapy and the subsequent cost offsets. CONCLUSIONS: Postoperative RT is cost-effective for pre- and postmenopausal breast cancer women with Stage I–II undergoing breast conservation therapy in Sweden only as an adjuvant to no medical adjuvant treatment. As an adjunct to novel adjuvant medical therapies, RT is cost-effective in high-risk groups.

PCN11
ECONOMIC EVALUATION OF BORTEZOMIB IN THE TREATMENT OF RELAPSED AND REFRACTORY MULTIPLE MYELOMA PATIENTS IN CANADA
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OBJECTIVES: In 2005, bortezomib received regulatory approval in Canada for the treatment of multiple myeloma (MM) patients who have relapsed following front-line therapy and are refractory to their most recent therapy. Prior to this approval, treatment options for this patient group were very limited and included best supportive care (BSC). The objective was to conduct an economic analysis of bortezomib versus BSC in relapsed and refractory MM patients. METHODS: The clinical evidence (survival and QOL) for the analysis was taken from the SUMMIT trial (NEJM 2003;384:2609–2617), a Phase II trial of bortezomib in 202 relapsed and refractory MM patients. These patients were heavily pre-treated with a median of six prior lines of therapy. In order to properly represent such a refractory group of patients, the Progressive Disease subgroup of patients in SUMMIT were used to estimate how a BSC group would perform. Utility score was indirectly obtained from mapping patient QOL (EORTC-QLQC30, MY24, FACIT-Fatigue, FACT/GOG-Ntx) onto dimensions in ED-5D. Resource use from SUMMIT was used to estimate costs from the Ontario Ministry of Health perspective. RESULTS: Bortezomib produced a survival gain of 9.95 months (range 7.75 to 12.09 months), a QALY gain of 0.53 QALY, and an incremental cost of CAN$37,662 per patient. The incremental cost-effectiveness ratio (ICER) was CAN$45,399 (range $37,380 to $58,288) per QALY and incremental cost-utility ratio (ICUR) was CAN$70,832 (range $58,189 to $89,791) per QALY. Sensitivity analyses did not produce wide changes in the ICER or ICUR. CONCLUSIONS: Bortezomib is a cost-effective option for this patient population that has limited available therapies.

PCN12
IMPACT OF ADJUVANT CHEMOTHERAPY WITH DOCETAXEL FOR EARLY BREAST CANCER: COST-EFFECTIVENESS ANALYSIS (CEA) OF A DOCETAXEL, DOXORUBICIN AND CYCLOPHOSPHAMIDE REGIMEN (TAC) VERSUS 5-FLUOROURACIL, DOXORUBICIN AND CYCLOPHOSPHAMIDE (FAC) IN FRANCE
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OBJECTIVES: A drug protocol that incorporated docetaxel with the conventional anticancer agents doxorubicin and cyclophosphamide (TAC) has shown better efficacy than 5-FU with the same agents (FAC) in terms of disease-free survival and overall survival, in a long term (5 year) randomised controlled trial in women with early breast cancer (BCIRG001 trial). Considering the cost difference between the two regimens and the potentially large number of patients affected by this new indication, an economic assessment was deemed necessary. METHODS: In order to assess long term costs and effectiveness of both regimens beyond the time scope of the trial, we developed a lifetime Markov model comparing TAC and FAC. Four health states were defined: alive without relapse, alive with loco-regional relapse, alive with distant relapse and dead. Transitions occurred every 6 months accordingly to time dependent transition probabilities derived from the clinical trial. Model consistency was checked against the 5-year trial results. We took into account costs of initial chemotherapy, of severe (grade 3/4) adverse events (febrile neutropenia, stomatitis, diarrhoea, infection), of secondary prophylaxis with growth factors and of follow-up after treatment. In case of relapse, a cost was assigned to patients including pre-treatment check-up, chemotherapy, supportive care and follow-up. The perspective was that of the French public health insurance. RESULTS: Patients receiving TAC had a longer life expectancy than those treated with FAC (28.61 versus 26.33 years). Overall lifetime average costs were €20,837 and €16,143 respectively for TAC and FAC. The incremental
cost-effectiveness ratio (ICER) was €2059 in the base case, varying from €1474 to €4963 according to the multi-ways sensitivity analysis. CONCLUSIONS: The economic assessment shows that TAC is cost-effective in the management of early breast cancer in France with an ICER below the threshold commonly cited in such analyses.

PCN13

COST-EFFECTIVENESS OF HEPATIC ARTERY INFUSION FOR METASTATIC COLORECTAL CANCER (CALGB 9481)

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OBJECTIVES: CALGB conducted a randomized trial to compare the survival duration, quality of life, and costs of hepatic artery infusion (HAI) versus systemic chemotherapy (SYS) as initial treatment for patients with colorectal cancer metastatic to the liver. We evaluated the lifetime incremental cost and benefit from a third-party payer perspective alongside that trial. METHODS: Resource use data were collected for all study patients through 18 months, regardless of disease progression, and a subset was followed until death. Unit costs were derived from itemized patient bills, adjusted using department-specific ratios of costs to charges. Utility weights were collected serially from trial patients and used to calculate quality-adjusted survival. RESULTS: During the first 18 months, inpatient stays accounted for the highest proportion of overall costs (47%) in the HAI arm, while outpatient visits were the major component of costs (40%) in the SYS arm. In both arms, non-protocol chemotherapy treatment given after progression accounted for approximately half of all outpatient care costs. Compared to systemic 5-fluorouracil and leucovorin, hepatic artery infusion of floxuridine increased quality-adjusted survival by 0.46 quality-adjusted life years, at an incremental cost of $50,867. Most of the difference in costs occurred early, and was attributable to higher inpatient care and surgery costs. The incremental cost-effectiveness ratio (ICER) was $112,924 per quality-adjusted life year. The bootstrap-derived distribution of ICER was robust in sensitivity analyses. CONCLUSIONS: Hepatic artery infusion for metastatic colorectal cancer resulted in a substantial increase in quality-adjusted survival at an ICER that compares favorably with other widely used cancer treatments in the United States. These results create a benchmark against which the costs and cost-effectiveness of new agents can and should be evaluated.

PCN14

COST-EFFECTIVENESS ANALYSIS OF ARANESP® (DARBEPOETIN ALFA) ADMINISTERED ONCE EVERY THREE WEEKS COMPARED TO ONCE EVERY WEEK

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OBJECTIVE: Anemia, a common complication of chemotherapy, is often treated with erythropoiesis-stimulating proteins. The objective of this study was to assess the cost-effectiveness of once every three weeks (Q3W) 500µg Aranesp® (darbepoetin alfa) administration compared to a weekly 150µg (QW) regimen from a French societal perspective. METHOD: A decision-tree model with a 16-week time horizon was developed in Excel®. This model included the possibility to adapt darbepoetin alfa dosing based on hemoglobin (Hb) criteria reported in guidelines. The transition probabilities, the number of days with Hb ≥ 11 g/dL (effectiveness measure), and the units of blood transfused were extracted from a randomized clinical trial. Unit costs were applied to medical resources used (transfusions, darbepoetin alfa, physician visits, hospitalizations, and administration time by health care professionals) and patients’ time. Literature data, validated by two French clinical experts, was used for inputs regarding resource use. Time was valued at gross hourly wage rate. Both time and medical costs were extracted from official sources (AMELI; INSEE) and adjusted to 2005 values. A 5000-replication probabilistic sensitivity analysis was performed with @RISK® using distributions for both probabilities and time. RESULTS: The effectiveness was similar between the two arms. Switching patients from QW to Q3W resulted in a gain of 2.3 days with Hb ≥ 11 g/dL (95% CI: −3.3; 7.6). Total costs were slightly lower for Q3W ($4616 [95% CI: 4303; 4959]) compared to QW ($4856 [95% CI: 4488; 5258]). Probabilistic sensitivity analysis revealed 68% of replications with higher effectiveness and lower costs for Q3W treatment (dominant); 11% with both higher effectiveness and costs; 4% where Q3W was dominated by QW and 17% showed both lower effectiveness and costs. CONCLUSION: This analysis provides probabilistic information to decision makers about the health economic impact of darbepoetin alfa Q3W. A decision in favor of Q3W is more likely to be beneficial from a health economic viewpoint.

PCN15

PHARMAECOENOMIC ANALYSIS OF EXEMESTANE VERSUS TAMOXIFEN AS ADJUVANT THERAPY FOR PATIENTS WITH EARLY-STAGE ESTROGEN RECEPTOR-POSITIVE BREAST CANCER

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OBJECTIVE: To estimate the cost-effectiveness of adjuvant treatment with exemestane vs. tamoxifen for early-stage breast cancer after 2–3 years treatment with tamoxifen, in Spain. METHODS: A Markov state-transition model was performed from the National Health System perspective, and simulates the long-term outcomes over 10 and 20 years. The primary outcome was the incremental cost-effectiveness of exemestane scheme in terms of cost per quality-adjusted life year (QALY) gained. The transition probabilities between health states (disease-free survival with or without complications, local recurrence, contralateral breast cancer, systemic recurrence or death) were derived from the Intergroup Exemestane Study (IES) trial and from secondary Spanish sources. The costs associated with chemotherapy and complications (bone fractures, vaginal bleeding, venous thromboembolism, myocardial infarction) and unit costs (€2005) were obtained from Spanish treatment guidelines and Spanish health costs databases. A literature review was conducted to derive the utility data. RESULTS: The average additional QALY per exemestane-treated patients were 0.200 and 0.557, for 10 and 20 years, respectively, compared with that of tamoxifen alone scheme. The additional cost per QALY gained obtained with exemestane was €70,990 and €39,170, respectively. The sensitivity analyses confirmed the robustness of the base case analysis. CONCLUSIONS: According to this model, adjuvant exemestane therapy after 2–3 years of tamoxifen therapy significantly improved disease-free survival as compared
with the standard five years of tamoxifen treatment, with additional costs per QALY gained.

PCN16

ADDING RITUXIMAB TO STANDARD CHEMOTHERAPY APPEARS DOMINANT VS. CHEMOTHERAPY ALONE IN ADVANCED STAGE NHL—INTERIM RESULTS FROM A RANDOMIZED CLINICAL TRIAL (RCT)

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OBJECTIVES: To identify cost consequences and cost effectiveness of R-MCP (rituximab, mitoxantrone, chlorambucil, prednisolone) vs. MCP from the perspective of a third party payer in Germany (statutory sickness fund). METHODS: Resource utilization data on 329 patients were collected in parallel to a RCT and analyzed for the treatment phase (8 months). In addition, an interim analysis of the subsequent observation period was conducted. Data for initial chemotherapy, chemotherapy administration, treatment of adverse events, treatment of complications/progressive disease, subsequent chemotherapies, and treatment for other reasons were collected. Several sensitivity analyses were performed to address different cost environments and discounting scenarios. RESULTS: Mean cost of the treatment phase in the base case analysis was €35,600 for R-MCP and €21,500 MCP per patient (p < 0.0001). More treatment cycles were administered in the R-MCP arm (1026 MCP, 1237 and analyses were performed to address different cost environments and discounting scenarios. RESULTS: Data from the BOND study showed median time to disease progression (TTP) is significantly longer with cet/iri, 4.1 months, than cetuximab alone, 1.5 months. Median survival was 8.6 months for cet/iri and 6.9 months for cetuximab. In our evaluation, estimated mean overall survival was 10.8 months for cet/iri and 5.6 months for ASC. Over the duration of the economic model, cet/iri patients incurred additional costs of £13,851 and gained additional 0.42 life-years per patient compared with ASC patients. The incremental cost per life-year gained for cet/iri versus ASC was £32,752. The incremental cost per QALY gained was £34,454.

CONCLUSIONS: Cet/iri is an effective chemotherapy option for mCRC patients failing conventional cytotoxic agents and who have limited therapy options. Our study shows that cet/iri is also within the range of acceptable cost-effectiveness when compared to other oncology therapies.

PCN18

LETROZOLE (FEMARA) IS A COST-EFFECTIVE TREATMENT IN THE EXTENDED ADJUVANT SETTING IN WOMEN WITH EARLY BREAST CANCER: AN APPLICATION TO CANADA

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OBJECTIVES: Although tamoxifen shows benefit in the first five years of adjuvant therapy, extending its use by an additional five years is not beneficial. This has created an unmet medical need for patients who are disease free after 5 years of standard adjuvant therapy, but still have a significant risk of relapse over the following ten years. In a large randomized placebo-controlled trial, letrozole significantly reduced the risk of recurrence by 42% and the risk of distant metastases by 39%. The DFS was significantly improved with letrozole regardless of nodal status.

METHODS: A Markov model was developed to evaluate the lifetime cost-utility of extended adjuvant letrozole in postmenopausal women. The cost-utility analysis was based on the results of the MA17 trial, from which patient-level data was used to estimate event rates in both treatment groups. Expected costs, life-years and QALYs were estimated by summing across all health states and cycles for each treatment group. Deterministic and probabilistic sensitivity analyses were performed to account for uncertainty. RESULTS: The baseline results from the model show ICERs of $30,100/LY and $34,058/QALY for a cohort of 1000 postmenopausal women. Letrozole is even more cost-effective and node positive patients with ICERs far below the generally accepted threshold of $50,000/QALY.

PCN17

THE COST-EFFECTIVENESS OF CETUXIMAB IN COMBINATION WITH IRINOTECAN FOR THE TREATMENT OF PATIENTS WITH EGFR-EXPRESSING METASTATIC COLORECTAL CANCER AFTER FAILURE OF IRINOTECAN—INCLUDING CYTOTOXIC THERAPY IN SCOTLAND

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OBJECTIVES: Cetuximab in combination with irinotecan (cet/iri) is a new chemotherapy option for patients with EGFR-expressing metastatic colorectal cancer after failure of irinotecan-including cytotoxic therapy. In Scotland, the prognosis for patients with metastatic colorectal cancer (mCRC) is poor and there are limited therapy options after the failure of conventional cytotoxic agents. Our objective was to determine the incremental cost-effectiveness of cet/iri compared to current practice in Scotland. METHODS: Given there are no licensed treatment options for this patient group in Scotland, the economic evaluation compared cet/iri with best/active supportive care (ASC). The perspective of the economic evaluation was that of the National Health Service in Scotland. The economic evaluation was based on a pivotal clinical trial comparing cetuximab in combination with irinotecan with cetuximab monotherapy (BOND). As the BOND study did not directly compare cet/iri with ASC, the data were ‘bridged’ to estimate overall survival. Sensitivity analyses are presented by way of both probabilistic analysis and univariate sensitivity analysis. RESULTS: Data from the BOND study showed median time to disease progression (TTP) is significantly longer with cet/iri, 4.1 months, than cetuximab alone, 1.5 months. Median survival was 8.6 months for cet/iri and 6.9 months for cetuximab. In our evaluation, estimated mean overall survival was 10.8 months for cet/iri and 5.6 months for ASC. Over the duration of the economic model, cet/iri patients incurred additional costs of £13,851 and gained additional 0.42 life-years per patient compared with ASC patients. The incremental cost per life-year gained for cet/iri versus ASC was £32,752. The incremental cost per QALY gained was £34,454.

CONCLUSIONS: Cet/iri is an effective chemotherapy option for mCRC patients failing conventional cytotoxic agents and who have limited therapy options. Our study shows that cet/iri is also within the range of acceptable cost-effectiveness when compared to other oncology therapies.
PCN19

AUSTRALIAN COST-EFFECTIVENESS ANALYSIS OF ANASTROZOLE VS TAMOXIFEN IN POSTMENOPAUSAL WOMEN WITH EARLY BREAST CANCER BASED ON THE 5-YEAR COMPLETED TREATMENT ANALYSIS OF THE ATAC TRIAL

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OBJECTIVES: In the Arimidex, Tamoxifen Alone or in combination (ATAC) trial, anastrozole produced significantly longer disease-free survival and time to recurrence compared with tamoxifen in postmenopausal women with hormone receptor-positive (HR+) early breast cancer after 5 years of treatment (ATAC Trialists’ Group, Lancet 2005;365:60–2). A cost-effectiveness analysis of anastrozole compared with generic tamoxifen was undertaken for inclusion in a submission to the Australian Pharmaceutical Benefits Advisory Committee (PBAC) seeking national reimbursement for anastrozole in early breast cancer.

METHODS: A Markov model and Weibull survival curves fitted to trial data were used to project 5-year outcomes from the ATAC trial to an actuarial time point of 20 years (a conservative lifetime equivalent). Resource utilisation data were obtained from a survey of Australian physicians and the published literature. Unit costs (2003–4 AUS) were obtained from routine sources. A societal perspective was adopted although indirect costs were not included. Utility scores, derived from a study in postmenopausal women with early breast cancer, were incorporated into the model. Costs and benefits were discounted at the annual rate of 5%. Incremental cost effectiveness ratios (ICERs), 95% CIs, and acceptability curves were calculated.

RESULTS: The ICERs and 95% CIs for anastrozole compared with tamoxifen at 20 years were AU$28,532 (AU$16,146–AU$56,500) per life year gained and AU$24,113 (AU$13,170–AU$59,357) per QALY gained. There was a greater than 90% probability that the cost per QALY gained with anastrozole would be lower than AU$50,000. The results were sensitive to the time horizon of the model and the assumptions about the duration of treatment benefit.

CONCLUSIONS: Compared with thresholds accepted in Australia for new drug entities, anastrozole is a cost-effective alternative to generic tamoxifen for primary adjuvant treatment of postmenopausal women with HR+ early breast cancer.

PCN20

ORAL AND INTRAVENOUS CHEMOTHERAPY FOR FIRST LINE TREATMENT OF NON-SMALL CELL LUNG CANCER (NSCLC) IN THE UK NHS SYSTEM

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OBJECTIVES: NICE Guidance in 2001 recommended vinorelbine, paclitaxel, and gemcitabine as part of first-line chemotherapy options for NSCLC patients. Since the Guidance was published, an oral formulation of vinorelbine and docetaxel has been introduced in UK. A Markov model has been developed to realise an indirect comparison of these five chemotherapies, and define their respective level of costs in the NHS’ perspective.

METHODS: Thirty commonly used regimens including the oral form with an administration in d8 at home were defined by a panel of clinical oncologists. In absence of significant statistical difference between the principal criteria of effectiveness, a cost-minimization study was carried out by allocating to all comparators the published data for vinorelbine in Le Chevalier 1999. The corresponding unit costs of drugs, administration and toxicity management, patient transportation costs were gathered from BNF, PSSRU. The main cost incurring toxicities based on occurrence in referenced publications were taken into account.

RESULTS: With the conservative assumption of no differences in therapeutic efficacy, the oral vinorelbine at a dose of 60 mg/m2/week, with one week of rest every 3 weeks, appears as the least expensive strategy: with an administration in d8 at home under a general practitioner supervision, its annual follow-up cost is of £2888; with an outpatient visit in d8, its annual cost is of £3448. Administered within a day-hospitalization, intravenous vinorelbine 25mg/m2 d1 d8, gemcitabine 1250 mg/m2 d1 d8, paclitaxel 175mg/m2 and docetaxel 100mg/m2 incur annual follow-up costs respectively of £3746, £5332, £5977 and £6766. The oral vinorelbine allows savings of £838 compared to its intravenous form, £2444 compared to gemcitabine, £3089 and £3878 compared to paclitaxel and docetaxel per patient managed for one year. CONCLUSION: Oral vinorelbine has a less budgetary impact due to the reduction of the hospital expenditure.

PCN21

TREATMENT COST OF COLORECTAL CANCER CHEMOTHERAPIES IN GERMANY

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OBJECTIVES: To evaluate cost of colorectal cancer chemotherapies (i.e. AIO/Ardalan-regime, Mayo Clinic protocol and oral capecitabine) in different treatment settings (private office, hospital) considering recent changes in drug costs and payment mechanisms in Germany.

METHODS: Resource utilization data, derived from 89 quarterly fee-listings for patients with metastatic colorectal cancer, were re-analyzed using the new EBM2000plus tariff system (introduced April 05) for office-based physicians, the 2005 DRG-System for hospital treatment and new regulation on drug prices according to the 2004 health care reform. Physician’s services, drug costs, pharmacy costs and costs for implantable venous port systems and single-use pumps were considered. Several scenarios to reflect different assumptions were calculated. A third party payer perspective (statutory sickness funds) was adopted.

RESULTS: Depending on the treatment setting (office-based, municipal hospital, university hospital), quarterly treatment costs for the AIO/Ardalan-regime varied between €5412 and €15,109, and for the Mayo-Clinic protocol between €2602 and €4751. Projected costs for capecitabine were €1980. No hospitalisation was considered to be necessary for capcitabine due to its oral route of administration. Projecting these cost differences to epidemiological data and treatment pattern information results in a yearly savings potential of €117 Mio—€214 Mio (depending on assumptions on hospital care pattern) for German statutory sickness funds by switching these patients to capcitabine treatment. Compared to the original analyses, based on cost and payment mechanisms from 2000, substantial differences were observed.

CONCLUSION: Treatment using the AIO/Ardalan-protocol was clearly the most expensive treatment option, treatment using capecitabine incurred lowest costs. Substantial cost-savings for sickness funds could be achieved if more patients were treated with capecitabine. Recent changes in German payment mecha-
nisms had a substantial impact on the results of health economic evaluations.

PCN22

COSTS OF COMMON TREATMENT OPTIONS FOR INDOLENT FOLLICULAR NON-HODGKIN’S LYMPHOMA
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OBJECTIVES: Follicular non-Hodgkin’s lymphoma (FL) is the most common indolent lymphoma occurring in the Western Hemisphere with a variable clinical course. Because of high costs of new treatments, we assessed direct health care costs associated with the most commonly prescribed treatments for FL.

METHODS: New and previously diagnosed FL patients (>18 years) known during 1997–1998 to 15 Dutch hospitals were randomly selected for inclusion. Each patient was followed for three years, from a distinct event in the disease course onwards, for resource use associated with each of the treatments, including ‘watchful waiting’. The hospital perspective was adopted. Unit costs were based on the 2003 price level.

RESULTS: Two hundred patients were included, of whom 75% percent underwent >1 treatment during the 3-year data collection period (25% was not treated because of a watchful waiting strategy (10%) or complete remission (15%)). Allogeneic and autologous stem cell transplantations were the most expensive treatments, with a mean per patient cost of €45,326 (n = 7) and €18,866 (n = 9) respectively (up to discharge only). This was followed by fludarabine i.v. €10,651 (n = 33), rituximab €10,628; n = 7), and CHOP €7547 (n = 42). Classical FL treatments were found to be the least expensive treatments used with an estimated cost for CVP of €5268 (n = 58), for radiotherapy of €4218 (n = 52), and for chlorambucil of €2476 (n = 53).

CONCLUSIONS: This study presents detailed information on resource use and costs associated with the most commonly prescribed FL treatments. In addition to differences in effectiveness, commonly used treatments vary considerably in terms of resource use and overall cost. This information is of value for resource planning.

PCN23

ECONOMIC ASPECTS AND DRIVERS OF FEBRILE NEUTROPENIA IN CANCER—A MULTICENTRE RETROSPECTIVE ANALYSIS IN BELGIUM
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OBJECTIVES: To determine costs and identify cost drivers for febrile neutropenia (FNE) in Belgium. METHODS: Direct costs of FNE to health care payers were calculated from retro-projected chart review of patients treated during 2003 in 4 centres (n = 93, 4 Hodgkin’s disease (HD), 36 Non–Hodgkin lymphoma (NHL), 10 multiple myeloma, 35 breast cancer (BRCA) and 8 small–cell lung cancer). Clinical data and FNE related resource utilization were collected from patient files. Cost data included all FNE related costs. Resource use (including hospitalisation, antimicrobials, perfusions, lab tests, interventions and other drugs) was multiplied with unit costs from official sources. Regression analysis to identify cost drivers was performed on log–transformed costs using a mixed linear model.

RESULTS: The average number of FNE’s in patients with FNE was 1.3, the first FNE occurring after 1.7 cycles. The average number of FNE’s tended to be higher in patients with hematological malignancies and in patients receiving combination chemotherapy. The mean cost per FNE episode, excluding G–CSF treatment and secondary prevention, was €4221 (95% CI:3521–4921). Major cost components were hospitalization (€2707), antimicrobial therapy (€784) and tests (€636). Growth factors were prescribed for FNE treatment and secondary prevention in 84% and 51% of patients respectively. The average total cost of growth factors was €1217. Mortality during chemotherapy was 11%. Regression analysis showed that underlying disease and survival were independent cost drivers. NHL patients incurred 1.85 times higher costs than others (95% CI:1.07–3.20, p = 0.0316). Patients who died, either from FNE or from their underlying disease, showed 1.52 times higher costs (95% CI:1.04–2.22, p = 0.0347) than survivors. Co–existence of thrombocytopenia or anemia also significantly predicted higher FNE costs.

CONCLUSION: The cost of FNE varied according to underlying disease. NHL patients showed the most elevated total FNE related costs. These analyses of cost drivers enable to fine–tune data for economic analyses to relevant patient subgroup.

PCN24

ESTIMATING THE COST OF INFORMAL CAREGIVING IN LUNG CANCER PATIENTS. THE HABIT STUDY
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OBJECTIVES: To estimate cost associated with informal care giving in advanced stage Non-Small Cell Lung Cancer (NSCLC) patients, identifying the costs drivers in Italy; to measure symptoms evolution using the LCS subscale of the FACT-L questionnaire.

METHODS: A total of 104 patients (55 on second line chemotherapy and 49 in supportive care) were enrolled in 18 Italian oncology departments and followed up for 3 months. Main caregiver workload was assessed monthly by evaluating the number of hours devoted to ten caregiving tasks, presence and activities of other informal or formal caregiver were registered, performance status was evaluated monthly by means of the ECOG scale. Patients completed the LCS symptoms subscale for each visit. Formal care giving time was valued according to market prices; informal care giving hours were valued using the wage rate for an equivalent service. The covariance analysis was performed to check for influential factors in assistance need and costs.

RESULTS: During the 3-month observational period both ECOG and LCS scores depreciated in the two groups. An equal number of deaths were registered among patients in chemotherapy and in supportive care. Monthly hours of informal care giving increased from 124,37 to 166,9 for the chemotherapy patients and from 141,92 to 150,97 for supportive care patients. The home assistance cost accounted for €3159 for chemotherapy and €4189 for supportive care patient. The regression analysis highlighted that symptom depreciation is a driver of care giving time and costs and that the assistance cost increases if the caregiver doesn’t live with the patient.

CONCLUSIONS: The burden of assistance in NSCLC advanced patients is mainly beam by family members who provide also home health aide. As the population ages and family structure is changing, social intervention targeted at unpaid family caregiver will be needed to ease the economic, psychological and physical burden of care giving.

PCN25

INFLUENCE OF THE PORTION OF MEDICAL EXPENSE PAID INDIVIDUALLY ON PHYSICIANS’ ATTITUDE TOWARDS CANCER TREATMENT IN JAPAN
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OBJECTIVES: To investigate the influence of the portion of medical expense (30% of total amount of medical cost) paid individually on physicians’ attitude toward treatment for the patients with breast cancer in Japan. METHODS: A total of 165 physicians from board members of Japanese breast cancer society (363 physicians) completed self-report questionnaires.

RESULTS: One hundred and forty-two out of 165 physicians (87.7%) were surgeons, which reflected peculiar circumstance; surgeons usually are involved in surgical treatment as well as chemotherapy in Japan. Seventy-seven physicians (48%) had an experience of having been asked by the patient for cheaper treatment because of excessive individual payment. One hundred and twenty physicians (74%) tried to select the treatment, giving greater importance on the cost individually paid by the patients. The difference between actual cost and the cost roughly estimated by the physicians was the greatest in the treatment using molecular targeting drugs (i.e. trastuzumab) and was smaller in hormone therapy as well as conventional chemotherapy. The rate of physicians unfamiliar with following national medical/welfare system in Japan was “refunding from social assuror” (12%), “interest free-loan by local government” (46%) and “tax reduction for medical expenses” (21%). The physicians supporting expansion of the portion of the medical expense uncovered by social insurance was three times greater than those negative for it.

CONCLUSION: 1) About 60 percent of breast cancer specialists had keen senses on an economical side of the treatment especially on the portion of medical expense paid individually. 2) Excessive individual payment exerted an influence on continuing effective chemotherapy.

PCN26

CUTANEOUS CANCER TREATMENT AND COSTS IN GERMANY

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OBJECTIVES: Cutaneous cancer is a general term given to a range of skin tumours. Its severity is determined by the size and location of the primary tumour, and whether there are metastases. This study was designed to obtain a clear understanding of the current treatments and costs related to the clinical management of cutaneous cancer in Germany. This study was undertaken to be able to contrast the efficacy and health economic benefits of current care relative to emerging ablation technologies being developed. METHODS: A Care Map was developed to capture how patients with cutaneous cancer are treated in Germany from diagnosis through follow up. In this study, the focus was on treatment of tumours not larger than 20 cm². Information in the public domain was supplemented with information gathered through expert interviews with six dermatologists.

RESULTS: After diagnosis of cutaneous cancer, patients were mainly treated with Mohs surgery (32%), conventional surgery (30%), chemotherapy (14%) and radiotherapy (12%). Other treatments used include limb perfusion, phototherapy (e.g. PUVA), laser therapy, immunotherapy or combinations of these therapies. After first line treatment, more than 95% of patients are cleared of their cancer and are subsequently followed for recurrence of the tumour. Recurrent tumours are mainly treated with Mohs surgery (31%), conventional surgery (25%), or chemotherapy (22%). Severe adverse events are rare. The total average charge to the third party payer of first-line treatment is approximately €3540. For the second-line treatment the costs are approximately €3756.

CONCLUSIONS: Current treatment of small cutaneous cancers varies depending upon the type of tumour. Mohs surgery, conventional surgery, chemotherapy and radiotherapy are the main treatment options. First line treatment is very successful, with 85% of patients being cured. However, the 15% of patients with recurrences will need to undergo a second-line treatment, impacting the patient and health care system.

PCN27

ECONOMIC ANALYSIS OF BISPHOSPHONATES FROM THE PAYERS PERSPECTIVE IN BRAZIL

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OBJECTIVES: To evaluate the incidence of skeletal-related events (SREs) in cancer patients with bone metastasis, their incremental direct costs and measure the potential economic value of the use of bisphosphonates. METHODS: A retrospective analysis of medical provider’s bills from 3.219 cancer patients (breast, prostate, lung, renal, multiple myeloma) for 24 private health care plans in Brazil was constructed and analyzed from the private payers’ perspective. Patient population was divided into two groups: placebo (2.431 patients with no use of bisphosphonate) and bisphosphonate (787 patients treated with Zometa®, Aredia®, Ostac/Bonefos®). The total health care utilization cost per patient per year was calculated as the sum of the average pharmaceutical cost (bisphosphonate cost plus the cost of infusion, outpatient day hospital, materials and other prescription drugs) and the average cost per patient in treating a SRE, considering the real incidence for each bisphosphonate. SREs were defined as pathological bone fracture, spinal cord compression, radiation therapy to bone, and surgery to bone.

RESULTS: The incidence of clinical and surgical SREs was: Zometa® (15%; 1%), Aredia® (19%; 2%), Ostac/Bonefos® (26%; 13%), placebo (37%; 5%). The cost per patient in treating a clinical SRE, in USD, ranged from $58 to $2744. The cost per patient in treating a surgical SRE ranged from $610 to $21,250 (patient who required surgery to bone). The average cost per patient in treating a clinical SRE was $480 and in treating a surgical SRE was $5445. The total health care utilization cost per patient per year was the lowest for Zometa ($2106) followed by Aredia ($2375), Ostac/Bonefos ($2818) and placebo ($2637).

CONCLUSION: Among the bisphosphonates analyzed, Zometa® showed to be effective at preventing the skeletal-related events with the lowest total health care utilization cost.

PCN28

DOCUMENTATION OF PHARMACY COST IN THE PREPARATION OF CHEMOTHERAPY INFUSIONS IN ACADEMIC AND COMMUNITY-BASED ONCOLOGY PRACTICES

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OBJECTIVES: Significant changes in Medicare reimbursement for outpatient oncology services are included as part of the Medicare Modernization Act of 2003. The objective of this study was to identify the “true cost” associated with the drug-related handling for the preparation and delivery of chemotherapy doses. METHODS: Two academic medical outpatient infusion centers (Universities of Utah and Wisconsin) and two community cancer centers in the U.S. (Fairfax, Virginia and Montgomery, Alabama) provided data used to estimate all “fixed costs” associated with the preparation of chemotherapy including drug storage, space, insurance management, inventory and waste management, pharmacy staff payroll, equipment, supplies, information resources and shipping. These costs were annualized and then divided by the number of chemotherapy doses given at each site per year. A Time-and-Motion study was also performed.
to determine what tasks were conducted by pharmacy staff and how much time was spent in the preparation of the top fifteen chemotherapeutic drugs and regimens used across the four sites. Pharmacy staff was observed as to the time spent in each task relative to the total time in an average shift to determine the proportion of total work hours dedicated to the preparation of the selected chemotherapy drugs. RESULTS: The total average fixed costs for the preparation of chemotherapy doses across all sites was $36.03 (range $32.08 for Virginia and $67.19 for Utah). Data from the four centers was projected to the 3,990,495 million estimated chemotherapy infusions administered to a national Medicare population in 2003 resulting in a total annual cost to Medicare for chemotherapy preparation of $143,777,535. Pharmacists were observed to spend the majority of their day (90% or higher) on tasks directly related to the preparation of these agents. CONCLUSIONS: Preparation costs for chemotherapy are significant and need to be considered in determining reimbursement rates for administration.

**PCN29**

**PER-PATIENT COST OF HOSPITAL CARE FOR ADVANCED BREAST CANCER IN THE UK BASED ON A PATIENT-LEVEL RESOURCE UTILISATION DATASET**

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**OBJECTIVES:** To estimate the per-patient cost of hospital care associated with the treatment of breast cancer recurrence in the UK. **METHODS:** Patient-level resource utilisation data for 571 node-positive early breast cancer patients treated at the Western general Hospital, Edinburgh between 1991 and 2004, of whom 180 experienced disease recurrence, were analysed in order to provide estimates of the cost of hospital care post-relapse. Unit costs from national sources were applied to patient-level resource use data for hospital care collected over a period of five years post-relapse. The total cost was estimated by bootstrapping (1000 simulations; with replacement). **RESULTS:** Of the 180 patients who experienced a relapse, 145 (81%) died within follow-up, 143 of these due to breast cancer. The first relapse was distant in 145 patients and locoregional in 35 (25 of which experienced a subsequent distant disease and 3 experienced further locoregional recurrence within follow-up). The bootstrap mean cost post-relapse (and 95% confidence intervals) was £14,085 (£12,370–£15,877) for patients whose first relapse was distant and £14,575 (£11,411–£17,872) for patients whose first relapse was locoregional. Comparison with previous published estimates suggests that the cost of chemotherapy treatments has increased substantially in recent years. **CONCLUSIONS:** Hospital costs for patients with relapsed breast cancer may be higher than previously estimated, perhaps due to recent increases in the costs of chemotherapy agents. Costs for patients whose first relapse is locoregional are similar on average to that for patients whose first relapse is distant, as many have subsequent locoregional or distant relapses.

**PCN30**

**COMPARATIVE ANALYSIS OF DRUG COST OF BREAST, CERVICAL AND COLORECTAL CANCER IN HUNGARY**

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**OBJECTIVES:** The aim of this study is to calculate the market share of drug cost from the total health insurance cost of treatment of breast, cervical and colorectal cancer. **DATA AND METHODS:** Data derives from the central, nationwide database of the Hungarian National Health Insurance Fund Administration (OEP) covering the year 2001. The cost of treatment includes the cost of outpatient care, the acute and chronic inpatient care, the (subsidies) of medicines’ prices (reimbursement) and the expenditure on disability to work. The subsidies of drugs include the following ATC codes: “L” (Antineoplastic and immunomodulating agents), “N02” (Analgesics) and “A04” (Antiemetics and antineuseants). The diseases were identified with the following ICD (International Classification of diseases): breast (C50, D05, D24), cervix (C53, D06, D26.0) colorectal (C18, C19, C20, C21, D01.0, D01.1, D01.2, D01.3, D01.4, D12). **RESULTS:** The total health insurance cost of treatment of breast cancer was around 33.4 million € (8.6 billion Hungarian forint) in 2001. The total health insurance cost of treatment of cervical cancer was around €4.1 million (1 billion Hungarian forint) in 2001. The total health insurance cost of treatment of colorectal cancer was around €38.871.666 (9.98 billion Hungarian forints) in 2001. The drug cost of breast cancer was €9.45 million, cervical cancer €6.62 million and colorectal cancer was €4.86 million. The market share of drug reimbursement cost from the total health insurance cost was the following: breast cancer (28.3%), cervical cancer (15.4%), colorectal cancer (12.5%). **CONCLUSIONS:** The health insurance reimbursement of drugs varies in different types of cancer. The drug costs represent the highest cost element in breast cancer compared to cervical and colorectal cancer.

**PCN31**

**COST EFFECTIVENESS MODEL OF IV BISPHOSPHONATES IN THE PREVENTION OF BONE COMPLICATIONS IN BREAST CANCER PATIENTS WITH BONE METASTASES: A GERMAN INPATIENT PERSPECTIVE**

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**OBJECTIVES:** Intravenous (IV) bisphosphonates reduce skeletal related events (SREs) and alleviate bone pain in patients with breast cancer and bone metastases (BCBM). However, these agents differ in terms of efficacy, administration time and costs. We compared the cost-effectiveness of IV bisphosphonates from a German inpatient perspective. **METHODS:** A 7-year literature-based model was designed to simulate the natural history, costs and quality-adjusted life expectancy (QALE) of 4 hypothetical cohorts of BCBM patients receiving no treatment (NT) or monthly IV ibandronate (IB), pamidronate (PA) or zoledronic acid (ZA). The model included probabilities of death and disease progression and the risk of SREs. The risk reduction in SREs with each bisphosphonate was estimated using the Andersen Gill hazard ratio v. NT (0.71 for IB, 0.70 for PA, and 0.56 for ZA). The model included direct medical costs for drugs, IV administration and SREs. Survival was adjusted for the time spent with and without SREs and on and off therapy to capture the bisphosphonates’ impact on QALE. All outcomes were discounted at 5% per annum. **RESULTS:** The cumulative number of SREs over the 7-year simulation was lowest for ZA (3.53 per patient), followed by PA (4.17), IB (4.21) and NT (5.80). Average QALE was highest with ZA (1.10), followed by PA (1.09), IB (1.09) and NT (0.92). Total per-patient costs were lowest for ZA (€5,520), followed by PA (€6,968), NT (€7,317) and IBN (€7,881). In probabilistic sensitivity analyses, the 95th percentile value for the cost per QALY saved was €15,600 (ZA), €84,000 (IB), and €87,500 (PA). ZA, PA and IB were cost savings
vs. NT in 79%, 56%, and 36% of model runs, respectively. CONCLUSIONS: For the management of BCBM patients, ZA is the preferred bisphosphonate as it is more effective and less expensive than other IV agents or even no therapy.

PCN32

COST-EFFECTIVENESS ANALYSIS OF LETROZOLE VERSUS TAMOXIFEN AS INITIAL ADJUVANT THERAPY IN HORMONE-RECEPTOR POSITIVE POSTMENOPAUSAL WOMEN WITH EARLY BREAST CANCER IN THE UK
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OBJECTIVES: The primary core analysis of the BIG 1–98 study showed that in postmenopausal women with hormone receptor positive (HR+) early breast cancer, the aromatase inhibitor (AI) letrozole (LET) significantly reduced the risk of recurrence by 19% overall (95% CI 7–30%) and the risk of relapse in distant sites by 27% overall (CI 12–40%) compared with tamoxifen (TAM). Letrozole demonstrated non-significant improvements in overall survival and contralateral breast cancer. LET patients had reduced risks of endometrial cancer and venous thromboembolism (VTE), but increased risks of mild/moderate hypercholesterolaemia, cardiac events and fractures. This study reports the cost-effectiveness of initial adjuvant therapy with LET vs. TAM in postmenopausal women with HR+ early stage breast cancer from the UK NHS perspective based on preliminary analyses of published results of the BIG 1–98 trial. METHODS: A Markov model describes the occurrence of contralateral tumours; locoregional recurrence; soft tissue, bone, and visceral metastases, and treatment side effects (endometrial cancer, VTE, hip fractures, other fractures, hypercholesterolaemia, and MI). Clinical parameters for TAM were based on published results of the BIG 1–98 trial and other published studies, as were health-state utilities. Corresponding probabilities for LET were calculated by applying RRs for LET vs. TAM from the BIG 1–98 study. Costs of breast-cancer care were estimated using UK patient-level resource use data. Lifetime costs (2004UK£) and QALYs were estimated for HR+ women aged 61 years at diagnosis, discounted at 3.5% annually. RESULTS: Compared with TAM, LET results in an additional 0.33 QALYs (12.84 vs. 12.51). These benefits are obtained at an additional cost of £4079 (12,474 vs. 8,395). Cost-effectiveness of LET vs. TAM is £12,321 (95% CI £2672–£23,889) per QALY saved. CONCLUSION: Adjuvant treatment with letrozole is cost-effective from a UK NHS perspective compared with tamoxifen and should be considered in women diagnosed with HR+ early breast cancer.

PCN43

COST-EFFECTIVENESS ANALYSIS OF AANASTROZOLE OVER TAMOXIFEN IN POSTMENOPAUSAL WOMEN WITH EARLY BREAST CANCER FROM A UK NATIONAL HEALTH SERVICE PERSPECTIVE: THE 5-YEAR COMPLETED TREATMENT ANALYSIS OF THE ATAC TRIAL
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OBJECTIVES: In the Arimidex, Tamoxifen Alone or in Combination (ATAC) trial, anastrozole produced significantly longer disease-free survival and time to recurrence compared with tamoxifen in hormone receptor-positive (HR+) postmenopausal women with early breast cancer after 5 years of treatment. (ATAC Trials’ Group. Lancet 2005;365:60–2) Based on these ATAC results, the cost-effectiveness of anastrozole versus tamoxifen is estimated from the perspective of the UK National Health Service (NHS). METHODS: A Markov model and Weibull survival curves fitted to trial data were used to project 5-year outcomes from the ATAC trial to an actuarial time point of 25 years. Resource utilisation data were obtained primarily from a physician survey. Unit costs (2003–4 UK£) were obtained from routine NHS sources. Utility scores for relevant health states were obtained from 26 representative UK patients, using a standard gamble technique. Costs and benefits were discounted at the annual rate of 3.5%. All effectiveness and cost parameters subject to uncertainty were varied in a probabilistic analysis. Incremental cost-effectiveness ratios (ICERs), 95% CIs, and acceptability curves were calculated. RESULTS: The estimated 25 year ICER of anastrozole compared with generic tamoxifen was £7811 (£219–31,438) per QALY gained with a probability of the order of 90% that it lies below £20,000 per QALY gained. The results were sensitive to the time horizon of the model and

PCN34

COST-EFFECTIVENESS OF ANASTROZOLE OVER TAMOXIFEN IN ADVANCED OR RECURRENT GASTRIC CANCER: ORAL FLUOROPYRIMIDINE TS-1 VERSUS CONVENTIONAL INTRAVENOUS CHEMOTHERAPY
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OBJECTIVE: TS-1 is a newly developed oral anticancer drug. We previously reported the treatment costs for gastric cancer in Japan and suggested that TS-1 is cost saving compared to conventional intravenous chemotherapy. The aim of this study is to examine health utilities in gastric cancer patients and to assess the cost-utility of TS-1. METHODS: Patients with advanced or recurrent gastric cancer who were able to ingest meals were identified retrospectively from the ordering system database of Showa University Hospital between January 1998 and July 2001. The utilities of the patients during chemotherapy were assessed by oncology pharmacists on the basis of medical records (including information on mobility, meal ingestion, pain, and other symptoms), using the rating scale method, time trade-off method, standard gamble method and EQ-5D mapping procedure. The costs of the patients were calculated on the basis of hospital billing data. Cost-utility analysis was conducted from a societal perspective. RESULTS: Of the 23 patients who met the inclusion criteria, 13 received TS-1 and 10 received conventional intravenous chemotherapy. Mean (SD) utilities as measured by the rating scale method, time trade-off method, standard gamble method and EQ-5D mapping procedure were 0.89 (0.12), 0.90 (0.11), 0.94 (0.07), and 0.84 (0.18), respectively, in the TS-1 group. The corresponding utilities in the conventional intravenous chemotherapy group were 0.65 (0.18), 0.66 (0.18), 0.81 (0.12), and 0.52 (0.23), respectively. The utilities of the TS-1 were significantly (P < 0.05) higher than those of conventional intravenous chemotherapy by every technique. The mean monthly cost during chemotherapy was significantly lower in the TS-1 group than in the conventional intravenous chemotherapy group (£2481 vs. £6458, P < 0.05). CONCLUSION: TS-1, an oral anticancer agent, is a dominant strategy with a lower cost and a greater health outcome than conventional intravenous chemotherapy in patients with advanced or recurrent gastric cancer.
the assumptions about the length of the treatment benefit.

CONCLUSIONS: Anastrozole is a cost-effective alternative to tamoxifen for the adjuvant treatment of postmenopausal women with HR+ early breast cancer from the UK NHS perspective, with the cost per QALY gained with anastrozole falling well within the range considered acceptable for reimbursement in the UK.

PCN35
A COST UTILITY ANALYSIS OF FULVESTRANT VERSUS EXEMESTANE IN THE SECOND LINE TREATMENT OF POSTMENOPAUSAL WOMEN WITH ADVANCED BREAST CANCER IN GREECE (PRELIMINARY RESULTS)
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OBJECTIVE: To estimate the cost and effects (measured in QALYs) of fulvestrant as replacement of exemestane in the second line treatment of postmenopausal women with advanced breast cancer (ABC) in Greece. The preliminary results are presented in this analysis. METHODS: A Markov model was used in order to compare cost-effectiveness of two patient cohorts receiving: fulvestrant (cohort A) or exemestane (cohort B) as 2nd line treatment, megestrol acetate (A, B) as 3rd line treatment and a palliative care package (A, B). The perspective of the study was that of the National Health care System. Clinical evidence was derived from published clinical trials. Treatment effects were estimated in QALYs. Direct costs included drug therapy, oncologist visits, monitoring tests and adverse events treatment. Information on resource use was obtained from a panel of 3 oncology key opinion leaders. As patients can use either public or private sector, charges of both sectors for year 2005 will be used. Public sector prices are used in this analysis. The time horizon of the study was 11 years and the discount rate used for both costs and QALYs was 3.5%. RESULTS: Cohort A had a higher proportion of responders with a longer duration on 2nd line treatment. In a cohort of 100 patients, fulvestrant produces 8.1 extra QALYs at a 18% extra cost compared to exemestane resulting in an incremental cost-effectiveness ratio (ICER) of €35,633 per QALY. However, as public sector charges highly underestimate cost of treatment, further scenario analysis will be carried out in order to capture true cost of treatment in Greece. CONCLUSIONS: Fulvestrant proves to be more beneficial than exemestane at an extra cost of €35,633 per QALY. Fulvestrant produces extra benefit with a reasonable extra cost for ABC patients in Greece.
ASSESSING THE IMPACT ON STAFF RESOURCE AND PATIENT WAITING TIME OF A SWITCH FROM IV TO ORAL CHEMOTHERAPY: TIME AND MOTION MODEL FOR HTAS
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OBJECTIVE: Capacity planning is an increasingly important determinant of NHS service delivery, and will be employed by NICE to assess the resource implications of new chemotherapy (CT) treatments. Navelbine (vinorelbine) Oral is an orally administered version of a NICE-approved IV CT. A time and motion methodology evaluated the impact on pharmacy and nursing time, and patient waiting, of a switch from IV to oral CT in a Cancer Centre and Unit. METHODS: Three CT regimens were compared: Navelbine IV d1 d8, gemcitabine IV d1 d8, and Navelbine Oral d1 d8, all q21d. IV CT always required an outpatient visit; oral administration on d8 could take place in the clinic or at home. Five administrations were measured for each regimen in each setting and 80% variance calculated. Results were extrapolated to three cycles of treatment.

RESULTS: Administration of Navelbine Oral was less time consuming in both the Cancer Centre and Unit. Pharmacy time in the Centre was reduced from 3h to 1h. The Cancer Unit was able to dispense on site rather than rely on a remote compounding pharmacy. Nursing time was reduced from 6h to 1h 18mins in the Centre and from 4½h to 36mins in the Unit. Total patient visit time was reduced from 26h 18mins to 7h 39mins in the Centre and from 12h 54mins to 9h in the Unit. CONCLUSIONS: Delivery of oral CT is less resource intensive and time consuming than IV CT and reduces overall patient waiting in a hospital. A switch from IV CT to Navelbine Oral, with home administration on d8, resulted in a four-fold increase in the capacity of the day unit, and a three-fold increase in the number of prescriptions prepared by pharmacy. The methodology provides a quantitative measure of comparative capacity that could be used as part of future health technology assessments.

APPLICATION OF AN ALGORITHM FOR DEFINING RETROSPECTIVE COHORTS OF COLORECTAL CANCER (CRC) PATIENTS TREATED WITH DIFFERENT FIRST-LINE CHEMOTHERAPY REGIMENS +/- BEVACIZUMAB TO ADMINISTRATIVE CLAIMS DATA
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OBJECTIVES: To apply a previously described algorithm for defining cohorts of CRC patients treated with first-line chemotherapy agents +/- the targeted therapy bevacizumab to an administrative health insurance claims database. METHODS: Claims records for 717 patients newly diagnosed for CRC in 2004 were extracted from a large U.S. health care claims database. By applying a previously defined algorithm (see “Development of an algorithm for the identification and classification of colorectal cancer (CRC) patients according to first-line chemotherapy +/- bevacizumab using administrative claims records”) these patients were classified according to five, mutually exclusive, first-line chemotherapy regimens +/- bevacizumab. RESULTS: Of the 717 patients identified, 709 (99%) could be assigned to one of the first-line chemotherapy categories: oxaliplatin (25%); irinotecan+bolus 5-FU/LV (2%); irinotecan+infusional 5-FU/LV (1%); irinotecan+5-FU/LV (bolus vs. infusion not distinguishable) (5%); and 5-FU/LV or capecitabine alone (66%). Each category was further subdivided according to whether bevacizumab was administered during the first month of chemotherapy. Of the 97 patients with a J9999 (“antineoplastic drug not elsewhere classified”) HCPCS claim in 2004, 12 had only one such claim and therefore bevacizumab vs. cetuximab could not be identified; all but 2 of the remaining had their J9999 claims identified definitively. Seventy patients incurred a J9999 claim within their first-line therapy: assignment to bevacizumab, cetuximab, and unknown was 63, 1, and 6, respectively. Eighty patients (11%) received second-line therapy. CONCLUSIONS: First-line chemotherapies for CRC can be identified in health insurance claims data through a careful examination of CPT, HCPCS, and revenue center codes and the intervals between them. However, distinguishing bolus vs. infusion regimens is challenging due to inconsistent coding of ambulatory pump and IV push claims. Newly approved agents billed under a “not otherwise classified” code can be distinguished if their costs or intervals of administration differ substantially.

DEVELOPMENT OF AN ALGORITHM FOR THE IDENTIFICATION AND CLASSIFICATION OF COLORECTAL CANCER (CRC) PATIENTS ACCORDING TO FIRST-LINE CHEMOTHERAPY +/- BEVACIZUMAB, AND INITIATION OF SECOND-LINE THERAPY USING ADMINISTRATIVE CLAIMS RECORDS
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OBJECTIVES: To develop an algorithm for defining cohorts of newly diagnosed CRC patients according to first- and second-line chemotherapy regimen and the use of bevacizumab using administrative claims records. METHODS: A three-step process was used to create algorithms for first-line chemotherapy regimens and the use of the anti-angiogenic agent bevacizumab: 1) a literature review and consultation with clinicians was performed to define common treatment patterns in CRC (medication and dosage, modes and timing of administrations); 2) coding of chemotherapy agents and modes of administration were mapped through review of CPT, HCPCS, and UB-92 revenue center coding guides; 3) coding of agents, modes of administration, and medication dose by cost proxy was refined through empirical review of all claims associated with chemotherapy and CRC diagnoses in a sample of the data. RESULTS: Patients were identified as having newly-diagnosed CRC during a qualifying period if they had an ICD-9-CM claim for malignant CRC preceded by a 12-month period without any CRC claims. Five first-line chemotherapy regimens were identified: oxaliplatin+5-FU/LV, irinotecan+bolus 5-FU/LV, irinotecan+infusional 5-FU/LV, irinotecan+5-FU/LV (bolus vs. infusion not distinguishable), and 5-FU/LV or capecitabine alone (without oxaliplatin or irinotecan). Bevacizumab did not have a specifically assigned billing code in 2004 but could be differentiated from another agent approved for the treatment of metastatic CRC in the second line—cetuximab—through examination of the frequency of administration and medication cost. The initiation of second-line therapy was defined as change to/adding of any of the following agents thirty days after starting first-line therapy: irinotecan, oxaliplatin, or cetuximab. CONCLUSIONS: Retrospective cohorts of CRC patients treated with different chemotherapy agents and bevacizumab can be identified in claims data through examination of ICD-9-CM, CPT, HCPCS, and revenue center codes, as well as frequency of administration and cost of chemotherapy.
A NEW MEASURE FOR ASSESSING HEALTH-RELATED QUALITY OF LIFE (HRQoL) IN PATIENTS WITH ADVANCED COLORECTAL CANCER (ACC): “CCRA-QOL”
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OBJECTIVE: To develop an instrument to measure HRQoL in patients with advanced colorectal cancer (ACC) given that there are no specifically designed for this purpose. METHODS: In order to define the main dimensions the questionnaire should cover, a scientific literature review, a specific interview and a focus group with seven experts (four oncologists, two nurses and one psychologist) were performed. Later, an in depth semi-structured interview was conducted in eight patients with ACC to evaluate the impact of disease symptoms and treatment in HRQoL. From the content of the interviews a sample of items were identified. Each item was subsequently rated by the same panel of experts, according to clarity, frequency and importance to patients with ACC (qualitative reduction). Remaining items were edited in the questionnaire form in order to be self-administered to a sample of 35 patients in a cross-sectional study. After that, a factor analysis and a Rasch analysis were performed to obtain the final questionnaire. RESULTS: Twelve dimensions were identified by experts. From the qualitative analysis, a questionnaire with 27 item was obtained, 4 items were only applicable to a specific subset of patients (items analysed independently). Factor analysis from the remaining 23 items identified 4 dimensions explaining 56.14% of total variance. In each dimension the Rasch analysis was used to exclude those items with inadequate adjustment (INFIT > 1.30) or redundant with other items in the measurement scale, obtaining in total 16 items. The final questionnaire includes 16 items with a good internal consistency (Cronbach’s alpha = 0.81) and 4 additional items that have to be analysed separately. CONCLUSION: A new questionnaire was elaborated to measure HRQoL in patients with ACC with a good reliability. Psychometric properties are currently being tested in conditions of real clinical practice.

CRITICAL APPRAISAL OF SCIENTIFIC POSTERS COMPARING ANEMIA TREATMENTS IN CANCER PATIENTS: APPLYING ISPOR TASK FORCE GUIDELINES ON METHODOLOGICAL QUALITY OF RETROSPECTIVE STUDIES
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OBJECTIVE: Lack of space may prevent research posters from fully disclosing methodological details. Nevertheless they are increasingly used as scientific evidence in communications with health care professionals and as references in review articles, although they are not subject to extensive peer-review. The objective of this study was to assess the methodological quality of posters with results from retrospective database studies on the use of erythropoiesis-stimulating proteins [epoetin alfa (Eprex®), epoetin beta (Neocpentrom®), or darbepoetin alfa (Aranesp®)] in the management of anemia in cancer patients. METHODS: We evaluated the quality of research posters in anemia, presented at European congresses since 2004 by using the methodological criteria published by the ISPOR Task Force on Retrospective Database. Two reviewers assessed all posters independently. In total 21 criteria were applied: 3 on data sources, 3 on research design, 8 on study population, 5 on statistical analyses and 2 on conclusions. RESULTS: Four posters were assessed (Persson, ISPOR 2004; Reichardt, OGHIO 2004; Malonne, BHS 2005; Pujade-Lauraine, ECCO 2004). Three presented a retrospective cost-minimization analysis and one a retrospective efficacy evaluation. Overall, the quality of the analyses was poor to very poor satisfying from 14% to 38% of the criteria. Very low scores were observed regarding the quality of the data sources and the research design (scoring 0/3 each in the 3 cost-minimization studies). Key elements such as selection bias were not considered. Cost data were mostly limited to specific categories, such as drug costs, without including other costs associated with the condition and its treatment. CONCLUSIONS: The ISPOR guidelines for the evaluation of retrospective analyses are a useful tool for quality assessment of scientific posters. When assessed against these guidelines, all posters revealed serious methodological shortcomings. These findings caution against the use of posters without appropriate assessment of their methodological quality.

MODELLING THE EFFECT OF A NOVEL THERAPEUTIC AGENT ON THE EVOLUTION OF UTILITY IN REFRACTORY MULTIPLE MYELOMA PATIENTS
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OBJECTIVES: To estimate the effect of Bortezomib on utility values in multiple myeloma patients. METHODS: A Phase III trial (APEX) compared Bortezomib with High Dose Dexamethasone. Utility scores (EuroQol-5D) were collected together with a comprehensive range of clinical and serological outcomes. Changes in utility scores were analysed separately for survivors and non-survivors using non-parametric regression methods. A maximum likelihood method that adjusts for the latent, underlying risk of death as a utility-driven was employed to take account of unobservable effects of declining health on utility scores. RESULTS: Data for 655 out of a total of 669 patients in APEX were included in the analysis, including 129 patients for whom information was available on time to death. Mean utility scores before progression were similar between Responders (0.65) and Non-responders (0.61; mean diff. 0.045, 95% CI –0.01, 0.10); the respective estimates for the after-progression phase (0.67 vs. 0.58) had a mean difference of 0.10 (95% CI –0.00, 0.19). No differences were found between treatment groups. A steep decline in utility over time, following a stable period, began approximately 100 days before death. Estimates from a two-step regression model of utility scores are consistent with informative censoring or sample selection bias in the estimating sample; adjusting for such bias reduced the estimated post-progression difference between responders and non-responders. CONCLUSIONS: The last days of life in patients with multiple myeloma are associated with a steep decline in health related quality of life. Evaluations of utility outcomes conducted alongside clinical trials of salvage therapies in hematology and cancer are likely to require adjustment for the unavailability of representative samples for assessment as a result of early trial termination. We propose an approach commonly used in other fields to deal with this issue and discuss its advantages and limitations.

HEALTH RELATED QUALITY OF LIFE EVALUATIONS IN PROSTATE CANCER: WHO’S BEING STUDIED?
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OBJECTIVES: The issue of health-related quality-of-life (HRQOL) of prostate cancer patients has gained prominence.
We hypothesized that disparities exist in the types of individuals who have been studied and reported, relative to the actual cancer population. METHODS: We searched MEDLINE, EMBASE/Excerpta Medica, and Current Contents from January 1, 1998-July 2004 using the MeSH subheadings “prostatic-neoplasms” and “quality of life” and the keywords, “prostate cancer” and “quality of life.” Articles were selected if they met the following inclusion criteria: English language literature, original research, publication in a peer-reviewed journal. Articles were excluded for the following reasons: fewer than 10 patients studied; no HRQOL instrument used; editorial or review; developmental studies; unstructured or open-ended interviews used as primary data collection. RESULTS: 293 articles met inclusion and exclusion criteria. Studies originated from 23 countries; the United States producing the majority (52%) followed by Canada (8%) and the UK (7%). A total of 79,882 patients participated in these studies (average: 274 patients per study). One hundred eighty-three studies (68%) reported the mean age of the cohort; but reporting of other demographic information was modest overall. Among studies recording race, 82% of study participants were white, 6% were black and less than 1% were Hispanic, white or Asian. Blacks were represented in very few studies with 4057 (41%) included in four studies. Eighty-six different types of HRQOL instruments were recorded. The most common included the European Organisation for Research and Treatment of Cancer Quality of Life Questionnaire (26%), the SF-36 (25%), and the UCLA Prostate Cancer Index (20%). CONCLUSIONS: Many HRQOL studies of prostate cancer patients have been published, but the data quality and reporting varies widely. Racial minorities are underrepresented relative to their proportions in most populations.

**PCN45**

**MULTILINGUAL VALIDATION OF THE FACT-LEU KEMIA IN 7 LANG UAGES**

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OBJECTIVES: To develop a leukemia-specific subscale for the Functional Assessment of Cancer Therapy (FACT) and assess the linguistic validity of Afrikaans, Arabic, Czech, Korean, Portuguese, Slovak and Spanish translations. METHODS: The leukemia-specific subscale was developed through item generation from literature review and interviews with clinical experts and patients in 9 countries. The FACT-Leukemia (FACT-Leu) was then translated using the standard FACIT methodology: 2 forward translations, reconciling of the 2 forwards, back-translation to English, and 3 independent bilingual reviews. The sample included 115 patients (57% male, mean age 46 years) from 8 countries: South Africa, Egypt, Czech Republic, Brazil, Korea, Slovak Republic, Spain, and US (Spanish). Patients diagnosed with leukemia completed the FACT-Leu in their native language and then offered structured input on problems with translation or content. Statistical and reliability analyses were performed, and the participant comments were analyzed qualitatively. RESULTS: The Leu subscale had good reliability with the combined sample (alpha = 0.88) and the Spanish sample (alpha = 0.86). There were no negative patient comments related to the FACT-Leu items in any language. In addition, all leukemia subscale items had good item-total correlations in the combined sample. Item-total correlations in the individual language samples were reviewed to identify potential translation errors. Four items were flagged with this procedure: appetite, bleeding, bruising, and worry about infections. These translations were reviewed to ensure that the translation was not the cause of the relatively low item-total correlation. One minor revision was made to the Spanish and Afrikaans versions after testing. CONCLUSIONS: The FACT-Leu showed good reliability and linguistic validity in the seven-language combined sample and in the Spanish sample, and good linguistic validity across the individual languages. These results contributed to a better understanding of how quality of life issues are perceived by leukemia patients in different countries and supported cross-cultural comparability of instrument scores.

**PCN46**

**WHAT ARE THE PSYCHOSOCIAL CONSEQUENCES OF AN ABNORMAL SCREENING-MAMMOGRAPHY?**

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OBJECTIVES: The EU recommends biennial breast cancer screening for women 50–69 of age. If 1000 women are biennial screened in ten years 20–30 women are diagnosed with breast cancer. The reduction of the breast cancer mortality will shift for one woman only; the other 19–29 women diagnosed with breast cancer will die or survive regardless of the screening. In five rounds of breast cancer screening more than 100 women will experience to get a false-positive screening mammography. Women recalled for further investigations after an abnormal screening mammography, which after diagnosis is confirmed to be a false-positive result, experience significant adverse psychosocial consequences. METHODS: A prospective longitudinal survey over one year from June 2004 included consecutively women who participated in breast cancer screening. A validated questionnaire, Consequences Of Screening on Breast Cancer (COS-BC), specifically developed for measuring psychosocial consequences of abnormal and false-positive screening mammography was used as outcome measure. Previously Rasch analyses have confirmed that COS-BC encompasses four subscales and three single items. The COS-BC was completed by women with an abnormal screening mammography and women with a normal screening mammography and the psychosocial impact in these two groups was compared. RESULTS: All together 453 women with an abnormal screening mammography and 845 women with a normal screening mammography completed the COS-BC. In all four dimensions and in the three single items differences were found. Women with an abnormal screening mammography had experienced more negative psychosocial consequences compared to women with a normal screening result. All differences were statistically significant with p-values were less than 0.001. CONCLUSION: It has severe psychosocial consequences to have an abnormal screening mammography, which ought to be taken into account when planning breast cancer screening.

**PCN47**

**VALIDATION OF THE SPANISH VERSION OF THE UCLA PROSTATE CANCER INDEX: RELIABILITY AND VALIDITY OF A HEALTH-RELATED QUALITY OF LIFE MEASURE.**

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OBJECTIVES: To evaluate the psychometric properties of the Spanish version of the UCLA Prostate Cancer Index (UCLA-PCI). METHODS: A longitudinal, multicenter study was performed. Feasibility was tested by analyzing missing items, and ceiling and floor effects were assessed. Internal consistency was tested using Cronbach’s alpha. Patients were classified based on Gleason grading: Group A: 2–6 (least aggressive tumor); Group B: 7 (moderately aggressive); and Group C: 8–10 (most aggres-
Erlotinib (Tarceva™) is an oral highly specific epidermal growth factor receptor tyrosine kinase inhibitor. Phase II/III clinical trials have shown clinical efficacy of erlotinib in advanced (stage III/IV) Non-Small-Cell Lung Cancer (NSCLC) in terms of survival and increased Health Related Quality-of-Life (HRQoL). There is limited information of HRQoL and resources utilization on Canadian population of NSCLC. OBJECTIVE: To determine the HRQoL and resource utilization components in Canadian patients with stage III/IV NSCLC. METHODS: A face-to-face survey was conducted on a cohort of 32 patients with stage III/IV NSCLC from the lung cancer clinic at Princess Margaret Hospital, Toronto. HRQoL was assessed using disease specific tools (FACT-L). Utility scores were assessed by EQ-5D US English version. Socio-economic, clinical, and resource utilization data were collected using a self-administered questionnaire. Participants’ clinic charts were reviewed for supportive data and verification. RESULTS: Mean age was 63.03 ± 10.39 years, 23 were females and 68.8% have been smokers. Mean time since cancer diagnosis was 24.06 ± 17.74 months, 78.1% had metastasis. The average FACT-L score was 81.64 (range: 90–130), the FACT-L/TOI score was 57.43. The average EQ-5D score was 0.533, the score for Current Health State was 59.38 (0–100 scale). Mean number of visits to oncology clinic was 5.12 ± 7.48/month, and 0.86 ± 0.84/month for family physicians. Patients have been hospitalized for 4.13 ± 4.26 days on average in previous year. The average cost of medical imaging was CAD40.21 ± CAD18.27, mean cost of lab test was CAD44.72 ± CAD9.02, and mean cost of non-chemotherapy drugs was CAD44.51 ± CAD65.25. Average cost of Chemotherapy drugs was CAD460.70 ± CAD98.70. CONCLUSION: Advanced NSCLC patients on chemotherapy use substantial health care resources in Canadian setting. However, if not in end stage of life, patients have high HRQoL and utility scores that warrant further investigation.

**PCN49**

**HEALTH STATE DESCRIPTIONS FOR METASTATIC BREAST CANCER: A QUALITATIVE STUDY**

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OBJECTIVES: The aim of this study was to develop health state descriptions for patients receiving chemotherapy for stable, responding and progressive metastatic breast cancer (MBC). Subsequent work will derive utility values for the health states for use in cost utility analyses. METHODS: An interview discussion guide was produced based on literature review and clinical input. This focused on the symptoms of MBC, impact on different areas of functioning (physical, social, emotional, sexual, and cognitive), health related quality of life (HRQoL), severe hair loss and side effects of chemotherapy (all grade III–IV toxicities). These included febrile neutropenia, hand-foot syndrome, diarrhoea/vomiting, stomatitis, and fatigue. Health states were developed and validated using cognitive debriefing interviews with oncologists and a focus group with oncology specialist nurses. Fifteen health states (7 stable, 7 responding, 1 progressive) described the symptoms, toxicities, HRQoL and impact on functioning. Health states combined stable, responding and progressive disease with grade III–IV side effects or hair loss. To simplify the preference elicitation stage of this study the number of health states were reduced by employing an orthogonal fractional factorial design to combine disease stages with toxicities. The contributory effect of each will be estimated using a regression model. RESULTS: Four main areas of functioning, physical, emotional, social and sexual, were identified as being primarily affected in MBC. Patients responding to treatment have the highest overall HRQoL while those with progressive disease have the lowest. The focus group discussion supported the validity of the health states. CONCLUSION: Health states describing the combined impact of MBC and grade III–IV toxicities associated with chemotherapy treatment on patient’s HRQoL at different disease stages were developed. These health states will be piloted and used in a societal based valuation study. The final health states will be presented.

**PCN50**

**A PILOT STUDY ASSESSING THE QUALITY OF LIFE IMPACT OF ADVERSE EVENTS EXPERIENCED BY ADVANCED NON-SMALL-CELL LUNG CANCER PATIENTS RECEIVING SECOND-LINE CHEMOTHERAPY**

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OBJECTIVES: In clinical trials, chemotherapy-related adverse events (AEs) are classified according to the Common Toxicity Criteria (CTC). This standardised method of reporting provides clinicians with an overview of the level of medical intervention required to treat AEs, but does not necessarily assess the impact on a patient’s health-related quality of life (HRQoL). We attempt to translate CTC (version 2.0) ratings into a scale that reflects the severity of various events on a patient’s HRQoL. METHODS: In this study, scores of impact on patient HRQoL were assigned to AEs experienced by advanced non-small cell lung cancer (NSCLC) patients receiving second-line chemotherapy. This was achieved through a pilot survey of a convenience sample of
twelve physicians. A mapping instrument was developed to allocate values of HRQL impact to fifty chemotherapy-related AEs. The HRQL impact was measured on a five-point scale for direct comparison with the CTC. RESULTS: This analysis revealed that approximately half (23 of 50) of the AEs had HRQL impact values that were different to their CTC grades. For the majority (17 of 23), the HRQL impact value was lower than the CTC grade. The results of the HRQL impact survey confirmed that the CTC classification does not always reflect the impact on patient HRQL and that in general, low to moderate grade leukopenic and thrombocytopenic haematological events have lower impact on patient HRQL than non-haematological events. Vomiting, pain, sensory neuropathy, rigors, chills and fever had a higher impact on HRQL than the CTC would suggest. CONCLUSIONS: We have proposed a method for estimation of the HRQL impact of AEs on chemotherapy patients that has face validity. This research provides a basis to quantify the HRQL impact of chemotherapy-related AEs. This could then be used to assess the value of various chemotherapy agents in cost-utility analyses.

DEVELOPMENT OF A NEW SCALE TO ASSESS PATIENT PERCEPTIONS OF CANCER-RELATED FATIGUE: THE PERFORM PROJECT
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OBJECTIVE: To develop a short new scale to assess patient perceptions of cancer-related fatigue (CRF), and determine the beliefs and expectations of cancer patients with CRF.

METHODS: To define the first version of the questionnaire a two-phase methodology was used. Firstly, initial item content was defined by integrating information from: 1) a literature review performed to identify related studies; 2) content analysis of two focus groups carried out with cancer patients; and 3) two expert meetings with oncologists. To reduce the initial pool and produce the first version of the questionnaire for validation, a multicentre cross-sectional study was performed and the item pool was administered to a sample of the target population. Item reduction was based on a clinimetric approach, so that for each item in the initial pool, frequency and importance were assessed by a Likert scale and the frequency and importance product index (PI) was calculated. Item selection was based on the ordering of items based on the PI. RESULTS: The initial item pool included 75 double-items referring to mental attitude (7), social and family (15), psychological impact (12), physical functioning (12), daily life activities (12) and general opinions (17). Initial pool was administered to 238 cancer patients: mean age 57, 56% (12), daily life activities (12) and general opinions (17). The EORTC QLQ-C30 was the most commonly used questionnaire (17 studies). Generally, it was administered in treatment trials starting at baseline and every 6 weeks thereafter until disease progression (on average 2 years duration). Few EORTC QLQ-C30 studies (2 of 15 multi-arm studies) were able to detect differences between groups other than on the diarrhea item. Recently, two supplemental CRC specific modules were developed, the EORTC QLQ-CR38 and FACT-C. While the EORTC QLQ-CR38 module focuses more on symptoms, the FACT-C considers patients’ attitudes towards their cancer. One study used the EORTC QLQ-CR38 and was able to detect treatment group differences in symptoms; specifically, stoma-related, mutirurition, defecation, and sexual problems, gastrointestinal tract symptoms, body image, and future perspective. Another study used the FACT-C along with other FACT specific modules to compare QoL across different cancer types. Minimal differences (due to the small sample size in each cancer type) were observed. CONCLUSIONS: The EORTC QLQ-C30 is the most commonly used questionnaire in mCRC patients receiving chemotherapy. With increased use and availability of translations, the EORTC QLQ-CR38 and FACT-C will likely prove to be more sensitive in detecting differences. Common patterns exist for the administration (coinciding with cycles) and duration of follow-up (≥1 year), yet no standard QoL questionnaire emerged able to detect group differences for mCRC patients receiving chemotherapy.

ASSESSING QOL IN PATIENTS WITH METASTATIC COLORECTAL CANCER (mCRC) TREATED WITH CHEMOTHERAPY
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OBJECTIVES: To establish whether a standard questionnaire exists for evaluating quality of life (QoL) in patients with mCRC.

METHODS: We conducted a search of the published literature on QoL, chemotherapy, and colorectal cancer between 1998 and 2004, excluding studies with limited total sample sizes (<50). We reviewed twenty studies with unique patient populations covering nine QoL questionnaires and nine chemotherapy drugs.

RESULTS: Most studies were conducted in Europe (primarily the UK), average sample size was 184 patients per study arm (range: 25, 411). The EORTC QLQ-C30 was the most commonly used questionnaire (17 studies). Generally, it was administered in treatment trials starting at baseline and every 6 weeks thereafter until disease progression (on average 2 years duration). Few EORTC QLQ-C30 studies (2 of 15 multi-arm studies) were able to detect differences between groups other than on the diarrhea item. Recently, two supplemental CRC specific modules were developed, the EORTC QLQ-CR38 and FACT-C. While the EORTC QLQ-CR38 module focuses more on symptoms, the FACT-C considers patients’ attitudes towards their cancer. One study used the EORTC QLQ-CR38 and was able to detect treatment group differences in symptoms; specifically, stoma-related, mutirurition, defecation, and sexual problems, gastrointestinal tract symptoms, body image, and future perspective. Another study used the FACT-C along with other FACT specific modules to compare QoL across different cancer types. Minimal differences (due to the small sample size in each cancer type) were observed. CONCLUSIONS: The EORTC QLQ-C30 is the most commonly used questionnaire in mCRC patients receiving chemotherapy. With increased use and availability of translations, the EORTC QLQ-CR38 and FACT-C will likely prove to be more sensitive in detecting differences. Common patterns exist for the administration (coinciding with cycles) and duration of follow-up (≥1 year), yet no standard QoL questionnaire emerged able to detect group differences for mCRC patients receiving chemotherapy.

MONITORING AND SECURING QUALITY IN ONCological CARE—THE 2004 LONGITUDINAL PASQOC® RESULTS
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OBJECTIVE: Patient Satisfaction and Quality in Oncological Care (PASQOC®) 2002 was the first assessment in Germany focusing on patient satisfaction in oncology. In 2004 PASQOC® was rerun to assess and observe quality of oncological care over time (2002/2004). Of 49 participating practices and ambulances, 16 were following-up on their 2002 experience.

METHODS: All cancer patients presenting at the investigators’ practices within a defined recruiting period received the validated questionnaire PASQOC® via mail. Patients’ inclusion criteria: German speaking, ≥18 years, confirmed cancer diagnosis, physical/mental ability to complete self-administered questionnaire. Analysis based on dichotomous “problem scores” indicating the presence or absence of a problem. These are summed into 13 “dimension
FIBROMYALGIA

FIBROMYALGIA SYNDROME: A PORTUGUESE EPIDEMIOLOGICAL SURVEY
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OBJECTIVES: To assess the estimated prevalence of possible fibromyalgia sufferers among the general adults population in Portugal using a screening questionnaire, the LFES-SQ developed by White. METHODS: This questionnaire was administrated to a random community sample of 500 persons interviewed by telephone and positive responders to the screening questionnaire were classified as “pain sufferers”. Using a ratio calculated in Portugal between patients “positive” (+) to the screening questionnaire and the number of patients really diagnosed with FMS, we applied this ratio to our population of “pain sufferers” and therefore obtain an estimate of the prevalence of possible fibromyalgia sufferers in Italy, please note that we worked on two different populations. The ratio was calculated using a sample of patients in Lisboa, to whom we administrated the same screening questionnaire and we diagnosed this entire sample to see if they were FMS sufferers (using the 1990 ACR criteria). RESULTS: In Portugal following the hospital survey we were able to calculate the following ratios: Multiplication factors of possible FMS patients VS number of (+) = Total FM cases in Lisboa / Number of Patients screened (+), i.e., . . . multiplication factor for the total population = 51/154 = 0.331; multiplication factor for women = 50/136 = 0.368; multiplication factor for men = 1/18 = 0.056. Once those ratio were applied to our random sample of 1000 persons we obtained an estimated prevalence of FMS in Italy of 4.17% of the total population, 6.99% of women and 0.31% of men. CONCLUSION: Those data are higher than those obtained in the White study or in the published prevalence of FMS in the literature, but they allow us to assess an estimated prevalence of FMS. The next steps will be to calculate local multiplication factors of FMS in Italy in order to improve those estimates and to generalise this survey in Europe.

FIBROMYALGIA SYNDROME: AN ITALIAN EPIDEMIOLOGICAL SURVEY
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OBJECTIVE: To assess the estimated prevalence of possible Fibromyalgia (FM) sufferers among the general adults population in Italy using the LFES-SQ, a screening questionnaire developed by White. METHODS: This questionnaire was administrated to a random community sample of 1000 persons interviewed by telephone and positive responders to the screening questionnaire were classified as “pain sufferers”. Using a ratio calculated in Portugal between patients “positive” (+) to the screening questionnaire and the number of patients really diagnosed with FMS, we applied this ratio to our population of “pain sufferers” and therefore obtain an estimate of the prevalence of possible fibromyalgia sufferers in Italy, please note that we worked on two different populations. The ratio was calculated using a sample of patients in Lisboa, to whom we administrated the same screening questionnaire and we diagnosed this entire sample to see if they were FMS sufferers (using the 1990 ACR criteria). RESULTS: In Portugal following the hospital survey we were able to calculate the following ratios: Multiplication factors of possible FMS patients VS number of (+) = Total FM cases in Lisboa / Number of Patients screened (+), i.e., . . . multiplication factor for the total population = 51/154 = 0.331; multiplication factor for women = 50/136 = 0.368; multiplication factor for men = 1/18 = 0.056. Once those ratio were applied to our random sample of 1000 persons we obtained an estimated prevalence of FMS in Italy of 4.17% of the total population, 6.99% of women and 0.31% of men. CONCLUSION: Those data are higher than those obtained in the White study or in the published prevalence of FMS in the literature, but they allow us to assess an estimated prevalence of FMS. The next steps will be to calculate local multiplication factors of FMS in Italy in order to improve those estimates and to generalise this survey in Europe.

CROSS-SURVEY OF FRENCH AND PORTUGUESE GENERAL PRACTITIONERS GLOBAL MANAGEMENT OF FIBROMYALGIA
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OBJECTIVE: To compare the management of fibromyalgia amongst French and Portuguese General Practitioners (GPs). METHODS: A questionnaire with a prepaid envelope was sent to a sample of 10,000 GPs in France and to all practicing GPs (n = 8399) in Portugal. This questionnaire was organized in six main sections: the characteristics of the physician’s professional practice, the physician’s opinion on fibromyalgia, the main symptoms of fibromyalgia, diagnosis criteria, treatments of fibromyalgia, sources of knowledge on fibromyalgia. RESULTS: A total of 1130 French GPs (response rate: 11.3%) and 337 Portuguese GPs (response rate: 4%) returned the questionnaire. In France 66% are male with an average age of 47, whereas in Portugal 52% are male with an average age of 50. The profile of the respondents is similar in age and gender to the average national profile. Thirty-three percent of French GPs and 29.5% of the Portuguese ones affirm that fibromyalgia is a disease; 63% and 68% respectively claim it is a symptom and it is only for 2% of French and 2.5% of the Portuguese GPs that fibromyalgia does not differ significantly in structure. The 16 practices recruited n = 1639 patients (n = 1826), 50.9% women (55.5); mean age 63.6 years (62.4). Comparing 2004 with 2002 it is demonstrated that 5 practices showed overall improvement in all dimensions, 3 practices improved in some, 4 practices improved and decreased, while 4 maintained steady state. Patients of one practice reported much more problems in all dimensions in 2002 than on average. In 2004, the practice presents with only “praxis organisation” being still an issue for patients (+37%). This practice demonstrated an overall better performance based on improvements in 8 out of 13 scales. Problem scores dropped (i.e. improvement) especially interpersonal communication dimensions, i.e. patient-physician relationship (-56%), co-management (-32%), involvement of family members (-54%), discussion with other patients (-41%). CONCLUSION: Assessing patient satisfaction over time is one tool to generate a platform for quality assurance in oncological care. The PASCOQ® questionnaire is a tool to assess not only status quo but is also feasible to detect changes in patients’ satisfaction with physicians, staff, environment as well as side effects and supportive medication.
OBJECTIVE: To compare the management of fibromyalgia amongst French and Portuguese Rheumatologists. METHOD: A questionnaire with a prepaid envelope was sent to all practicing rheumatologists in France (n = 2614) and Portugal (n = 124). This questionnaire was organized in six main sections: the characteristics of the physician’s professional practice, the physician's opinion on fibromyalgia, the main symptoms of fibromyalgia, diagnosis criteria, treatments of fibromyalgia, sources of knowledge on fibromyalgia. RESULTS: A total of 430 French and 34 Portuguese rheumatologists (response rate: 17% and 27.4% respectively) returned the completed questionnaire. In France 66% are male with an average age of 48, whereas in Portugal 61% are male with an average age of 46. The profile of the respondents is similar in age and gender to the average national profile. Twenty-three percent of French rheumatologists and 12% of the Portuguese affirm that fibromyalgia is a disease; 72% and 88% respectively claim it is a symptom and it is only for 2% of French rheumatologists that fibromyalgia does not exist. They have an average of 30 and 24.5 patients suffering from fibromyalgia for the French and Portuguese Rheumatologists respectively. Concerning the use visual analog scales for measurement of pain, if 23% of French Rheumatologists use them systematically and 18% never use them, we have 12% and 23% respectively in Portugal. CONCLUSION: The comparison between French and Portuguese Rheumatologists management of fibromyalgia reveals some significant differences, especially regarding the prescription of antidepressants more important in Portugal and the use of visual analog scales is more frequent in France. Concerning other type of management they essentially differ for acupuncture, osteopathy, hypnotherapy and bicycling. We can also note important difference concerning the use of visual analog scales, used more frequently in France.

PFM4
DIAGNOSIS OF FIBROMYALGIA AND HEALTH CARE RESOURCE USE IN PRIMARY CARE IN THE UK
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OBJECTIVE: To investigate the incremental health care resource use and costs associated with Fibromyalgia diagnosis.

METHOD: We used data from the UK General Practice Research Database (GPRD) to study the health care resource use of patients prior to and following their FM diagnosis. All patients in GPRD with a diagnosis of Fibromyalgia from January, 1 1998 and 2-years minimum of data prior to their first diagnosis, were included. Incidence rates of the clinical, therapy, referral, test and consultation events of interest were estimated for up to 10-years prior to and up to 4-years after the date of the diagnosis. A simple cost assessment was performed to compare the cost of diagnosed patients with Fibromyalgia and the predicted costs (based on trend analysis) of those patients if they wouldn’t have been diagnosed. RESULTS: There were 2260 diagnoses of Fibromyalgia. Of these, 81.3% were in females and mean age was 49-years old. Following the diagnosis of Fibromyalgia, the visits rate related to depression stabilised and then declined to 13 per 100 person-years by 4-years post-diagnosis. Referral rates declined considerably and the incidence of tests appeared to stabilise. Rheumatology referrals dropped to near control levels by 4 years following the Fibromyalgia diagnosis. In total, it was estimated that £9082 per 100 patient-years were saved by making the diagnosis. The major contributor to this savings was the reduced level of “other referrals” (£5599), followed by rheumatologists (£1880), GP consultations (£871) and tests (£621). The reduction in drugs contributed less (£112 per 100 person-years). CONCLUSION: Fibromyalgia is associated with considerable, long-term morbidity and health care resource use. A definitive diagnosis of Fibromyalgia is associated with a temporary increase in the use of TCAs and SSRIs and with a reduction in consultations and referrals for associated symptoms and in the health care resources and costs used to manage affected patients.

PFM5
CROSS-SURVEY OF FRENCH AND PORTUGUESE RHEUMATOLOGISTS GLOBAL MANAGEMENT OF FIBROMYALGIA
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OBJECTIVE: To carry out a cross evaluation of the level of awareness and knowledge of fibromyalgia amongst French and Portuguese General Practitioners (GPs). METHOD: A questionnaire with a prepaid envelope was sent to a sample of 10,000 GPs in France and to all practising GPs (n = 8399) in Portugal. This questionnaire was organized in six main sections: the characteristics of the physician's professional practice, the physician's opinion on fibromyalgia, the main symptoms of fibromyalgia, diagnosis criteria, treatments of fibromyalgia, sources of knowledge on fibromyalgia. RESULTS: In total, 1130 French GPs and 337 Portuguese GPs (response rate: 11.3% and 4% respectively) returned the questionnaire. In France 66% are male, average age of 47, whereas in Portugal 52% are male with an average age of 50. The profile of the respondents is similar in age and gender to the average national profile. In total, 33% of French GPs and 29.5% of the Portuguese affirm that fibromyalgia is a disease; 63% and 68% respectively claim it is a symptom and it is only 2% of French and 2.5% of the Portuguese GPs that fibromyalgia does not exist. They have an average of 6.1 and 8.3 patients suffering from fibromyalgia for the French and Portuguese GPs respectively. Concerning the 1990 ACR criteria, if 18% of French GPs know them completely and 36% partially, we have 33% and 47% respectively in Portugal. CONCLUSION: The comparison between French and Portuguese General Practition-
ers knowledge of fibromyalgia reveals no difference regarding the definition of this pathology and some mild differences appears in their knowledge of the ACR criteria and their appreciation of the associated symptoms (the frequency of widespread pain and joint swelling in particular). It is surprising how the knowledge GPs in France and Portugal have of FM is closer than between GPs and Rheumatologists in each country.

HEALTH

PIH1

COST-EFFECTIVENESS MODEL OF PALIVIZUMAB IN THE NETHERLANDS
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OBJECTIVES: To assess the cost-effectiveness of Palivizumab, a prevention against respiratory syncytial virus (RSV) infections in infants at high risk, such as premature babies, infants with bronchopulmonary dysplasia (BPD), and children with congenital heart disease (CHD). METHODS: A decision tree model was used to estimate the cost-effectiveness of Palivizumab in high-risk children. The data sources included published literature, the Palivizumab clinical trials, official price/tariff lists and national population statistics. The primary perspective of the study was that of the society, which included cost of the complications asthma and wheezing. RESULTS: The use of Palivizumab results in an ICER of €12,728/QALY without discounting for effectiveness, which increases to €20,236/QALY after discounting for effectiveness in the prematurity/BPD indications. In the CHD indication the use of Palivizumab results in an ICER of €4256/QALY without discounting for effectiveness and €7067/QALY after discounting for effectiveness. Sensitivity analyses confirmed the robustness of the model. CONCLUSION: This study showed that Palivizumab is a cost-effective treatment against RSV in infants at high risk: the use of Palivizumab results in positive short and long-term health economic benefits to the society and health authorities.

PIH2

THE COST OF PREMATURITY: TWO NEONATAL INTENSIVE CARE UNITS (NICUS) FROM UNIVERSITY HOSPITALS OF ATHENS
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OBJECTIVE: The objective of the study was the estimation of the actual hospitalization costs of two neonatal intensive care units of university of Athens. METHODS: The study was based on retrospective data gathered from the records of 70 neonates who were hospitalized at the NICUs of Alexandria’s obstetric and Aglaia Kyriakou pediatric hospitals of Athens, with admission dates between February and April 2004 until their discharge from the hospital. Clinical data derived from medical records, while economic data from each hospital’s administrative and financial department. Regression analysis was performed with SPSS program in order to find the correlation between the cost and birthweight and other parameters. The mean daily treatment cost was estimated according to: birth weight and gestational age of the neonates as well as Length of Stay in NICU and Intermediate level II until their discharge from hospital. Direct cost analysis was based on cost of personnel, cost of supplies, medication, parental feeding, laboratory and imaging tests, cost of infrastructure, hotel services and various other on-site costs. The economic analysis did not include the depreciation of capital assets. The prices used for the analysis were based on Greek NHS prices, expressed in €2004. RESULTS: The mean daily actual cost per infant in the NICU of Alexandria was 207 euro and for intermediate level II €121. The mean daily actual cost per infant in NICU for Aglaia Kyriakou hospital was 511€ and for intermediate level II €231. The mean length of stay (LOS) in the NICU and Intermediate level II of Alexandria was 17.22 and 24.16 days respectively. The mean LOS in the NICU and Intermediate level II of A.Kyriakou was 8.5 and 11.5 days respectively. CONCLUSION: Estimates of the economic costs of preterm birth can be informative to decision-makers and facilitates quality improvement efforts used in neonatal care.

PIH3

ESTIMATING A PREFERENCE-BASED MEASURE OF SOCIAL PARTICIPATION FROM THE HANDICAP SCALE FOR CHILDREN
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OBJECTIVES: To establish a model that estimates a preference-based measure of social participation for children between 8 and 18 years from the Handicap Scale for Children (HSC) classification system. METHODS: A sub-sample of the social participation vignettes of the HSC classification system was valued on a VAS scale by a representative sample of 249 persons of the general Dutch population aged 18 years onwards. Several models based on a full state (econometric) method were considered in order to extrapolate the available valuations for the sub-sample to all possible vignettes. RESULTS: The best fitted model assumes that the VAS scale and the scale of the five dimensions of the HSC (mobility, physical, daily activities, social integration and orientation) are linear, includes an interaction for mobility with physical independence, orientation with mobility, physical independence, daily activities and social integration, and accounts for clustering by respondents. The measurement properties of the weighted scoring of the best fitted model improves upon models which assume an ordinal scale of the five dimensions, do not include interactions and/or do not account for clustering. The model that simply sums up the levels of each dimension provides systematic errors for the preferences. CONCLUSIONS: We obtained a preference-based measure for social participation for children between 8 and 18 years that can be used for assessing need, for quality assurance and for evaluating interventions on a group level aiming to increase social participation in children with chronic illnesses.

PIH4

WHAT METHODS OF ASSESSMENT AND MANAGEMENT OF ELDERLY PEOPLE ARE COST EFFECTIVE
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OBJECTIVES: The primary objective was to determine the cost-effectiveness acceptability of targeted (TA) versus universal assessment (UA) and geriatric team (GM) versus primary care (PC) management models. METHODS: The primary effectiveness measure was life years gained (LYGs). The perspective was societal. The primary analysis used a 3-year timeframe. Resource use data and survival were collected within a multi-centre, cluster
randomised trial of general practitioner practices. Patients were over 74 years old, living in the community, in the UK. Costs and outcomes were discounted (3.5% recommended UK rate). Missing data for censored cases were imputed by survival analysis. Missing data due to missing observations were imputed by characteristic of patient. Data were adjusted for age, gender and cluster randomisation. Costs and LYGs were bootstrapped. Net benefit statistics were estimated. Cost-effectiveness acceptability analysis used willingness to pay thresholds (GBP0 to GBP50000). Sensitivity analysis assessed the impact of structural factors and assumptions. RESULTS: 109 GP practices were assigned to (a) assessment method: UA = 55 (21,762 patients) TA = 54 (21,457 patients); (b) management method: GM = 55 (22,216 patients); PC = 54 (21,003 patients). Preliminary analysis indicated a net cost to TA (GBP296; 2.5–97.5 percentile 0.006–0.28) and PC = 0.70–1.00. Sensitivity analysis indicated a net cost to TA (GBP296; 2.5–97.5 percentile –0.006–0.19) and PC (0.016; 2.5–97.5 percentile 0.004–0.28). The probability of net benefit for TA across the willingness to pay thresholds. The probability of net benefit for PC was 0.70–1.00. Sensitivity analysis indicated the results for targeted assessment, but not PC, were sensitive to method of imputing missing data and timeframe. CONCLUSIONS: The cost-effectiveness of targeted assessment is uncertain. PC management appears cost effective.

OBJECTIVES: Comparison of population health is a matter of concern for national governments and for international agencies. This paper reports on the analysis of data collected in national surveys conducted in Sweden (S) and England & Wales (EW) using the same health status questionnaire, administered by post during 2002 and 2003. METHODS: Data were collected from 1945 respondents in Sweden and 1001 in England & Wales. Both datasets were weighted to be representative of their respective national populations. RESULTS: Age-standardised EQ-5Dvas was systematically higher for men than for women in both surveys, however this position is reversed for women aged 70+ in the EW survey. Differences in age/gender-standardised EQ-5Dvas between the 2 national surveys were small (typically <5). Despite this apparent convergence, the age-standardised rates of reported problem on the 5 EQ-5D dimensions varied significantly both by gender and by survey. The rates of problem on usual activities, for example, were 2.3% and 6.2% for men and women aged 20–44 in the Swedish survey. The corresponding rates in the EW survey were 12.1% and 13.1%. Within-survey regression models were constructed using EQ-5Dvas as the dependent variable and recoding the 5 dimensions to 0/1 dummy variables (no problem/any problem). Both models appear to fit the data reasonably well (r² > 0.450) with roughly equivalent constants (87.9 and 89.5) however, the value decrements given by the beta coefficients indicate large differences in the importance associated with each dimension. The highest decrements in the Swedish survey are for mobility (15.7) and pain/discomfort (12.0). The highest decrements in the EW survey are for usual activities (11.4) and anxiety/depression (9.5). CONCLUSION: The study explores some possible causes of the differences (and similarities) noted in the analysis and propose a series of standard tables for use in reporting data on comparative population health.

NATIONAL HEALTH AND SOCIAL LIFE SURVEY (NZHLS): A COMPARISON BETWEEN NEW ZEALAND AND SWEDEN

OBJECTIVES: To compare health status and health care use in New Zealand (NZ) and Sweden (S) in their population-representative, multi-phase surveys conducted during 2001–02 and 2003–04. METHODS: NZHLS and NHSTR surveys were conducted during 2001–02 and 2003–04. Data were extracted from both surveys and the analyses were conducted with comparable data across the two countries. RESULTS: The NZHLS and NHSTR surveys were conducted during 2001–02 and 2003–04. Data were extracted from both surveys and the analyses were conducted with comparable data across the two countries. CONCLUSIONS: The NZHLS and NHSTR surveys were conducted during 2001–02 and 2003–04. Data were extracted from both surveys and the analyses were conducted with comparable data across the two countries.
LIFESTYLE, PHYSICAL ACTIVITY AND EQ-5D HEALTH STATUS IN A OVER 65 YEARS POPULATION
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OBJECTIVE: Although there is clear scientific evidence that regular physical activity has positive effects on both psychological and physical well being, 41.9% of Italian over 65 is classified as sedentary. We believe that programs that can facilitate the increasing of physical activity among the aging population are crucial to improve their quality of life. Our purpose is to investigate physical activity and health-related status in aged over 65 years in Northern Italy. METHODS: We want to estimate through the EQ-5D the perception of health in this population and, in particular, the changing in the subjects who increased their physical activity. This study has started in January 2004 and will finish in December 2008. The research comprises two parts. The first part consists of a baseline evaluation of an old population and in the promotion of an increase of the physical activity. The second part is a follow-up after 3 and 5 years and will finish in December 2008. The sampled people received a postal questionnaire containing demographical data, anthropometrical information, smoking and alcohol intake, quantification of the physical activity through instrument PASE, functional ability through instrument ADL and IADL, self-reported chronic conditions, drugs assumption and, finally, appraisal of health state through the EQ-5D. The study population consisted of 5,255 subjects. Mean age was 74.5 years (SD = 7.1; 65–102 years). The mean VAS score of the sample was 63.9 (SD = 20.4). RESULTS: We have performed the Binary Regression Model (BRM) and the Multinomial Logistic Model (MNLM) to assess the relationship between health status (defined through the EQ-5D’s health profiles) and the other variables. CONCLUSION: There is evidence that people who practice physical activity are more probable to preserve their healthy status.

COST-EFFECTIVENESS STUDY OF ASSISTED REPRODUCTIVE TECHNIQUES IN SPAIN
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OBJECTIVES: There has been an increasing demand for Assisted Reproductive Techniques (ART) in the last few years. High health care and pharmaceutical costs are barriers to its implementation. Recombinant hormones used to induce ovarian stimulation are more expensive than those therapies obtained from human fluids. However, expensive as they are, they are also more efficient. We compared follicle-stimulating hormone (FSH) and human menopausal gonadotropin (hMG) extracted from human urine in order to establish which one yielded a better cost-effectiveness profile. METHODS: A cost-effectiveness analysis was carried out using data on 24,765 ART cycles considered for follow up. A Markov model was built and a cohort of 60,000 patients were randomly assigned to each treatment (N = 120,000). Consumption of resources and accompanying costs were obtained from a study on ART-specialized private health facilities in Spain. RESULTS: A total of 420,346 ART cycles were completed, with an average of 3.5 cycles per patient. In total, 106,735 pregnancies and 59,238 births were obtained. Average cost per pregnancy ran from €17,766.23 (women under 36 treated with hMG) to €28,239.30 (patients over 36 treated with hMG), whereas healthy live births showed average cost between €30,615.55 (women under 36 treated with FSH) and €61,510.59 (patients over 36 treated with hMG). CONCLUSIONS: Alternative recombinants for ART improve safety and efficacy of the treatment. Moreover, it poses lower costs and reduces the number of cycles necessary to successfully give birth.
WORK AND HEALTH CONDITIONS DURING PREGNANCY IN WOMEN OF THE MEXICAN SOCIAL SECURITY INSTITUTE
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OBJECTIVES: To compare socio-demographic, reproductive and prenatal attention conditions among women who perform work outside the home (as opposed to housework); in the case of those going out to work, to describe the conditions of such work; and finally to show whether health-related differences exist that correlate with working situation (at home vs. outside the home). METHODS: Transversal study (pilot) carried out in a family medicine unit of the Mexican Social Security Institute (IMSS) between April and July 2003, during which period interviews were effected with 337 pregnant women engaged in either paid work, housework, or both, and registered with the Family Medicine external consultation services. A questionnaire was applied in order to establish demographic and reproductive characteristics, as well as variables related with prenatal control and the existence of symptoms before and after pregnancy; finally, to provide information on characteristics of both domestic and extra-domestic work. RESULTS: In total, 36.5% were women with paid work (A), the rest having exclusively domestic work (63.5%) (B). Of those with extra-domestic work (A), 78.6% had clerical or similar jobs, mainly in service activities (45%), and 18.9% were industrial workers. Stress at work is present in 74% of cases interviewed. On analyzing the effect of work on women's health conditions, it was observed that women who do not go out to work show a higher risk of muscular-skeletal alterations than those who do so (RM: 4.3 IC95% 1.6–11.4). The presence of genitourinary symptoms is greater for those who do not go out to work on women's health conditions, it was observed that women with paid work (A), the rest having exclusively domestic and extra-domestic work.

QUALITY OF LIFE AND HEALTH BEHAVIORS OF VENEZUELAN PHARMACY STUDENTS
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OBJECTIVES: The purpose of this study was to describe health-related quality of life (HRQL) of Venezuelan pharmacy students and to explore the association among quality of life, health behaviors, and demographics. METHODS: A random sample 171 of pharmacy students, ranging in age from 18 to 35 years were surveyed using a written questionnaire. HRQL was determined using the Medical Outcome Study Short Form 36 (MOS SF-36). The associations among HRQL, demographics, and health behaviors were examined using both bivariate and multivariate models. RESULTS: The sample consisted of 127 females and 44 males. The sample had a mean age of 22.3 years. As expected the sample was healthy: only 11 subjects (6.47%) evaluated their health as poor and 30 subjects (17.5%) reported to suffer from an illness. Forty subjects (23.4%) reported current medication use. The prevalence of alcohol consumption during the previous month was 65.8% and for smoking it was 15.5%. One third of the sample reported no exercising during the previous month. Multiple regression analyses were used to model HRQL score as a function of age, sex, income, illness, lack of regular exercise, alcohol consumption, and smoking. The regression model explained approximately 20% of the variance in HRQL. Controlling for other variables in the model, low income, illness, and smoking had a significant negative impact on HRQL. Lack of regular exercise and age were not associated with HRQL. Controlling for other variables male students had significantly higher scores in HRQL than female students. Alcohol consumption was associated with HRQL in bivariate but not in multivariate models. CONCLUSIONS: The overall quality of life of pharmacy students in Venezuela is good. This exploratory study demonstrates sex differences in perceived quality of life of college students. Quality of life is associated to certain predictors of future health status, including health behaviors such as smoking.
OBJECTIVES: To evaluate, in daily practice, the benefits of entecavir in reducing HBV DNA viral load (VL) and subsequent compensated cirrhosis (CC), decompensate cirrhosis (DC), and hepatocellular cancer (HCC). METHODS: The analytic perspective was that of a third-party payer. We used patient-level drug exposure and VL data from a randomized phase III trial of 715 HBeAg+ CHB patients, and estimates of cost offsets and life expectancy gains as a result of the prevention of projected clinical events. The multivariate-adjusted relative risks with VL categories were estimated by Cox proportional hazards model with a shared frailty term to account for the clustering of patients within the intensive care units. The number of bleeding events measured DAs safety. RESULTS: Respectively 509 and 587 patients were included in the before and after groups. There is strong evidence of recruitment bias: patients in the after group are younger, more frequently ventilated, have less comorbidities but more organ failures. After propensity score matching, 340 patients were retained in the analysis, with a better balance between the groups. The use of a frailty model improves significantly the variance explained by the survival model, showing a non-negligible cluster effect. When considering the whole sample of patients, without adjustments, survival is improved in the after (i.e. with DA) group (p = 2.5%), with a hazard ratio (HR) of 0.805. In the matched sample, there are no significant survival differences (HR = 0.900, p = 35.0%). However, after stratifying by the LODS severity score quartiles, significance is reached (HR = 0.789, p = 4.8%). In the matched sample, a negative binomial model best described bleeding events. In this model, patients in the after group have a higher mean of bleeding events (p = 2.0%). CONCLUSION: This observational study confirms DAs clinical trial results in the real practice setting. However, the use of the propensity score cannot replace randomization to assure perfect balance for all patient characteristics, measured and unmeasured. The results should therefore be considered with caution.

ECONOMIC IMPLICATION OF HEPATITIS B VIRAL (HBV) LOAD REDUCTION FOR ENTECAVIR IN HEPATITIS B E ANTIGEN-POSITIVE CHRONIC HEPATITIS B (CHB) PATIENTS

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OBJECTIVES: To evaluate the cost effectiveness of entecavir in reducing HBV DNA viral load (VL) and subsequent compensated cirrhosis (CC), decompensate cirrhosis (DC), and hepatocellular cancer (HCC). METHODS: The analytic perspective was that of a third-party payer. We used patient-level drug exposure and VL data from a randomized phase III trial of 715 HBeAg+ CHB patients, and estimates of cost offsets and life expectancy gains as a result of the prevention of projected clinical events. The multivariate-adjusted relative risks with VL categories were estimated by Cox proportional hazards models from a Taiwan sample, a negative binomial model best described bleeding events. Respectively 509 and 587 patients were included in the before and after groups. There is strong evidence of recruitment bias: patients in the after group are younger, more frequently ventilated, have less comorbidities but more organ failures. After propensity score matching, 340 patients were retained in the analysis, with a better balance between the groups. The use of a frailty model improves significantly the variance explained by the survival model, showing a non-negligible cluster effect. When considering the whole sample of patients, without adjustments, survival is improved in the after (i.e. with DA) group (p = 2.5%), with a hazard ratio (HR) of 0.805. In the matched sample, there are no significant survival differences (HR = 0.900, p = 35.0%). However, after stratifying by the LODS severity score quartiles, significance is reached (HR = 0.789, p = 4.8%). In the matched sample, a negative binomial model best described bleeding events. In this model, patients in the after group have a higher mean of bleeding events (p = 2.0%). CONCLUSION: This observational study confirms DAs clinical trial results in the real practice setting. However, the use of the propensity score cannot replace randomization to assure perfect balance for all patient characteristics, measured and unmeasured. The results should therefore be considered with caution.
decision analytic model was developed to estimate clinical failure by studying the resistance mechanisms of three common CAP pathogens, S. pneumoniae, H. influenzae and the atypical pathogens. It was estimated that in most cases 95% of resistant pathogens would result in clinical failure. Country-specific resistance rates for moxifloxacin, macrolides, beta-lactams and doxycycline were obtained from surveillance studies. Multi-drug resistance was estimated using US multi-drug resistance rates. Treatment algorithms were partially based on CAP treatment guidelines for out-patients of the Fine risk categories, I to III, focusing on mono-therapy. Patients could receive up to two treatments in the community and one hospitalisation. The outcomes evaluated were clinical failure avoided, hospitalisations avoided and second-line treatments avoided. Resource use and costs were obtained from the literature. Expert opinion was used extensively to validate the clinical assumptions. RESULTS: Moxifloxacin dominated all other treatments in France and the US and roxithromycin and cefuroxim strategies in Germany. Clinical failure rates for moxifloxacin and macrolide strategies were 5.3% and 47.3% in France, 5.2% and 16.8% in Germany 3rd and 5.2% and 23.6% the US respectively. In Germany compared to a strategy of amoxicillin followed by roxithromycin, moxifloxacin had an incremental cost-effectiveness of €1 per clinical failure avoided, but prevented 9646 clinical failures and 918 hospitalisations per 100,000 patients. CONCLUSIONS: Antimicrobial resistance has a significant impact on the cost-effectiveness of empirical treatment of CAP. The first-line use of moxifloxacin in CAP is a cost-effective strategy for all levels of resistance.

PINS

DYNAMIC MODELLING FOR ESTIMATING THE COST-EFFECTIVENESS OF A CHLAMYDIA TRACHOMATIS SCREENING PROGRAM

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OBJECTIVES: To estimate the cost-effectiveness of a systematic Chlamydia trachomatis (CT) screening program including partner treatment for The Netherlands using a dynamic approach. METHODS: Data on infection prevalence, participation rates and sexual behaviour were obtained from a large pilot study conducted in The Netherlands. We developed a dynamic SIS (Susceptible-Infected-Susceptible) model, which is widely used in exploring the transmission dynamics of infectious diseases, to estimate the impact of screening men and women on the incidence and prevalence of CT in the population. Subsequently, a progression-of-disease tree was used to calculate the complications averted by the screening program. Cost-effectiveness is expressed as the net costs per major outcome averted (MOA). We compared doing nothing both with a one-off screening program and with screening on various time intervals. RESULTS: Compared to doing nothing the one-off screening program is estimated to cost €373 per MOA. However, restricting the screening to women only the program is estimated to save costs. Even though screening on various time intervals adverted more serious complications, this is less cost effective as the screening related costs increase relatively more (e.g. bi-annual screening is estimated to cost €3200 per MOA compared to doing nothing). CONCLUSION: Our cost-effectiveness analysis shows that society has net to pay for the prevention of CT complications. A one-off screening program is however more cost-effective than screening on various time intervals. One could argue that €373 per MOA, for the one-off screening program, is an acceptable cost-effectiveness. A screening program consisting of screening women only should always be adopted from a pharmacoeconomic point of view.

INFECTIONS CAUSED BY RESISTANT CANDIDA SPECIES: COST-MINIMIZATION ANALYSIS OF ANTIFUNGAL THERAPY IN BRAZIL

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OBJECTIVE: Compare the total costs of antifungal therapy—lipid formulation of Amphotericin B (LAB), voriconazole (VCZ) and caspofungin (CAS)—as empirical treatment in Brazilian institutions/patients with high risk of infection by fluconazole-resistant Candida species. METHODS: A Brazilian analytical model was constructed using the recommended protocols for resistant Candida infections in a 60-kg hypothetic patient and 21 days of treatment. The analysis perspective was from the third-party payers. Drug and device prices were retail prices (database: April/2005) including taxes. The daily inpatient charges used (without diagnostic tests and procedures) were obtained from hospitalar consultants (average of costs from medium-level hospitals in Sao Paulo). The studied scenarios were: 1) continuous use of intravenous therapy in full-time inpatient condition; 2) switch from IV to oral with voriconazol in full-time inpatient condition and 3) switch from IV to oral with voriconazol and early discharge. RESULTS: The cumulative cost for LAB was R$38,382.34/US$15,352.94, R$30,991.93/US$10,796.77 and R$23,856.44/US$9542.58 for the scenarios 1, 2, and 3, respectively. CONCLUSION: In high risk Candida-resistant scenario, VCZ has the lower cumulative cost than CAS and LAB (scenario 1). If the clinical situation allows the use of oral formulation, the advantage of VCZ increases significantly (scenario 2), mainly if the clinical status of patients permits discharge (scenario 3). Moreover, the oral and/or home treatment could reduce the risk of nosocomial infection, morbidity/mortality for immunocompromised patients and improve the QoL, but we couldn’t measure these impacts because of lack of epidemiologic data in Brazil.

WITHDRAWN
INCREASED MANAGEMENT NEEDS AND CARE COSTS FOR NURSING HOME RESIDENTS WITH CLOSTRIDIUM DIFFICILE ASSOCIATED DIARRHEA
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OBJECTIVE: To identify differences in management levels and costs between nursing home (NH) residents with and without Clostridium difficile associated diarrhea (CDAD). METHODS: Minnesota long-term care data from 1995–2001 were examined for residents with (ICD-9-CM code: 008.45) and without CDAD. NH residents are assigned to one of eleven management categories reflecting low to very high care needs, based on assessment of dependence in activities of daily living (ADL), need for skilled nursing and behavior. Reimbursement rates are set for each management category based on expected care needs. Dependence in ADL, need for skilled nursing, behavior and assigned management category were analyzed. Costs were estimated by applying Minnesota NH reimbursement rates, adjusted to national values to each management profile. Cost estimates (2002 US$) include room and board, nursing and ancillary staff care. RESULTS: CDAD was coded for 260 (0.1%) of the 220,123 NH residents analyzed. Age and gender were similar for both groups. Residents with CDAD had significantly more bowel incontinence (p = 0.000), required more skilled nursing services (p = 0.000) and were more dependent in walking (p = 0.001), transferring (p = 0.002), bed mobility (p = 0.003), as well as in, albeit not statistically significant (p > 0.5), dressing, bathing and eating. Residents without CDAD had significantly more (p = 0.001) behavioral problems and were slightly more dependent (p > 0.05) in grooming. Increased ADL dependency and need for skilled nursing resulted in residents with CDAD being assigned to higher management categories significantly (p = 0.000) more often than those without CDAD. This increase in management results in an additional $2985 in care costs annually per NH resident with CDAD, on average. CONCLUSIONS: CDAD constitutes a physical burden to the resident and an economic burden to the long term care system in terms of direct care costs, as well as opportunity costs due to the need for increased skilled nursing services.

A COST UTILITY ANALYSIS OF PEGINTERFERON ALFA-2A (40KD) VERSUS PEGINTERFERON ALFA-2B (12KD) FOR THE TREATMENT OF CHRONIC HEPATITIS C (CHC) IN THE UK
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OBJECTIVES: The National Institute for Clinical Excellence (NICE) recently published guidance on the use of peginterferon alfa-2a (40KD) and peginterferon alfa-2b (12KD) for the treatment of adults with CHC (http://www.nice.org.uk/pdf/TA075guidance.pdf). However, from a cost-effectiveness perspective, this guidance does not differentiate between either the efficacy or the costs of the two treatments. Therefore, in the absence of any direct head-to-head trials, a reliable indirect comparison may create a more informed, evidence-based choice for payers and clinicians. METHODS: The Bucher method (J.Clin Epidemiol 1997;50:683–91) is a mathematical technique that indirectly compares drugs without bias. Indeed, evidence suggests (Song, et al. BMJ 2003;326:472) that results calculated with this method are not significantly different from those obtained using direct comparisons. We therefore used this method to evaluate the relative treatment effects of the two peginterferons in combination with ribavirin, compared to a common comparator (conventional interferon alfa plus ribavirin). This allowed the relative effectiveness of the two drugs to be compared. These results, expressed as adjusted sustained virological response (SVR) rates, were then entered into a previously published Markov model to assess the incremental cost-effectiveness. RESULTS: Following adjustment for SVR rate in the common control arms (by Bucher method), peginterferon alfa-2a (40KD) plus ribavirin resulted in a higher number of expected discounted quality-adjusted-life-years (QALYs) in both HCV genotype 1 (14.12 vs. 14.08) and non-1 (14.95 vs. 14.68) patients compared with peginterferon alfa-2b (12KD) plus ribavirin. Peginterferon alfa-2a (40KD) plus ribavirin also generates lower direct NHS (National Health Service) costs for genotype 1 (£24,064 vs. £24,488) and non-1 patients (£11,446 vs. £13,332) than peginterferon alfa-2b (12KD) plus ribavirin. CONCLUSION: Compared to peginterferon alfa-2b (12KD) plus ribavirin, peginterferon alfa-2a (40KD) plus ribavirin is likely to be the dominant treatment strategy for patients with CHC in the UK, generating better outcomes (QALYs), with lower direct NHS costs.

ANTIMICROBIAL TREATMENT OF ACUTE OTITIS MEDIA AND ITS PHARMACOECONOMIC ANALYSIS IN SLOVAKIA
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OBJECTIVES: Acute otitis media (AOM) is an important problem mainly in children age. It often results in serious illnesses such as pneumonia, meningitis and accumulated fluid can cause significant hearing impairment, and may interfere with the development of normal speech in infancy. Antimicrobials are treatment of choice. Our objective was to analyze antibiotic prescribing and evaluate cost of antimicrobial treatment acute otitis media. METHODS: Same protocols and methodology was applied for multicentric study; 4 weeks prospective study in November 2003; 66 paediatricians in 5 Slovak cities. Validation of antibiotic prescribing according guidelines. CMA (cost-minimisation analysis) was used. Utilisation of antibiotics in WHO ATC/DDD system. RESULTS: Out of 326 patients, to 179 (54.9%) were indicated antibiotic treatment. The most frequent prescribing antibiotic were co-amoxicillin (J01CR) in 49 patients (31.2%, 229.5 DDD), second were penicillins (J01CE) in 37 cases (21.4%, 143 DDD), then cephalosporins (J01D) in 35 cases (20.2%, 129 DDD), aminopenicillins (J01CA) in 24 cases (13.9%, 229.5 DDD), second were penicillins (J01CE) in 35 cases (20.2%, 129 DDD), aminopenicillins (J01CA) in 24 cases (13.9%, 135.4 DDD), macrolides (J01FA) in 18 cases (10.4%, 109 DDD). The largest rate of total cost for antimicrobial therapy of AOM was spending for alternative choices: co-amoxicillin (36.5%), cephalosporines (24.3%) and macrolides (21.1%). Cost for amoxicillin as first choice drug was 4.3%, for alternative antimicrobials 84.9% and other antimicrobials (10.8%). CONCLUSIONS: Acute otitis media is serious infection illness which needs to be cured by antimicrobials. More often were indicated alternative antibiotics, with more expensive average cost for therapy. Reasonable use of antibiotic is necessary to maintain the resistance at low level and aim to decrease total cost.
A RETROSPECTIVE EVALUATION OF THE MANAGEMENT AND OUTCOME IN HOSPITALIZED PATIENTS WITH COMMUNITY ACQUIRED PNEUMONIA IN AN INNER-CITY HOSPITAL
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Community-acquired pneumonia (CAP) is a common and serious illness. Analyses of administrative data show that large variations exist in admission rates, length of hospital stay, and use of institutional resources. OBJECTIVES: This study evaluated the medical management of patients hospitalized with Community Acquired Pneumonia (CAP) in an urban inner-city public hospital. The study was undertaken to identify areas for quality improvement.

METHODS: A retrospective chart review was used to collect data on patients admitted to the hospital with a diagnosis of CAP during the period January 1, 2003 to April 30, 2004. Data were collected based on American Thoracic Society (ATS) criteria. RESULTS: Medical records of 155 patients were reviewed; overall mortality rate was 4%; 80% of patients received their first antibiotic dose in less than eight hours; 97% of patients had their oxygenation checked within 24 hours of admission. Only 45% of patients had at least one culture performed prior to initiation of antibiotics. The most commonly prescribed antibiotic was levofloxacin, representing 39% of all antibiotic orders. Using the ATS guidelines, 14 (9%) patients were considered to have received inappropriate antimicrobial treatment. Of these patients, 7 had severe cases of CAP requiring admission to an intensive care unit (ICU). The average length of stay for all patients was 7.64 days (SD + 0.327). Patients who received an antibiotic regimen that covered both typical and atypical organisms, as compared to those who did not, had a shorter length of therapy (7.33 days vs. 9.79 days, p < 0.05).

CONCLUSION: Ongoing analysis of inpatients with CAP will provide information to evaluate improvement of clinical outcomes and to identify areas of focus for future performance improvement activities.

ASSESSMENT OF THE EFFECT OF DROTECOCIN ALPHA (ACTIVATED) TREATMENT OF SEVERE SEPSIS ON BLEEDING EVENTS WITH COUNT MODELS
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OBJECTIVES: To evaluate the effect of drotrecogin alfa (DA) on bleeding events in patients with severe sepsis and multiple organ failures. METHODS: A pre-post design was conducted before and after DA’s market introduction. An optimal propensity score matching method was undertaken to control for unbalanced characteristics. Several models were tested to explain the number of bleedings events. The more usual ones are the Poisson and the negative binomial (NB) models. Contrary to the NB model, including a dispersion parameter, the Poisson model supposes the mean equals the variance. An alternative consists on modeling a count model. Double-hurdle models suppose that, once a event absence. Non-nested models were compared with the Vuong statistic. RESULTS: The matched sample includes 840 patients. Bleeding events were experienced by 17.6% of patients, 13.6% in the before and 21.7% in the after phase (p = 0.0021). The mean number of bleedings was higher in DA treated patients (0.28 against 0.18, p = 0.0208). The standard NB model fitted better than the double-hurdle NB model (p < 0.0001) and was similar to the zero-inflated NB model (p = 0.6815). We kept the NB model, the simpler one. Moreover, the dispersion parameter was significant (p = 0.0013), favouring the NB to the Poisson model. In this multivariate model, patients in the after phase were still more at risk of experiencing bleeding events. Other risk factors included the presence of a central catheter infection and a high LODS score. CONCLUSIONS: DA use in addition to the conventional treatment leads to more bleeding events. In our study, over-parameterised models did not bring more information than simpler ones.

SYSTEMATIC REVIEW ON THE SHARE OF ANTIBIOTIC THERAPY COST IN RELATION OVERALL DIRECT TREATMENT COSTS OF MOST FREQUENT NOSOCOMIAL AND COMMUNITY ACQUIRED INFECTIONS IN ADULTS
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OBJECTIVES: To evaluate the share of antibiotic therapy cost in total treatment costs for nosocomial and community acquired infections. METHODS: Systematic literature search (1996–2003) using the major online databases and additional manual search yielded 1211 references (selection 1a). Studies were divided up to 11 different diagnostic groups that were considered to be most relevant (selection Ib). Inclusion and exclusion criteria were applied for the selection lc. Study quality was assessed with a consolidated quality score comprising 23 questions. A study was assessed as “qualified” for further analyses, if at least 50% of maximum points were achieved in a review conducted by two independent reviewers. This resulted in the selection of 44 studies (selection II) that were subject to a detailed metaanalysis. RESULTS: The percentage of antibiotic costs in relation to total direct costs was low: nosocomial pneumonia (N = 3, 1.4–13.7%, SD: 5.5), respiratory tract infections (N = 2, 10–24.8%, SD: 5.3), community acquired pneumonia (N = 14, 0.64–57.84%, SD: 24.65), chronic bronchitis (N = 6, 1.1–66.66%, SD: 17.19), urinary tract infection (N = 3.5–33.82%, SD: 14.85), intraabdominal infection (N = 2, 3.2–19.38%, SD: 5.26), surgical prophylaxis (N = 2, 0.1–83.8%, SD: 33.02), otolaryngological infections (N = 4, 14.18–60.1%), STD (N = 1, 0.15–3.3%, SD: 2.23), Helicobacter pylori infections (N = 3, 2.34–45.49%, SD: 16.36), Clostridium difficile infections (N = 3, 0.07–1.20%, SD: 0.51). CONCLUSIONS: This review showed that costs of antibiotic treatment were low compared to overall direct treatment costs for most frequent infections regardless of the differences in design and quality of studies. The experience from this review may also contribute to further development of evidence-based guidelines for conducting pharmaco economical studies.

IMPACT ON QUALITY OF LIFE OF HEALTH STATES INDUCED BY CHRONIC HEPATITIS B INFECTION: ESTIMATES FROM INFECTED AMERICANS
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OBJECTIVE: An estimated 1.25 million Americans are chronically infected with hepatitis B virus, many of whom develop severe and potentially fatal liver diseases. Despite the high prevalence and serious health consequences, little is about the impact on quality of life of disease states resulting from chronic HBV infection. The objective was to estimate preferences (ratings and utility weights) for six hepatitis B-related disease states among infected persons. METHODS: Utility weights for six disease-related health states were elicited from a sample of 56 patients chronically infected with HBV in San Francisco using a standard gamble. Probability wheels with 2-color pie charts for the relative probabilities of perfect health and death were employed as props. RESULTS: The mean age was 51 y (standard deviation: 12, range: 20 to 77 y) and 77% were men. Mean utilities were: 0.72 (95% confidence interval: 0.68; 0.79) for chronic hepatitis B; 0.70 (0.65; 0.77) for compensated cirrhosis; 0.42 (0.35; 0.47) for decompensated cirrhosis; 0.48 (CI: 0.40; 0.52) for hepatocellular carcinoma; 0.62 (0.36; 0.67) in the first year after liver transplant; and 0.72 (0.65; 0.77) after first year post-transplant. CONCLUSION: These utility values, the first published on patients in the United States, indicate that health states resulting from chronic HBV infection substantially lower patients’ quality-of-life. These preferences (utility weights) for health states can be incorporated into many aspects of medical decision making, including summary measures of health related quality of life, monitoring population health, bedside clinical decision making, and in technology assessment. For all health states, the utilities collected here were lower than published estimates that are based on clinicians opinion.

PIN15
IMPACT ON QUALITY OF LIFE OF HEALTH STATES INDUCED BY CHRONIC HEPATITIS B INFECTION: ESTIMATES FROM UNINFECTED AND INFECTED PERSONS IN THE UK
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OBJECTIVE: Although the incidence of the hepatitis B virus in the UK is low, persons with chronic infection can develop severe and potentially fatal liver diseases. The objective was to estimate preferences (ratings and utility weights) for six hepatitis B-related disease states among uninfected and infected persons.
METHODS: Three hepatologists characterized the typical effects of symptoms on health-related quality of life. Standard gamble (SG) utility weights for six disease-related health states were elicited from a sample of 100 uninfected persons and 87 patients chronically infected with HBV in the UK. Probability wheels with 2-color pie charts for the relative probabilities of perfect health and death were used as props. RESULTS: The mean age of patients was 43 y and 46 y for uninfected persons; and 57% and 47% were men, respectively. For patients and uninfected persons, respectively, mean SG utilities were: 0.77 (95% confidence interval: 0.71; 0.81) and 0.82 (0.78, 0.85); for chronic hepatitis B: 0.73 (0.65; 0.77) and 0.83 (0.80, 0.87) for compensated cirrhosis; 0.34 (0.25, 0.39) and 0.36 (0.30, 0.42) for decompensated cirrhosis; 0.36 (0.28, 0.41) and 0.46 (0.39, 0.52) for hepatocellular carcinoma; 0.56 (0.49, 0.62) and 0.71 (0.65, 0.76) in the first year after liver transplant; and 0.67 (0.59, 0.73) and 0.82 (0.78, 0.86) after first year post-transplant. CONCLUSION: These utility values, the first published on patients or uninfected persons in the UK, indicate that health states resulting from chronic HBV infection substantially lower patients’ quality-of-life. The mean SG utilities were systematically lower for infected than for uninfected persons. These preferences for health states can be incorporated into many aspects of medical decision making, including summary measures of health related quality of life, monitoring population health, bedside clinical decision making, and in technology assessment.

PIN16
MEDICAL COSTS ASSOCIATED WITH NON-ADHERENCE TO ANTIRETROVIRAL THERAPY IN H.I.V.-POSITIVE PATIENTS
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OBJECTIVES: To compare the direct health costs of HIV-positive patients reporting sub-optimal intake of antiretroviral therapy (ART) with those of patients reporting full adherence.
METHODS: 546 subjects from the Italian multicenter observational study ICOna (Italian Cohort Naïve Antiretrovirals) were followed between 1997 and 2004. Non-adherence to ART was assessed by a self-administered questionnaire. Medical costs incurred by the National Health Service were calculated retrospectively as from first ART and expressed in constant 1997 prices. RESULTS: Mean time on ART was 5.75 years (range 1.04–7.77); mean HIV-RNA and CD4 cells at baseline were 4.75 log10 copies/ml (range 1.3–6.6) and 307/μl (range 0–1309). Non-adherence was reported by 197 (36%) patients, who showed a higher number of new AIDS-defining events (p = 0.01), of detectable viremia episodes (p < 0.001), and of ART changes (p = 0.01). Overall medical costs and ART costs per year were on average €6392 (range €535–€42,183) and €373 (range €357–€35,582), respectively, and did not significantly differ between the two groups. Annual inpatient costs were higher in the non-adherent group (€3432; 95% CI €236–€608) than in the adherent group (€198; 95% CI €127–€269; p < 0.005). On multivariate linear regression, higher HIV-RNA, lower nadir and baseline CD4, fewer ART changes, and interaction between low adherence and number of therapy switches were independently associated with higher log-transformed ART costs per year. Older age, HCV co-infection, sub-optimal ART adherence, lower CD4 nadir, and higher baseline CD4 were independently associated with higher annual inpatient costs, based on multivariate tobit analysis. CONCLUSIONS: Non-adherence is common among HIV-positive patients and is associated with virological failure, disease progression, more frequent hospitalizations and treatment changes. Total and ART costs do not seem to be significantly affected by non-adherence, probably because of switches to simpler and less expensive treatment options, whereas inpatient costs are significantly increased by sub-optimal drug intake.

PIN17
COST-EFFECTIVENESS ANALYSIS OF ENFUVIRTIDE ADDED TO AN OPTIMISED THERAPY VS AN OPTIMISED THERAPY ALONE IN PATIENTS WITH H.I.V./AIDS
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OBJECTIVE: To analyse the efficiency of adding Enfuvirtide (ENF) to an Optimised Therapy (OT) in HIV patients who are
resistant to the antiretroviral (ARV) drugs available.

METHODS: A Markov model was developed to simulate the clinical progression of the population analyzed in the clinical trial with a 48 weeks treatment period. A cost-effectiveness analysis of ENF in terms of incremental cost per life year gained (LYG) was obtained. The model was designed over a time horizon of 10 years with monthly cycles and taking into account the perspective of the Spanish National Health Service. The primary clinical outcome was time until death. Efficacy rates and transition probabilities were obtained from reported clinical and epidemiological trials. Resource use data was retrieved from published literature in the Spanish setting and a panel of clinical opinion leaders. Unit costs were converted to euros and adjusted for the year 2003. RESULTS: Adding ENF to OT increases patient’s life expectancy by 1.6 years. Total costs are €117,375 for OT and €159,121 with ENF + OT, mainly due to the fact that increasing life expectancy for a given cohort of patients, increases resource use and costs. Incremental cost per life year gained with ENF is €23,687, which is similar to the value previously reported when considering results with only 24 weeks of treatment (€24,780). CONCLUSIONS: ENF used in combination with an OT regimen increases life expectancy for HIV-1 treated patients who are highly ARV-experienced and delays onset of new AIDS-defining events, resulting in an economically efficient treatment option.

PIN18
DETERMINANTS OF HEALTH CARE COSTS IN AMBULATORY PATIENTS LIVING WITH HIV/AIDS

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OBJECTIVES: To estimate health care costs in ambulatory patients living with HIV/AIDS in Spain. To identify significant variables associated to health care costs. METHODS: This is a retrospective cohort study in which patients were followed up one year, stratified by CDC-disease stage (asymptomatic-HIV, symptomatic-HIV and AIDS). 572 patients agreed to join the study during an outpatient visit. Data on health care services use and costs were obtained from clinical records. Direct costs were divided into hospitalisations, ambulatory care and drug costs. Quality of life data from patients were obtained through EQ-5D questionnaire. RESULTS: The mean (SD) annual health care costs per patient in 2003 were € 8308 (4660). The main contribution came from drugs (82.2% of direct costs), while hospitalisations only represented a 4.6% of health care costs. We identified the willingness of men (83.5 %). A total of 27.6% of the responsiveness group and 68% reliability group patients took only one HAART in the last year. 90% of patients answered all questionnaire items. The mean time(SD) of questionnaire filling by the patients was 12 (15.3) minutes. Regarding validity, MINI-

INTEGRATING COMPLIANCE RATES INTO THE COST OF TREATING HIV/AIDS IN TWO AFRICAN COUNTRIES

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OBJECTIVES: Past studies have indicated that regimen compliance is associated with virological failure which, in turn, impacts the cost of treating HIV/AIDS. We calculated the per-patient cost of HIV/AIDS treatment in two African countries based on recently reported compliance studies and treatment costs.

METHODS: Patient compliance rates from recent studies in two African countries (South Africa and Uganda) were paired with compliance-specific virologic failure rates from the literature to estimate the rates of treatment failure in each country. Any patient with virologic failure was assumed to receive second-line therapy. As a base case, we used published estimates of HIV/AIDS annual per patient drug costs of $292 (in 2003 U.S.D.) in Uganda and $400 in South Africa for patients not experiencing virological failure and $1594 (Uganda) and $1203 (South Africa) for patients that do experience virological failure. The average annual per-patient drug cost was estimated for the two countries from a non-governmental organization (NGO) perspective. Sensitivity analyses were conducted on drug prices and compliance rates. RESULTS: Given each country’s compliance rates, the average virological failure rate was projected to be 39% in Uganda and 68% in South Africa. The average drug cost per patient was estimated to be $914 and $801 per year in South Africa and Uganda, respectively. If compliance rates were varied by +/- 25% of base case values, cost estimates ranged from $841 to $987 for South Africa and from $756 and $935 for Uganda. Similarly, if drug costs were varied by +/- 25%, cost estimates ranged from $685 to $1142 for South Africa and from $601 to $1002 for Uganda. CONCLUSION: Patient compliance is an important determinant of per-patient costs and overall budgets for the drug cost of treating HIV/AIDS in Africa. Considering only first and second-line unit costs does not accurately reflect overall treatment costs.

STUDY VALIDATION OF QUALITY OF LIFE QUESTIONNAIRE MINI-HIV

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OBJECTIVES: To evaluate the psychometric properties of MINI-HIV in HIV patients in Spanish population. METHODS: Validity, reliability and responsiveness of MINI-HIV were assessed throughout observational, longitudinal and multicentric study with 3 months of follow up. The 206 patients with HIV included in the study were divided into two groups: 50 patients within the reliability group (patients who were not foreseen any clinical change in the following 15 days) and 156 patients within the responsiveness group (patients that started a treatment or had a treatment). Thus, 46 blood donor subjects were to include within the control group. The main variable in the study was MINI-HIV (17 items). Other variables analysed on the study were; diagnosis date, disease symptoms, stage, previous HAART and actual HAART, MOS-HIV and general health status. RESULTS: The mean (SD) age of the participants was 37 (10.2), with a predominance of men (83.5%). A total of 27.6% of the responsiveness group were “naïve” patients. 53.8% of the responsiveness group and 68% reliability group patients took only one HAART in the last year. 90% of patients answered all questionnaire items. The mean time(SD) of questionnaire filling by the patients was 12 (15.3) minutes. Regarding validity, MINI-

Abstracts
HIV scoring showed a significant relationship with scoring assessed through MOS-HIV (R = −0.71; P < 0.01), and through general health status (p < 0.01). MINI-HIV scoring showed a significant relationship with CD4 (p < 0.01), viral load and symptoms (p < 0.001). Regarding responsiveness to change, a high effect size in MINI-HIV was observed between those patients whose general health status had improved during the follow up visits (ES = 0.694 IC 95% 0.134–1.254). The internal consistency of the questionnaire was assessed through the a Cronbach (α = 0.93). The ICC (test—retest reliability) was 0.86.

CONCLUSIONS: The MINI-HIV has good psychometric properties and correlated with clinical markers of the disease.

PIN21

SELF ASSESSED HEALTH-RELATED QUALITY OF LIFE AMONG HIV PATIENT IN UK

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OBJECTIVES: This study aimed to assess the cross cultural validity and reliability of Health Utility Index (HUI3) in UK HIV population. METHODS: The study was approved by local research ethics committee. All adult patients receiving HIV care in Cardiff were approached in the outpatient clinic and recruited into the study after giving written informed consent. Participants were required to complete the HUI3. Variables analyzed include QOL score, CD4+ category, HIV stage, antiretroviral (ARV) usage and viral load using Spearman's rank test, Kruskal-Wallis and Mann-Whitney U test. RESULTS: In total, 103 (98%) of participants completed the questionnaire. The average age of the participant was 40.8 years (±10.7 SD) and 81 were male. HUI3's was found to be reliable in most attributes (Cronbach’s alpha 0.68), except in vision, hearing and ambulation. Four attributes (ambulation, emotion, cognition and pain) correlated significantly with QOL score (p < 0.002) after controlling for antiretroviral use, clinical, and CD4+ categories. Findings also revealed no significant difference and correlation between QOL score and CD4+ count, viral load count and HIV clinical categories. There appears to be a stronger correlation (r = -0.19) and mean difference (P = 0.08) between QOL score and antiretroviral use but this did not reach statistical significance. An interesting pattern was observed whereby asymptomatic patients and those not using antiretroviral (ARV) therapy had a lower QOL score than AIDS patients. Class of ARV also appeared to affect QOL score but was not significant statistically (P = 0.2). CONCLUSION: The findings of this study support validity and reliability of HUI3 in UK HIV population and therefore could be used with confidence in comparative study of HIV treatment. The results also suggest benefit of ARV use in improving patient QOL and also the different effect of ARV regimen had on the score; however this requires further investigation in a controlled study.

PIN22

COST-EFFECTIVENESS MODEL OF PALIVIZUMAB IN THE UK

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OBJECTIVES: To assess the cost-effectiveness of Palivizumab, a prevention against respiratory syncytial virus (RSV) infections in infants at high risk, such as premature babies, infants with bronchopulmonary dysplasia (BPD), and children with congenital heart disease (CHD). METHODS: A decision tree model was used to estimate the cost-effectiveness of Palivizumab in high-risk children. The data sources included published literature, the Palivizumab clinical trials, official price/tariff lists and national population statistics. The primary perspective of the study was that of the health care purchaser (National Health Service), which included the cost of administration and hospital care for RSV infections. RESULTS: The use of Palivizumab results in an ICER of £7042/QALY without discounting, which increases to £16,720/QALY after discounting in the prophylaxis in premature infants and such with BPD. In the prophylaxis in babies with CHD the use of Palivizumab results in an ICER of £2427/QALY without discounting and £6664/QALY after discounting. Sensitivity analyses confirmed the robustness of the model. A scenario analysis showed that the inclusion of indirect costs leads to further improvement in the cost-effectiveness outcomes for Palivizumab CONCLUSION: This study showed that Palivizumab is a cost-effective prophylaxis against RSV-infections in infants at high risk: the use of Palivizumab results in positive short and long-term health economic benefits to the health care purchaser.

PIN23

COST UTILITY ANALYSIS OF A HYPOTHETICAL VACCINATION PROGRAM AMONG THE CURRENTLY TARGETED POPULATION IN THE NETHERLANDS IN CASE OF AN INFLUENZA PANDEMIC

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OBJECTIVES: A modeling study was conducted to assess the balance between costs and effects of a hypothetical influenza vacci-
PIN24

ADDING A QUADRIVALENT (6, 11, 16 & 18 TYPES) HUMAN PAPILLOMAVIRUS VACCINE TO THE EXISTING UK CERVICAL SCREENING PROGRAMME IS POTENTIALLY COST-EFFECTIVE

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OBJECTIVES: A vaccine to prevent infection with human papillomavirus (HPV) types 6, 11, 16 and 18 may soon become available. The current strategy to prevent cervical cancer in the UK is screening every 3 years, beginning at age 25 and then every 5 years for women aged 50+. The current screening coverage rate is 81.2%. The objectives are to assess the health and economic impact of HPV vaccination in association with current screening in the UK compared to screening alone. METHODS: A Markov model of the natural history of HPV infection incorporating screening and vaccination was developed for the UK. A vaccine that would prevent 90% of HPV 6, 11, 16 and 18-associated disease, with 20 years duration and 87% coverage, given to girls at age 12 in conjunction with current screening was compared to screening alone using cost per life-year (LY) and quality-adjusted life-year (QALY). Sensitivity analyses included varying the vaccination cost from £165 to £220 and assuming a lifetime duration for vaccine efficacy.

RESULTS: The model predicts the reduction in lifetime risk of cervical cancer attributable to screening in line with already published UK data. Introduction of vaccination, and maintaining the screening programme unchanged, would be expected to reduce the lifetime risk to 0.66%. Vaccination with current screening is associated with an incremental cost-effectiveness ratio (ICER) that varies from £16,000/QALY (£20,600/LY) to £22,000/QALY (£28,200/LY) compared to screening alone, when the vaccination cost is varied from £165 to £220. If a lifetime duration of vaccine efficacy is assumed, the ranges for the ICERs decrease to £12,750/QALY (£16,250/LY) to £17,570/QALY (£22,000/LY) respectively. CONCLUSION: These analyses suggest that adding a quadrivalent HPV vaccine to current screening in the UK may be a cost-effective method for further reducing the burden of cervical cancer.

PIN25

PRELIMINARY COST-EFFECTIVENESS ANALYSIS OF A POTENTIAL PROPHYLACTIC STAPHYLOCOCCUS AUREUS VACCINE (STAPHVAX) IN HEMODIALYSIS PATIENTS IN GERMANY

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OBJECTIVE: Increasing antibiotic resistant staphylococcus aureus strains in hospital- and chronic disease patients causing a high burden of illness and consume enormous health care resources in Germany. A new vaccine (StapVax) preventing S.aureus infections is in clinical development and currently seeking market authorization in the EU. The objective of this analysis is to project the potential economic value of vaccinating hemodialysis patients with StapVax against mecillin resistant staphylococcus aureus infections. METHODS: A literature-based decision analysis model was developed to assess the annual number of potential infections and death avoided as well as to calculate cost-effectiveness, break-even price and budget impact of the candidate vaccine. Baseline efficacy rate was assumed to be 57% with a 90% coverage rate. The model compared projected cost per infection avoided and cost per life-year gained for patients receiving the vaccine versus unvaccinated patients undergoing hemodialysis. RESULTS: Vaccinating the about 60,000 hemodialysis patients in Germany could prevent 650 S.aureus infections and 105 associated deaths per year. Assuming annual per patient vaccination cost of €500 (vaccine plus administration) the cost per infection avoided was estimated at €27,000, with a cost per life-year gained of €17,000, respectively. The net-budget impact in this scenario results in about €18 million. Vaccination cost of €170 would make the vaccine a budget neutral preventive strategy. Monte Carlo simulations on vaccine efficacy, mortality rate after S.aureus infection, treatment and vaccination cost resulted in cost per life-year gained ranging from €3000 to €22,000 in 95% of the runs, and from €7000 to €14,000 in 50% of trial runs. The model is most sensitive to vaccine program cost and predicted preventive efficacy. CONCLUSION: Vaccinating hemodialysis patients with StaphVax is a highly cost-effective measure to prevent serious morbidity and mortality in this patient population at substantial risk of bacterial contamination.

PIN26

COST-EFFECTIVENESS OF PREVENTING RECURRENT UPPER RESPIRATORY TRACT INFECTIONS WITH NON-SPECIFIC IMMUNOSTIMULATING BACTERIAL EXTRACT

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OBJECTIVES: To estimate the pharmacoeconomic impact of preventing recurrent upper respiratory tract infections (URTIs) with OM-85, a non-specific immunostimulating agent, in at-risk children. METHODS: Implementation of a decisional model. The evaluation of effectiveness (number of prevented URTIs/therapeutic cycle) was based on weighted average of the results of four randomized, double-blind, placebo-controlled trials identified by literature reviewing. The clinical events considered in the model were natural resolution of the infection, onset of complications (acute otitis media, sinusitis, others) and their evolution. Baseline event probabilities were derived by reviewing published data in the literature. URTI-related direct and indirect costs supported by patients, by Italian health system and by community were structured according with the principal guidelines and implemented with current Italian prices and tariffs. The cost-effectiveness of OM-85 was calculated for five scenarios, differing in the number of therapeutic cycles, grade of patient co-payment and other secondary assumptions. Sensibility analyses were performed to evaluate the model robustness. RESULTS: Immunostimulation with one cycle of OM-85 prevented on average 1.60 URTI/patient in 6 months (RR = 0.515). In the basic scenario, this preventive action induced savings for €107.42/patient in the perspective of the patient's family, for €48.52/patient in the perspective of Italian health system and for €231.26 in the community perspective. Sensibility analyses confirmed the robustness of basic scenario results. Threshold analyses showed that OM-85 prophylaxis is economically convenient as long as more than 7% of infections are prevented or global cost of one episode of URTI is greater than €10.00. CONCLUSIONS: Non-specific immunotherapy with OM-85 induces a reduction in the incidence of URTIs in at-risk children with a concurrent saving for patients and health system.

PIN27

COST-MINIMIZATION ANALYSIS OF VORICONAZOLE AND LIPOSOMAL AMPHOTERICIN B FOR THE TREATMENT OF INVASIVE CANDIDA AND ASPERGILLOSES INFECTIONS IN SPAIN

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OBJECTIVES: Increasing antibiotic resistant staphylococcus aureus strains in hospital- and chronic disease patients causing a high burden of illness and consume enormous health care resources in Germany. A new vaccine (StapVax) preventing S.aureus infections is in clinical development and currently seeking market authorization in the EU. The objective of this analysis is to project the potential economic value of vaccinating hemodialysis patients with StapVax against mecillin resistant staphylococcus aureus infections. METHODS: A literature-based decision analysis model was developed to assess the annual number of potential infections and death avoided as well as to calculate cost-effectiveness, break-even price and budget impact of the candidate vaccine. Baseline efficacy rate was assumed to be 57% with a 90% coverage rate. The model compared projected cost per infection avoided and cost per life-year gained for patients receiving the vaccine versus unvaccinated patients undergoing hemodialysis. RESULTS: Vaccinating the about 60,000 hemodialysis patients in Germany could prevent 650 S.aureus infections and 105 associated deaths per year. Assuming annual per patient vaccination cost of €500 (vaccine plus administration) the cost per infection avoided was estimated at €27,000, with a cost per life-year gained of €17,000, respectively. The net-budget impact in this scenario results in about €18 million. Vaccination cost of €170 would make the vaccine a budget neutral preventive strategy. Monte Carlo simulations on vaccine efficacy, mortality rate after S.aureus infection, treatment and vaccination cost resulted in cost per life-year gained ranging from €3000 to €22,000 in 95% of the runs, and from €7000 to €14,000 in 50% of trial runs. The model is most sensitive to vaccine program cost and predicted preventive efficacy. CONCLUSION: Vaccinating hemodialysis patients with StaphVax is a highly cost-effective measure to prevent serious morbidity and mortality in this patient population at substantial risk of bacterial contamination.
OBJECTIVE: There are no pharmacoeconomic studies perform to date comparing voriconazole and liposomal Amphotericin B (LAB) for the treatment of systemic fungal infections. The aim of this study was to perform an economic evaluation of voriconazole versus LAB for the treatment of invasive aspergillosis and candidiasis. METHODS: A cost-minimization analysis was performed from the hospital perspective in 2005, as the same efficacy was assumed. A systematic review of available literature was performed between 1996 and 2005, in order to obtain the efficacy and incidence of drug-related adverse events (AE) for each treatment group. Duration of treatment (intravenous: 15.42 days; oral: 4.49 days; the same for both treatments) and mean weight of patients (68.6 Kg) were obtained from a local study: The Fungcost study (Peiro S. Value Health 2002;5:564). Only direct costs per episode were considered; medications (iv and oral) at their hospital selling prices; the cost of monitoring AE; and administration costs (obtained from a national cost database). Voriconazole was the oral treatment in both groups. The most important AE for each treatment (and the way to monitor them) were: hepatotoxicity with voriconazole ~13.97%—(two chemistries and hematologic tests during the treatment period); and nefrotoxicity with LAB ~12.84%—(a daily creatinine clearance measurement). Mean cost per episode and incremental cost were calculated. RESULTS: Mean cost per episode was €6073.43 (iv treatment 94.22%) for voriconazole, and €8794.33 (iv: 95.78%) for LAB in the treatment of invasive aspergillosis, with an incremental cost of €2486.90 (28.28%). The treatment of candidiasis showed a mean cost of €6307.43 (iv: 94.22%) and €8779.92 (95.93%), respectively, with an incremental cost of €2472.48 (28.16%). Results were robust to the sensitivity analysis. CONCLUSION: Using costs and treatment patterns of fungal infections in Spain, voriconazole is more cost-effective than LAB for the treatment of invasive candidiasis and aspergillosis.

RESOURCE USE AND COSTS ASSOCIATED WITH THE MANAGEMENT OF PAP III, PAP IIID AND PAP IV IN THE PRE-HPV VACCINE ERA IN GERMANY
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OBJECTIVE: Human Papillomavirus infection is the principal cause of cervical cancer and most cervical neoplasia. Despite available screening and treatment, cervical cancer remains an important public health problem. HPV vaccination studies have shown high efficacy against HPV-induced cervical lesions. Prior to implementing a vaccination programme, data about cervical dysplasia and annual treatment costs are critical. This study assessed resource use and costs for Pap III, IIID and IV patients in Germany. METHODS: A one-year retrospective chart review of 138 patients, diagnosed with Pap III, IIID or IV between February—March 2004, was conducted to assess clinical and resource use. Resources included consultations, medications, procedures, diagnostics, adverse events and hospital stays. Unit costs from official sources were applied to calculate the average cost per patient. RESULTS: Most patients had Pap IIID (n = 79) vs. Pap III (n = 27) or Pap IV (n = 32). Mean duration of treatment was 4.4, 5.5, and 4.9 months for Pap III, IIID and IV respectively. Pap IIID patients had on average 4.6 gynaecologist consultations versus 4.2 and 5.6 for Pap III and IV respectively. Most common diagnostic tests were Pap-smears (99%) and colposcopy (in 89%, 73% and 75% of Pap III, IIID and IV). Typically, patients were treated by conisation (in 22%, 27% and 84% of Pap III, IIID and IV). More Pap IV patients had hysterectomies (22% vs. 4% for Pap III) and laser coagulation (12.5% vs. 4% for Pap IIID). 33% of the patients were hospitalised (mean 7.4 ± 8.3 days). The estimated average annual cost per patient was €1070, €955 and €3240 for Pap III, IIID and Pap IV, including 40% indirect costs. CONCLUSION: The cost of managing pre-cancerous cervical lesions in Germany is high. An HPV vaccine preventing many of these lesions could avert much of these costs.

ESTIMATED ANNUAL NHS COSTS OF HUMAN PAPILLOMAVIRUS (HPV) RELATED DISEASES IN THE UK
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OBJECTIVE: Human Papillomavirus (HPV) is the main cause of genital warts (GWs) and a necessary cause of cervical cancer (CC). There is a lifetime HPV infection risk in women of 55–75%. Genitourinary Medicine (GUM) clinics and CC screening programmes help in the detection and treatment of GWs and deceleration of progression to cancerous lesions. This study estimated the annual National Health Service (NHS) costs of diagnosing and managing HPV related diseases in a pre-HPV vaccine era. METHODS: Data for first and recurrent GWs episodes were obtained from the Health Protection Agency and management pathways from GUM clinicians. The number of women screened for CC, results, and procedures undertaken for abnormal findings were obtained from a variety of sources (e.g., Government Statistical Service, Regional Screening Programmes; adjusted to 2003). Annual new cases of CC were obtained from GLOBOCAN, 2002. Resource costs (2003) included screening tests, clinician visits, diagnostic and treatment procedures, hospital admissions and drugs. Sensitivity analyses examined the range of treatment patterns and costs. RESULTS: In 2003, GUM clinics treated almost 114,000 patients with GWs. Topical creams were the first line treatment for the majority (77%) followed by cryotherapy or combination of the two. An average 26% of patients returned to complete their treatment. Total annual costs for GWs were £22.4 million. In 2003, 4.8 million CC screening tests were conducted at a cost of £104.5 million. Over 227,209 women were referred for colposcopy, costing £34 million for the diagnosis and treatment of precancerous lesions. Newly identified CC cases (N = 3308) and hospital admissions for prevalent CC cases in 2003 cost £43.7 million. Estimated total 2003 NHS costs related to HPV were £204.6 million (range: £181.3–£209.7 million). CONCLUSION: Preventing HPV related diseases through vaccination with a quadrivalent vaccine could result in cost offsets and more efficient resource allocation.
fully satisfactory, a high recurrence rate is observed and prevention strategies are not available. HPV vaccination studies have shown high efficacy against HPV-induced lesions such as GW. Before implementing a vaccination programme, data on the incidence and prevalence of GW and their associated treatment costs are crucial. The objective of this study was to estimate these data.

METHODS: 217 specialists (gynecologists, urologists and dermatologists) were asked to record the number of patients, aged 14–64 yrs, presenting with GW between February and April 2005. The average number of patients per specialist was used to estimate the annual number of patients. Specialists also conducted a chart review of 189 previously diagnosed GW patients visiting them in the same period. Resource use, collected from records going back to February 2004, included visits, diagnostics, medications, procedures and adverse events. The cost of treating patients with an existing GW diagnosis was calculated using the average cost per patient and the extrapolated annual number of existing patients. Indirect costs were included.

RESULTS: It was estimated that there are around 57,000 new cases and 38,000 existing cases of GW annually in Germany. Mean treatment duration was 6.7 months, with an average of 3.2 visits to a specialist. 95% of patients had a visual exam, and the most used diagnoses included Pap smears (25.9%), biopsies (25.4%) and colposcopies (24.9%). Most common therapies were imiquimod (34.4%), electrosurgery (26.5%), laser therapy (19.1%) and cryotherapy (17.5%). The mean annual treatment cost per existing patient was €950. The overall estimated treatment costs were €36 million per year; of which €7 million indirect costs.

CONCLUSION: The management of GW presents a high burden to society that could potentially be reduced using a quadrivalent HPV vaccine.

**METHODS & CONCEPTS**

**DEVELOPMENT OF A NEW QUESTIONNAIRE TO MEASURE SATISFACTION WITH TREATMENT WITH MEDICINES (SATMED-Q)**

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OBJECTIVE: New advances in health care have shifted concern from infectious to chronic illnesses and therefore a new emphasis in the assessment of satisfaction with pharmacological treatment has risen. A generic questionnaire to measure Satisfaction with medicines is under construction. Item reduction and factorial validity are discussed here. METHODS: The initial instrument was composed by 36 items, arranged in 6 dimensions: 1. Efficacy and symptom relieve (5 items), 2. Ease and convenience (6 items), 3. Impact on HRQoL (4 items), 4. Satisfaction with Medical Care (4 items), 5. Medication Side Effects (8 items), and 6. Overall satisfaction (9 items). Items and dimensions where extracted from review of previous English instruments, a panel compose by 8 experts, and 4 focus groups with chronic patients. A convenience sample of 136 patients was used, representative of 7 prevalent chronic pathologies (Diabetes type II, Hypertension, Osteoarthritis, Prostate problems, EPOC/Asthma, Depression, and Migraine). Classic psychometric theory item analysis techniques, exploratory factor analysis, and confirmatory factor analysis (to estimate accurately factor correlations) were applied. RESULTS: The questionnaire was reduced to a new version of 5 dimensions assessed by 14 items, plus a dimension of Satisfaction with Medication Side Effects (3 items) to be corrected separately due to an important floor effect. The reduced version presents an overall Cronbach alpha of 0.881, acceptable goodness of fit indexes, and all factor loadings are significant (p < 0.001). Dimensions are well formed and correlate in different degrees, but the dimension of Satisfaction with Medical Care shows a relevant relation only with Impact on HRQoL (r = 0.45). CONCLUSION: The questionnaire shows good reliability and validity properties. The 5 + 1 proposed dimensions are stable and well defined in a 17-item form. Results support that the questionnaire can be used to compute an overall meaningful score.
METHODS: Within the framework of an international project (EUROCOST) Hospital Discharge Registers of 7 European countries were analysed. To reduce heterogeneity, clinical incidence was determined using different injury indicators, based on a) health care use; b) anatomical criteria; or c) expected outcome. The following existing and newly developed injury indicators were tested: admissions excluding day cases (a), length of stay 4+ days and 7+ days (a), serious long-bone fractures (b), radiological verifiable fractures (b), serious non-fatal injuries (c), injuries with a moderate to high disability weight (Global Burden of Disease weights and Dutch weights (IBIS)) (c). RESULTS: Clinical injury incidence varied substantially in the rough data, ranging from 6.6 to 22.9 per 1000 person years. Exclusion of day cases and short-term admissions both led to an increased variation in clinical incidence. The anatomical indicators “serious long bone fractures” and “selected radiologically verifiable fractures”, as well as both indicators based on disability resulted in at least comparable variation in clinical incidence and reduced variation in median length of stay in hospital as opposed to the rough data. Contrary to rough data, those four indicators showed reasonable (serious long bone fractures) to good associations with mortality rates. They were responsible for almost equal parts of the hospital costs of injury (40–44%). CONCLUSIONS: Comparing only serious injuries with an objective need for hospital admission based on disability weights (GBD and IBIS) or on anatomical criteria (serious long bone fractures and selected radiologically verifiable fractures) consistently reduced the influence of registration and health care practices on clinical incidence variation, which improved the comparability of clinical injury incidence data.

THE CONTRIBUTION OF PREVENTION AND MEDICAL CARE TO POPULATION HEALTH
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OBJECTIVES: To assess the contribution of prevention and medical care to the improvement in population health, as part of an overall assessment of the current cost-effectiveness of health care. METHODS: We calculated the difference between the current incidence, prevalence, and mortality of major health problems, and those in a situation without prevention and medical care (“partial null”). Major health problems include among others infectious diseases, cancers and cardiovascular diseases. The partial null was reconstructed with (if relevant historical) data on disease-specific mortality, case fatality, incidence, and knowledge of the natural history, combined with trend analysis, and with relevant literature on e.g. the impact of antibiotics on infectious disease epidemiology. The separate impact of prevention (predominantly screening, vaccination) and medical care was disentangled by isolating the impact of changes in (stage-specific) incidence on the one hand, and changes in case fatality and stage-specific prevalence on the other hand. Historical changes in health behaviour (predominantly smoking) as a possible result of public health interventions was included in a subanalysis. Other behavioural changes, such as weight gain and sexual behaviour, were regarded autonomous trends. All epidemiological data were age- and sex-specific. With multisite lifetable modeling techniques the incidence, prevalence of disease stages, disease-specific disability weights, and mortality were combined to calculate disability adjusted life expectancy in the current and null situation. RESULTS: Preliminary results will be presented on infectious diseases and cancers. CONCLUSIONS: Conclusions cannot yet be drawn. In a next step the results will be combined with recent cost-of-illness data to calculate disease-specific cost-effectiveness of prevention and medical care.

A STANDARD SET OF UNIT COSTS FOR GERMANY
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Although standardisation of costing methodology is a prerequisite for the consistency and comparability of health economic results it is often seen as insufficient. There exist a number of country-specific guidelines for the costing process in economic evaluations, but they often stay vague, especially with regard to the empirically based valuation of resource consumption. OBJECTIVE: To present a system of unit costs for the health care system in Germany that reflects a societal perspective and that ensures consistency and comparability of study results between different intervention studies by following uniform valuation standards. METHODS: The valuation set is compatible with the measurement of resource consumption derived from patient reported data. Data sources for the valuation are registry data, national statistics, charges and tariffs. The primary goal was to approximate a national average by considering and weighting different reimbursement schemes of private and public health insurance. RESULTS: The valuation set includes all basic direct and indirect cost components. As an example the valuations for physician services are based on average reimbursement per visit: A visit to the general practitioner is valued €15, costs for visits to specialists range from €14 (psychiatrist) to €80 (radiologist). Inpatient stays are valued by department-specific per diem rates ranging from €260 (orthopaedics) to €481 (neuro surgery). Cost of a work day lost amount to €89 following a human capital approach. The friction period when adopting the friction cost approach is 72 days. CONCLUSIONS: The proposed set of unit costs is based on average valuation of resource consumption. As most cost components are not derived from market prices but are based on administrative cost and/or remuneration data, institutional changes may have impact on the valuation of resource consumption. This should be considered when empirical unit costs are updated.

AFFORDABLE BOOTSTRAPS! EVALUATING FREEWARE OPTIONS FOR ANALYZING INCREMENTAL COST EFFECTIVENESS DATA
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OBJECTIVES: To compare and evaluate freeware options for bootstrap analyses of incremental cost effectiveness data. METHODS: Obenchain’s ICEplane software can be downloaded and installed from www.math.iupui.edu/~indyasa/bobdwn.htm. This software was compared against the web-based bootstrap analyses available online at HealthStrategy.com. Three datasets, that are downloadable from the ICEplane site, were used in this software comparison. The three datasets are from published studies dealing with abeciximab (ABX), pindolol (PIN) and tricyclic antidepressants (TCA). RESULTS: ICEplane must be installed on MS Windows operating systems, in contrast to the Health Strategy program that runs online through any operating system with browsers including Internet Explorer, Netscape or Firefox. Both software options provide output...
graphs such as scatter plots, confidence intervals and acceptability curves. ICEplane and Health Strategy generated very similar statistics on the initial raw data such as mean, median, standard deviation and standard error. Bootstrapped statistics include mean, median, incremental cost effectiveness ratio (ICER), and 95% confidence intervals. Respective mean ICERS and confidence intervals between ICEplane and Health Strategy bootstraps on the three datasets were as follows: ABX: 3771 (−665, 20,797) vs. 3692 (−1054, 13,303); PIN: −1880 (−412, 2863) vs. −1832 (−333, 25,442) and TCA: −16.48 (−169, 136) vs. −19.96 (−221, 147). There was good agreement on Fieller’s confidence intervals. CONCLUSIONS: The ICEplane software has more statistical and charting features than the Health Strategy bootstrap program. The analyses from Health Strategy ran more slowly with over 1000 bootstrap replications, but the results obtained compare reasonably well to ICEplane. The Health Strategy site has the potential benefits of requiring no installation and accessibility on multiple computer platforms. Both of these freeware options should make it easier for individuals to explore basic bootstrap analyses of cost effectiveness data, but more comprehensive statistical packages like Stata should be used when possible.

**Abstracts**

**PMC8**

**ESTIMATING COSTS AT THE FAMILY LEVEL**

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**OBJECTIVES:** Economic evaluations, such as cost effectiveness analyses (CEA), of pharmaceuticals have historically focused on costs and consequences at the individual level. However, illness and individual-level health interventions affect both the individual and their family members. METHODS: While certain disciplines have assessed the cost of illness on multiple family members and the effects of medical interventions on family members, CEA has not routinely incorporated measures of effectiveness and costs with the family as the unit of analysis. Family-level CEA is consistent with recommendations that CEA should consider everyone affected by the intervention and count all significant health outcomes and costs that flow from it, regardless of who experiences the outcomes or costs. RESULTS: Drawing from methodologies recommended by the Panel on Cost Effectiveness in Health and Medicine, we explore conceptual and methodology issues related to estimating costs at the family level for use in family-level CEA. CONCLUSIONS: We address the challenges inherent in defining a family, the availability of health service data to link families, and methods for aggregating, evaluating, and comparing family-level costs.

**PMC9**

**THE OPTIMAL COST-EFFECTIVENESS RATIO THRESHOLD IN CASE OF CO-MORBIDITIES**

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**OBJECTIVES:** To find the optimal threshold in the cost-effectiveness analysis in case of co-morbidities. METHODS: The two-period model was constructed in which agent receives utility from the income net of medical expenses. Agent can fall ill with two illnesses in the first period. The illnesses are treated and in case of a success the agent survives to the second period. The intensity of the treatment (the cost and the survival probability) is subject to optimization maximizing the total utility. The illnesses may have different morbidities and their occurrence can be correlated. The relation between the cost of the treatment of the i-th illness–Ci–and its efficiency–Pi–is described by increasing and convex function Ci (Pi). The cases of exogenous and endogenous budget (the expenses are covered by the insurer collecting a fair premium) are analysed. RESULTS: The results are the same for the exogenous and the endogenous budget case. The outcomes cannot occur together then the optimal thresholds are the same for both illnesses irrespectively of the morbidities, Cj(Pj) functions or risk aversion. If the correlation is equal to zero and the Cj(Pj) functions are equal then the illness with higher morbidity will have a higher optimal C/E threshold. More resources would be allocated to that illness both due to the higher morbidity and higher C/E threshold. If the correlation is equal to zero and the morbidities are equal then the illness that is less costly to treat (i.e. always C1 (P1) < C2 (P2)) will have a lower optimal C/E ratio threshold. Similar results are obtained for positive or slightly negative correlation. When the correlation is sufficiently negative the reversal of the above-mentioned phenomena may occur. CONCLUSIONS: The co-morbidities should be taken into consideration when specifying the optimal threshold for the ratio in the cost-effectiveness analysis, even when there is no correlation between illnesses.
A METHODOLOGICAL APPROACH TO ASSESS COST DATA IN THE CONTEXT OF A DECISION ANALYTIC MODEL TO EVALUATE THE COST-EFFECTIVENESS OF THE TREATMENT OF THE METABOLIC SYNDROME

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OBJECTIVES: The metabolic syndrome is an accumulation of risk factors and shows a high prevalence in the German population. Treatment is limited to the treatment of single risk factors as dyslipidemia or high blood pressure. A decision analytic model will be developed to assess the cost-effectiveness of a new pharmacological substance for the treatment of the metabolic syndrome. In this context a methodological approach was developed to evaluate cost data that enables decision analyst to use cost data for various treatment options. METHODS: Direct and indirect costs were considered for different treatment options and for costs of long-term complications of the metabolic syndrome. Field and desk research was done to obtain data concerning resource utilisation and was reviewed by clinical experts. Prices have been taken of official catalogues. Resource utilisation and prices have been related in a cost database that enables to give cost data for different treatment options and long-term complications of the metabolic syndrome. RESULTS: The German Metabolic Syndrome Cost Database includes information of resource utilisation prices and costs. The database is constructed in a way that it supports analysis from different perspectives. CONCLUSIONS: A flexible database was developed that enables the adaptation of cost data for future projects due to new developments in treatment of the metabolic syndrome.

DEVELOPMENT AND VALIDATION OF A CLAIMS-BASED RISK ASSESSMENT MODEL TO PREDICT PHARMACY EXPENDITURES IN A U.S. MEDICAID POPULATION

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OBJECTIVES: To empirically develop and validate the Medicaid RxCost Model, a prospective risk assessment model, that uses claims-based diagnostic information to predict future pharmacy expenditures. The Medicaid Mixed RxCost (MRxCost) Model was developed to explore the gain in predictive power associated with adding drug information. METHODS: A retrospective longitudinal cohort study using a California Medicaid sample from 1998 through 2000 was undertaken. Persons who were continuously enrolled for at least 13 months, who were 18 to 64 years of age, not eligible for Medicare and were not admitted for a hospital or nursing home stay >30 days were selected. A training sample consisting of 138,454 persons was utilized to develop the models using OLS regression. A random holdout sample of 92,621 was utilized to validate the models and to compare the performance of each model. The discrimination of the models was also compared to a demographic model and the Chronic Illness and Disability Payment System (CDPS) model. Prediction ratios and measures of discrimination were estimated for hypothetical physician groups with varying patient sizes. RESULTS: Subjects were on average 35 years old, 72% were female, and annualized prescription expenditures were $497. Out of a total of 101 variables explored for the Rx-cost model, 56 were retained after variable selection procedures and clinical review. The R-square value for the Medicaid RxCost Model, the Medicaid MRxCost Model and the CDPS model using the validation sample was 0.24, 0.30 and 0.04 respectively. The prediction ratio = 0.90 and r-square = 0.50 were highest for large hypothetical physician groups (500 patients), but acceptable measures were observed for groups as low as 10 members. CONCLUSIONS: The Medicaid RxCost Model was successfully developed and it substantially outperformed the CDPS model in terms of R-square. The Medicaid MRxCost Model proved that supplementing drug information can improve discriminatory power.

PHARMACOECONOMIC ASPECTS OF THE ADMINISTRATIVE REFORMS IN PHARMACEUTICAL SECTORS OF REPUBLIC HEALTH DEPARTMENTS IN MONTENEGRO

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OBJECTIVES: In 2002 in Montenegro there was no efficient system which should follow up the prescribing practice in outpatient clinics. The total expenses for drugs were so high that they threatened to diminish the whole system of drug supply. METHODS: Therefore in 2003 at the whole Montenegro Republic a system to follow up the drug prescribing in outpatient practice was implemented. System consisted from the central unit in Republic health department, and units in the all pharmacies which give drugs on the prescriptions covered financially by Republic health department. System started on 01.01.2004. System contains bases with all drugs on market in Montenegro, all doctors, pharmacists, drug users and enables to follow the drugs way from each doctor through pharmacy to the patient. RESULTS: At the same time Republic health department introduced the new list of drugs refunded by Republic health department. The list of drugs refunded by Republic health department, so called Positive list, covered all important drugs, and was prepared in accordance to new pharmacotherapeutic guidelines. ATC/DDD methodology of drugs was used. Analysis performed one year after implementation showed that the use of drugs significantly (1368%) decreased when compared with 2002 year. Expenses were 1.5 mil E lower that on 2002/2003. From all the drugs, the most often issued drugs were for arterial hypertension and for tonsillopharingitis, more than 25% of all prescriptions. The structure of drugs prescribed was improved when compared with pre implementation period. CONCLUSIONS: Permanent monitoring and periodic analyses of informations obtained from information system in the future will additionally improve rationalization of the drug prescribing. Monitoring and analyses will show if some other administrative measurements are needed to keep this positive trend on.

ECONOMIC IMPACT OF HOSPITAL MALNUTRITION

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OBJECTIVE: Malnutrition during hospital stay has been consistently reported since the 1970s. In addition to the clinical implications malnutrition may have, it also leads to increased length of stay and drug usage due to complications. We report from a large observational database of 26 Belgian hospitals to document the potential economic impact of hospital malnutrition. METHODS: As a legal requirement, Belgian hospitals must register case-mix data for each inpatient stay in a minimum basic data set (MBDS). We extracted exhaustive and anonymous stay data from 26 hospitals (2nd semester, 2003) and identified malnourished patients as patients for whom ICD9-CM codes for “underweight” (783.22) or “severe weight loss” (783.21) were recorded. A matched analysis on APR-DRG, age and gender was then performed to compare inpatient pharmacological costs, pro-
cures costs, hotel cost and overall costs between malnourished and normally nourished patients. RESULTS: A total of 1032 malnourished patients were identified. Of those, “underweight” or “severe weight loss” was the primary diagnosis for 105 patients and the secondary diagnosis for 927 patients. Therefore, only these 927 patients were included in the matched analysis. In all, 26,067 matched controls were retrieved. The overall mean cost difference per stay between malnourished and normally nourished patients averaged €1152 (95% CI: €870; €1433). Pharmacuticals, procedures and hotel costs differences averaged €264 (€192; €336), €137 (€113; €161) and €754 (€508; €1000), respectively. The largest mean cost difference was found for APR-DRG 691-Lymphoma & non-acute leukemia: €5117 (€2544; €7691). CONCLUSION: The inpatient cost incurred by malnutrition is substantial and calls for routine pre- or inhospital nutritional screening and adequate and timely initiation of nutritional support. However, we can not exclude the possibility that only severe malnutrition was reported and recognized through hospital registries. Further studies able to report from the larger spectrum of malnutrition are strongly advocated.

**PMCh14**

**POPULATION KNOWLEDGE: AN APPROACH TO CLASSIFY A GENERAL POPULATION ACCORDING TO LIFESTYLE, HEALTH BEHAVIOUR AND ATTITUDE**

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OBJECTIVES: For decision makers, epidemiological data are key information to set up a public health care policy. By definition, these quantitative data are rarely crossed with qualitative information about population trends concerning lifestyle and health behaviour. We developed a methodological approach to detect and classify groups of subjects over 26 qualitative variables.

METHODS: A sample of 924 French subjects was included in a cross-sectional survey and answered a face to face questionnaire focusing mainly on their health perception and lifestyle. A multiple correspondence factorial analysis (MCPA) followed by Kh2 test validations were performed to detect and to classify groups of subjects. RESULTS: Four subject groups (n1 = 297, n2 = 235, n3 = 241, n4 = 151) were clearly disclosed. Group n2 was removed from the other groups and was characterized by the poorest health perception, the highest number of declared diseases (more than 6), the highest number of visits to a physician (more than 5 per year), the lowest educational level, the highest compliance to prescriptions and the highest number of obese subjects. From the n2 group, we estimated the proportion of obese subjects (BMI above 30 kg/m²) to be 63%. For this group, medical management and follow-up of their weight problems would be the most beneficial. CONCLUSIONS: This qualitative analysis is an element of population knowledge which allows us to specify usual epidemiological data. In addition, this approach is a way to target the population who would accept the public health message most easily.

**PMCh15**

**DIRECT AND INDIRECT COSTS AND EFFECTS IN COST-EFFECTIVENESS ANALYSIS OF PREVENTION: A DYNAMIC MODELLING ANALYSIS**

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The inclusion of indirect medical costs is a topic of ongoing discussion in the literature. Actual practice seems to be to include only medical costs of so-called related diseases. However, this criterion is not unambiguous since health gains in life years gained may also depend on unrelated medical care. OBJECTIVE: To compare different ways to include both direct and indirect medical costs and health affects in cost effectiveness ratios.

METHODS: Smoking cessation interventions were evaluated using a dynamic population model, the RIVM chronic disease model. This is a multistate transition model that links prevalence of risk factors to the incidence of 28 chronic diseases. Three different cost-effectiveness ratios were compared: 1) all health effects were ascribed to the smoking cessation interventions while only costs of smoking related diseases were taken into account; 2) only the minimum gain in QALY’s and life years that can be attributed to the interventions were included while only costs of smoking related diseases were taken into account; and 3) all health effects and all health care costs in life years were included. RESULTS: Ratio 1) equals €2650 per QALY gained. Exclusion of health effects on competing diseases increases the ratio to €3600 (ratio 2). Finally, if all costs and effects are included, ratio 3) equals €8560 per QALY gained, which demonstrates that the cost-effectiveness ratio increases enormously when health care costs of competing diseases are taken into account. CONCLUSION: The large differences in outcomes urges one to think about the interpretation of cost-effectiveness ratios’ and what ratio to use. We argue that for the evaluation of preventive interventions in a population model, the third ratio is the best, since it seems impossible to isolate the precise effects of an intervention.
OBJECTIVES: The Fatigue Impact Scale (FIS) is a 40-item multiple response questionnaire designed to assess fatigue, divided into cognitive, physical, and psychosocial functioning subscales. The purpose of the study was to improve the measure by removing differential item functioning (DIF) and reducing the number of items. METHODS: FIS data were available from 188 patients with multiple sclerosis (MS). These data were subjected to Rasch analysis (one-parameter logistic item response theory) using the RUMM programme. Fit to the Rasch model was examined via Chi2 statistics and assessments of DIF related to gender, age and MS type. RESULTS: FIS responses from the 188 MS patients were analysed (47/25% male; mean age 50.9, SD 10.5; 39.6% relapsing remitting, 36.9% primary progressive, 23.5% secondary progressive). Initial results showed that the 40-item FIS exhibited misfit and was not unidimensional. Several items exhibited DIF by age, gender or MS-type. For example, patients aged over 50 years scored significantly higher than patients aged 50 or younger (who had a similar level of fatigue) on the item “I have to rely more on others to help me”. DIF by MS-type indicated that answers to certain items are significantly influenced by the disease stage of the patient. After the removal of 9 items that either misfit or exhibited age or gender DIF, the reduced FIS fit the Rasch model (Chi2 p > 0.05), providing a unidimensional fatigue scale. The threshold map suggests that for some items the severity (logit) coverage of the scale is good but there remains item redundancy suggesting further scope for item reduction.

OBJECTIVES: The purpose of this study was to examine the psychometric properties of a touch screen version (Assist Technologies) of the SF-36, a widely used measure of self-reported health status. METHODS: Non-probability purposive sampling was used to recruit 300 subjects intended to reflect the primary socio-demographic characteristics of the US general adult population. The SF-36 was administered via touch screen along with the EQ-5D and other items. Amount of missing data and presence of floor and ceiling effects were assessed. Scale score internal consistency was estimated using Cronbach’s alpha coefficient. As one test of construct validity, mean scale scores were compared across groups known to differ in regard to presence of chronic conditions. Convergent and discriminant construct validity were evaluated through examination of correlations between SF-36 scales and the EQ-5D domains. RESULTS: A total of 312 respondents completed the study. Scale means and standard deviations for the touch screen SF-36 in this sample were very similar to those seen with the paper-based format in the US general population. Less than 1% of all responses were missing. The percentage of respondents at the floor for almost all scales was less than 10%. Ceiling effects were evident for several of the scales. In general, these floor and ceiling effects were very similar to that observed in the general US population. All of the reliability coefficients exceeded 0.70; the range was from 0.75 to 0.93. Respondents with one or more chronic conditions reported significantly lower scores on all eight scales of the SF-36 compared to those with no chronic conditions. The direction and strength of the correlations between the SF-36 scales and the EQ-5D domains were as hypothesized. CONCLUSION: The comparable psychometric properties and lower levels of missing data make this touch screen version a very viable alternative to the paper-based SF-36 format.

OBJECTIVES: Patient-reported outcome (PRO) measures are typically designed to instruct patients to consider a specific time-frame (recall period) when answering each item. Recall periods vary in length (i.e., 24 hours, 1 week, or 4 weeks) based upon the condition being assessed and the objectives of the research. The goal of this study was to assess patient adherence patterns to recall periods varying in duration by analyzing summaries of one-on-one qualitative patient interviews. METHODS: Data were reviewed from eight previously conducted cognitive debriefing interviews on condition specific measures that varied in recall period length. In all interviews, patients were specifically asked what recall period they had used when completing the PRO measure. The patient’s response and the questionnaire’s prespecified recall period were compared. RESULTS: Cognitive debriefing data for 115 patients (55% women) with a mean age of 57.1 was reviewed. The conditions of the ten PROs evaluated were: GERD (n = 2), Dementia (n = 2), Diabetes (n = 3), and Overactive Bladder (n = 3). Recall periods were: Daily (n = 1); 1 week (n = 2); 2 weeks (n = 2); 2 to 4 weeks (n = 1); and 4 weeks (n = 4). The majority of patients (57.9%) stated the recall period specified on the PRO measure; 14.5% recalled a general period of time (e.g. since they had the condition); 13.8% stated a time over the recall period while 12.6% stated a time under the recall period. Shorter recall periods (e.g. 1 week) had more concordant patient responses than longer recall periods (80% vs. 53%). CONCLUSIONS: Patients tend to adhere better to shorter recall periods than longer recall periods when completing PRO measures. Questionnaires with longer recall periods often result with patients thinking in general terms of their condition or using a recall period of their own.

OBJECTIVES: How long ago...? : Assessing patient adherence to specified questionnaire recall periods

OBJECTIVES: Methods for meta-analysis of summary data

OBJECTIVES: Methods for meta-analysis when a direct comparison between treatment effects is impossible, inadequate, or inappropriate.

METHODS: Detailed descriptions are presented, and these are appraised per se and in relation with conventional meta-analysis methods. The main methods can be summarised as follows: weighted mean difference of relative effect measures (e.g. mean difference, log-odds-ratio, log-relative-risk and log-hazard-ratio) and meta-regression of relative effect measures, both of which are based on traditional meta-analysis approaches, and weighted...
Bayesian regression models, which are more flexible and are simple to implement in freely available software. RESULTS: Using health outcomes research examples for illustration in each case, we describe common methodology issues arising from use of these methods, such as when small numbers of trials are analysed, when unequal trial sizes are included and when excess variability between trials (or heterogeneity) is encountered. CONCLUSIONS: For the methods considered, we offer possible solutions, make recommendations for their use and point out situations in which caution should be exercised.

EVALUATING THE DIFFERENCE BETWEEN AVERAGE WHOLESALE PRICE AND WHOLESALE ACQUISITION COST FOR PHARMACEUTICALS IN THE UNITED STATES
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OBJECTIVES: 1) To examine the percent difference between average wholesale price (AWP) and wholesale acquisition cost (WAC) for pharmaceuticals in the United States, accounting for patent status and manufacturer type, and 2) to evaluate the relationship between brand manufacturers and relabelers. METHODS: Data for this study came from the Master Drug Data Base (MDDB), which is a proprietary drug file containing pricing information for all prescription and non-prescription products available in the US. The percent difference between AWP and WAC for prescription pharmaceuticals was compared on a variety of facets, including single source, type of manufacturer (original or relapager). The difference was expressed as a percentage of AWP (a commonly used method for reimbursing pharmacies in the US). We also compared the AWP among brand name manufacturers and relabelers (who repackaged brand name pharmaceuticals produced by the original manufacturer). RESULTS: A total of 23,607 unique drug products were included in the analysis examining AWP and WAC. The mean percent difference for brand name pharmaceuticals was 0.23 + 0.11, as compared to 0.44 + 0.26, p < 0.001. Brand name drugs that were available from multiple companies had a mean difference of 0.25 + 0.14, compared to 0.20 + 0.05 for single source products (p < 0.001). The median AWP for brand name manufacturers was $3.04 per unit, compared to $3.11 per unit for relabelers. CONCLUSION: This study documents the magnitude of well-known differences between AWP and WAC for brand name and generic products. Further, branded products produced by more than one manufacturer will have larger differences between AWP and WAC than single source products. The findings suggest the need for analysts to critically evaluate the use of AWP for determining product costs in the US and substantial differences exist between single source and multiple source products. A more transparent and accurate pricing system is needed for economic analyses in the US.

ECONOMIC EVALUATION OF MEDICAL DEVICES IN FRANCE: A CHALLENGE FOR HEALTH ECONOMISTS
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OBJECTIVES: Pharmacoeconomic evaluation activities have grown rapidly in recent years, but few economic evaluations have focused on Medical Devices (MD). This study addresses the barriers to conducting economic evaluations of MD, in comparison with pharmacoeconomic evaluations, in order to develop a framework for MD economic evaluation. METHODS: First, we studied the differences between MD and drugs that possibly impact on the completion of economic evaluations. Then, we analysed items of the French Guidelines for Economic Evaluations of Health Care Technologies developed by the “Collège des Economistes de la Santé” [http://www.ces-asso.org/docs/France_Guidelines_HE_Evaluation.PDF] that might be barriers to the completion of MD economic evaluations, as compared to drugs, and we developed suggestions to overcome these barriers. RESULTS: In this abstract we present three of eight barriers to performing economic evaluations of MD. The first one relates to the feasibility of clinical trials, e.g. inadequacy of “placebo” and “double blinding” for MD testing and difficulty to include large numbers of patients. We suggest performing comparative studies for assessing clinical outcomes to be included in economic evaluations and to discuss potential bias. Secondly, MD is developed by engineers who are used to assessing technical performance, but not clinical and economic outcomes. We propose setting up collaborations between engineers, health care professionals and health economists from the very beginning of MD development. Besides, MD effectiveness often depends on the operator (health care professional or patient) and may change over time, when the operator gains experience. Health economists must, therefore, analyse the transferability of economic evaluation results from one setting to another and over time. CONCLUSION: We recommend setting up multidisciplinary groups of engineers,
health care professionals and health economists from the beginning of MD development; and defining MD to be evaluated in priority, on which economic evaluation methods should be tested before being applied to others.

**PM2C4**

**USE OF PHARMACOECONOMICS/HEALTH ECONOMIC TOOL (PE/HE) IN LOCAL HEALTH CARE DECISION MAKING (DM)**

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**OBJECTIVE:** To evaluate the basic knowledge level of DM (General manager of the Hospital-GMH- and Chief of clinical service-SCS-) about the application of PE/HE tool as influence characteristics in decision make as well as main advantages and obstacles. **METHODS:** A transversal survey was performing. In a not related forum, DM was invited to complete a self-report questionnaire about utilization of concepts of PE/HE in local health care decision make. The main inclusion criteria were the DM taken part in the process of evaluation inclusions of drugs on the basic formulary. Descriptive and multivariate analysis test were applied. **RESULTS:** A total of 139 questionnaires were included for the analysis. Male 76.99%, the mean of (SD): age 48.28 (+6.35), time of labour experience 19.5 (+7.02). The 30.22% was SCS and 14.39% were GMH. The more important characteristics for inclusions of drugs on the basic formulary are efficacy (82.73%) and safety and tolerability (76.94%). The PE/HE was fifth (64.03%). 44.60% had training in PE/HE topics. Cost-benefit was the concept mentioned more frequently (75.54%). The 68.35% used PE/HE for inclusions of drugs on the basic formulary. The probability of using PE/HE is 3.97 times (75.54%). The 68.35% used PE/HE for inclusions of drugs on the basic formulary. The probability of using PE/HE is 3.97 times deployed if DM has taken PE/HE course. The perception of the group of the advantages de PE/HE help them to optimize the stolen high if DM has taken PE/HE course. **CONCLUSION:** It is important to strengthen the knowledge and utilization of the PE/HE tools in Mexican DM.

**PM2C5**

**ANALYSIS OF QUALITY OF LIFE DATA FROM DIFFERENT UTILITY INSTRUMENTS—AN EXAMPLE USING IMPUTATION**

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**OBJECTIVES:** Utilities are increasingly used to measure quality of life (QoL) for health states, and a variety of instruments can be used for this purpose. When QoL measures for different groups are obtained using different instruments, comparing summary statistics formally is difficult and there is nothing described in the methodology or applied literature. In this presentation we propose a relatively simple approach for comparing QoL mean scores from EuroQol and Aqol questionnaires indirectly when this situation is encountered, which leads to a result equivalent to that of a t-test. **METHODS:** Using an example from a utility study for illustration, we describe a method based on multiple imputation (MI), an approach commonly used to deal with missing data. From an estimate of the correlation between the total mean scores, we describe how simple linear regression can be used to obtain imputed values of EuroQol scores from Aqol scores. The multiple imputation approach then offers simple techniques to obtain pooled estimates of mean difference and variance on the EuroQol scale.

**RESULTS:** We show how the resulting data can be used in a simple way to generate a valid t-test statistic on the same QoL scale. We then briefly discuss the strengths and weaknesses of this approach from the point of view of QoL measures as well as methodology. **CONCLUSIONS:** The approach we present can be used to compare data from different QoL instruments. We summarise the circumstances under which such comparisons would be valid, and also highlight situations when this approach should not be used.

**PM2C26**

**DEVELOPMENT AND VALIDATION OF A DUTCH VERSION OF THE LONDON HANDICAP SCALE**

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**OBJECTIVES:** To describe the development and validation of a Dutch version of the London Handicap Scale (DLHS). This questionnaire was based on the London Handicap Scale, a valid and reliable utility instrument for measuring social participation in adults. **METHODS:** The DLHS was tested in 803 adults with a questionnaire consisting of the DLHS itself, the Impact on Participation and Autonomy’ questionnaire (IPA), the Dutch version of the EuroQol EQ-5D and questions concerning e.g. chronic diseases, use of medical devices. The study population consisted of patients with rheumatoid arthritis, car/asthma, epilepsy, larynchotomy and multiple sclerosis. **RESULTS:** Content validation, evaluated by relating the scores on the dimensions of the DLHS and the number of chronic diseases was satisfactory. Conceptual validation was shown by large (or some moderate, most large) correlations of predefined pairs of the DLHS dimensions with domains of the IPA. Correlations between the DLHS sumscore and the IPA subscales were considerably larger than corresponding correlations between the EQ-5D and the IPA subscales, indicating a good concurrent validity of the DLHS. The ability of the DLHS to discriminate between various subgroups of chronically ill persons five criteria was shown by correlating the DLHS sumscore with five predefined criteria. **CONCLUSIONS:** Based on this evaluation the questionnaire seems feasible and valid for assessing differences between different subgroups of chronically ill or disabled persons in The Netherlands.

**PM2C27**

**THE DEVELOPMENT OF A TREATMENT SATISFACTION QUESTIONNAIRE FOR IRON OVERLOAD (IO) PATIENTS ON CHELATION THERAPY (CT)**

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**OBJECTIVES:** Desferal (DFO), the most common CT for IO, requires infusions of 8–12 hours, 5–7 days per week. Oral formulations are in development. Consequences of the high burden of current chelation therapy with Desferal are poor treatment adherence and satisfaction potentially leading to sub-optimal clinical outcome. However, CT-specific satisfaction questionnaires have not been developed. **METHODS:** Five steps were taken to develop the satisfaction questionnaire: literature review, patient interviews, clinician interviews, item generation and content validity testing. Three IO expert interviews and four patient interview transcripts were reviewed to assess satisfaction with DFO and reactions to a hypothetical oral CT. Items were developed based on these steps and tested in nine patients.
MUSCULAR-SKELETAL DISORDERS

(US/UK). Patients also provided their opinions of current CT with DFO to ensure that no major concepts were omitted. RESULTS: The literature review revealed no IO or CT specific questions and, although several articles recounted DFO’s inconvenience and impact. Patient and clinician interviews suggested that patients were most concerned about the efficacy, side effects, convenience and costs of any new IO treatment. Satisfaction with DFO was low, primarily due to local site reactions, inconvenience, and the constraining nature of the therapies. Presented with a hypothetical oral CT, patients unanimously preferred oral CT. A 40-item questionnaire was developed that assessed patients’ expectations of and satisfaction with attributes identified as important including efficacy, safety, convenience and side effects, along with costs, overall satisfaction, treatment impact, patient compliance, and preferences. Results from the content validity testing resulted in additions to the instructions and the rewording of six items. CONCLUSIONS: To accurately assess patient input should be obtained. In the absence of real-life experience with the proposed therapy, unbiased hypothetical product profiles were used to elicit the dimensions important to patients, and this is consistent with established methods. Psychometric validation is currently underway.

ITEM RESPONSE BIAS IN INSTRUMENTAL ACTIVITY DAILY LIVING SCALE IN ASIAN OLDER ADULTS

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OBJECTIVE: Item response bias (also called differential item functioning, DIF) in Instrumental Activities of Daily Living (IADL) occurs when members of different groups possessing the same disability level do not have the same probability of responding positively for a given item(s). This study aimed to identify the extent of DIF by gender, age, ethnicity and dementia groups in IADL estimates in Asian (Chinese, Malay and Indian) elderly subjects. METHODS: Data of the 2003 National Mental Health Survey were analyzed from 1072 non-institutionalized elderly subjects using multiple indicator–multiple cause latent variable (MIMIC) modeling. RESULTS: Given the same functional level, older elderly were less likely to report receiving help with preparing meals; men were more likely to report receiving help with preparing meals, doing laundry, and taking medication; Malays were more likely to report receiving help with using telephone; and demented elderly were more likely to report receiving help with using telephone, managing money, taking medications, and “getting around”. The impact of DIF on group differences was highest for gender (54.0%), ethnicity (42.9%), dementia (14.7%) and age (2.4%). CONCLUSION: Item-response bias in IADL estimates by gender, age, ethnicity and dementia should be considered in direct comparisons of disability status among population groups.

MUSCULAR-SKELETAL DISORDERS

COST ANALYSIS OF MANAGEMENT STRATEGIES FOR CLOSED AND OPEN GRADE I TIBIAL SHAFT FRACTURES

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OBJECTIVES: To conduct a cost analysis of current competing strategies for the management of patients with closed and open grade I tibial shaft fractures, from both a governmental and societal perspective. METHODS: Our cost analysis was performed for four competing treatment strategies for management of closed or grade I open tibial fractures: 1) casting alone; 2) casting with therapeutic ultrasound; 3) operative treatment with non-reamed intramedullary nailing; and 4) operative treatment with reamed intramedullary nailing. The time to radiographic fracture union was used as the measure of effectiveness. Given the multiple clinical alternatives, each with the potential to result in a number of outcomes, a decision tree was used to perform all cost analyses. Sensitivity analysis was conducted through Monte Carlo simulations. RESULTS: From a governmental perspective the mean associated costs were USD $3365 (standard deviation [SD] ± 1425) for operative management by reamed intramedullary nailing, $5041 (SD ± 1363) for operative management by non-reamed intramedullary nailing, $5017 (SD ± 1370) for casting, and $5312 (SD ± 1474) for casting with therapeutic ultrasound. From a societal perspective the mean associated costs were ($12,449; SD ± 4894) for reamed intramedullary nailing, ($13,266; SD ± 3692) for casting with therapeutic ultrasound, ($15,571; SD ± 4293) for operative management by non-reamed intramedullary nailing, and ($17,343; SD ± 4784) for casting alone. CONCLUSIONS: Our preliminary cost analysis suggests that, from both a governmental and societal perspective, reamed intramedullary nailing is the treatment of choice for closed and open grade I tibial shaft fractures. However, there is evidence that, from a societal perspective, treatment of low energy tibial fractures with therapeutic ultrasound and casting may also be an economically-sound intervention.

COST-EFFECTIVENESS ANALYSIS OF ACLASTA IN PAGET’S DISEASE OF BONE IN BELGIUM

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OBJECTIVES: To assess, in the Belgian setting, the costs, efficacy, and cost-effectiveness of zoledronic acid 5 mg (Aclasta) versus conventional therapies (tiludronate (Skelid), pamidronate (Aredia), and risedronate (Actonel)) in the management of patients with Paget’s disease of bone (PDB). METHODS: Based on efficacy data from pivotal zoledronic acid 5 mg clinical trials and the literature, a decision tree model was developed to reflect the treatment path with the different drugs compared. This model takes into account four health states and links efficacy data to Belgian resource use data. It covers a 2-year time horizon. The outcome measure chosen is time in response, defined as time in which serum alkaline phosphatase is controlled. Direct medical costs, from the perspective of the health care payer (INAMI/RIZIV) were considered and discounting was applied in the second year. The consumption of medical resources (drug treatments including administration costs, laboratory tests, and physician consultations) was assessed via expert opinion. RESULTS: Over two years, the expected average numbers of months in response for patients treated with zoledronic acid 5 mg and conventional treatments (tiludrionate, pamidronate, and risedronate) are: 20.9 months; 11.1 months; 9.3 months; and 16.2 months, respectively. Over this period, the expected average costs for patients treated with zoledronic acid 5 mg and conventional treatments (tiludronate, pamidronate, and risedronate) are: €686; €1525; €1245; and €793, respectively. Hence, zoledronic acid 5 mg dominates all the other bisphosphonates compared, i.e. zoledronic acid 5 mg is less costly and more effective.
This is mainly due to the lower average number of treatment cycles needed with zoledronic acid 5mg, also considering the improved compliance with the IV infusion. The probabilistic sensitivity analyses performed show that the results are robust.

CONCLUSION: Based on our evaluation, in PDB, zoledronic acid 5mg is both more effective and less costly than the other bisphosphonates currently reimbursed in Belgium.

A COST EFFECTIVENESS MODEL FOR THE EVALUATION OF TOTAL HIP ARTHROPLASTY (THA) AND TOTAL KNEE ARTHROPLASTY (TKA) IN SWEDEN

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OBJECTIVES: The objective of this study was to develop a flexible health economic simulation Markov cohort model that can be used to assess the cost-effectiveness of different treatment strategies within the hip and knee arthroplasty area in Sweden.

METHODS: The Markov cohort model included the following health states: No event, Revision, re-revision and dead. The model has stochastic capabilities and the uncertainty in the risk of revision, mortality after revision, costs and quality of life were accounted for by bootstrapping technique. For exemplification the model was used to estimate the cost-effectiveness of a cemented implants with antibiotics compared to cemented implants without antibiotics in a Swedish setting for both patients with THA and TKA. Data used to populate the model was mainly derived from the Swedish National Hip Arthroplasty Register and the Swedish Knee Arthroplasty Register and the Swedish National Inpatient Register. The analysis had a societal perspective (i.e. the aim is to include all relevant costs irrespective of who incur them). In the base case simulations patient were followed for 10 years after the arthroplasty. RESULTS: An antibiotic cemented implant compared to an implant without antibiotics was found cost saving both for patients having a THA and TKA who received treatment significantly increased by 8% (p < 0.01; 6% in obese), but 62% of these patients’ A1c was still uncontrolled. DM patients often have comorbidities of hypertension (67%; 4% increase), followed by hyperlipidemia (48%; 12% increase), and retinopathy (27%; 11% increase) and these comorbidities are more prevalent in obese DM patients. CONCLUSIONS: DM has become very rapidly prevalent in US adults, with the greatest increase in Hispanics. Approximately half of DM patients did not have their A1C level controlled and one-fifth still did not receive treatment. DM patients who were obese were less likely to control their A1c compared to overall DM patients.

PREVALENCE TRENDS OF OVERWEIGHT AND OBESITY AND WEIGHT CONTROL PRACTICES AMONG ADULTS IN THE US

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OBJECTIVES: To estimate prevalence trends of overweight and obesity and to assess relationship between weight status and physical activity in adults ≥20 years old. METHODS: Three National Health and Nutrition Examination Surveys, NHANES (II) for 1976–1980, NHANES (III) for 1988–1994, and NHANES (IV) 1999–2002 were used. Based on body mass index (BMI), adults were classified as overweight (BMI 25 to <30) or obese (BMI ≥ 30). Duration of physical activity was calculated using leisure-time physical activity to determine compliance of CDC recommendations. SAS and SUDAAN softwares were used to account for the complex survey designs. RESULTS: The mean BMI increased from 25.31(II) to 28.02(IV). During the study period of II–IV, the prevalence of overweight and obesity changed from 31.4% to 34.7% and from 14.5% to 30.2%, respectively. Obesity significantly increased 7.8% for II– III (p < 0.001) and 7.9% for III–IV (p < 0.001). The prevalence of overweight individuals increased most rapidly in adults 20–39 years old. Obesity increased most rapidly in patients 40–64 years old for II–III and 20–39 years old for III–IV. Hypertension was more prevalent in obesity (75.2%[II], 50.7%[III], 48.0%[IV]) than overweight (54.5%[II], 33.7%[III], 34.1%[IV]), yet for both groups decreased over time. During IV, overweight adults spent an average of 240 minutes per week for physical activity, and obese adults spent 170 minutes. Only 43.2% of overweight and 37.5% of obese took medications or followed physical activity guidelines to lose or control weight.

TRENDS OF DIABETES MELLITUS PREVALENCE AND TREATMENT PATTERNS ASSOCIATED WITH OBESITY IN THE US

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OBJECTIVES: To examine trends of prevalence and treatment patterns of diabetes mellitus (DM) in adults and to determine the relationship between DM and obesity. METHODS: This study used Third National Health and Nutrition Examination Survey (NHANES III for 1988–1994) and NHANES 1999–2002, representing a national sample of the non-institutionalized civilian US population. Adult DM patients were identified if they were ≥20 years old, and were previously diagnosed with DM by a physician or currently using DM therapy (hypoglycemic agent/insulin). These patients were classified as obese if body mass index ≥30. Nationally representative prevalence was estimated using sample weights. Data were analyzed using SAS and SUDAAN statistical softwares to adjust for the complex sample design. RESULTS: The age-adjusted prevalence of DM was 6.8% in 1999–2002 compared to 5.4% in 1988–1994 (p < 0.001). Approximately 51.6% of DM patients were obese in 1999–2002 (44.1% in 1988–1994). During 1999–2002, DM was more prevalent in patients aged 65–74 (16.31%) and was increased most rapidly in this age group (4.5% increase; p < 0.05). DM was most prevalent in Whites (61%; 12.7% decrease from NHANES-III; p < 0.05), followed by Blacks (16%; 1%; increase), and Hispanics (16%; 10% increase; p < 0.05). More obese DM patients were treated with mediation than non-obese DM patients (84% vs. 80%). During study period, DM patients who received treatment significantly increased by 8% (p < 0.01; 6% in obese), but 62% of these patients’ A1c was still uncontrolled. DM patients often have comorbidities of hypertension (67%; 4% increase), followed by hyperlipidemia (48%; 12% increase), and retinopathy (27%; 11% increase) and these comorbidities are more prevalent in obese DM patients. CONCLUSIONS: DM has become very rapidly prevalent in US adults, with the greatest increase in Hispanics. Approximately half of DM patients did not have their A1C level controlled and one-fifth still did not receive treatment. DM patients who were obese were less likely to control their A1c compared to overall DM patients.
THE ECONOMIC BURDEN OF ADULT OBESITY. WITH SPECIAL REFERENCE TO DRUG CONSUMPTION: ESTIMATES FROM THE KORA STUDY REGION

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OBJECTIVES: To analyze the association between costs of illness and degree of obesity for a population-based sample of German adults. METHODS: In a cross-sectional resident population survey in the KORA study region of Augsburg, Germany (random sampling, N = 947, age: 25–74 years), body mass index (BMI) was assessed anthropometrically and categorized into normal weight (18.5 ≤ BMI < 25), preobese (25 ≤ BMI < 30), obese class 1 (30 ≤ BMI < 35) and obese classes 2–3 (BMI ≥ 35). Health care utilization and inability to work were assessed by self-reports via three computer-aided telephone interviews over six months. For drugs, actual prices were used; for all other direct cost components, costs were calculated by imputing mean unit costs on the reported resource consumption figures. Indirect costs (productivity loss due to temporary inability to work) were valued by individual gross earnings. Multivariate regression models were used to estimate the effect of BMI on direct and indirect costs of illness, while controlling for age, sex, social status, and urban vs. rural place of residence. RESULTS: Compared with persons of normal weight, obesity class 1 (obesity classes 2–3) was associated with 39% (63%) higher costs of visits to general practitioners, 51% (388%) higher costs of inpatient hospital care, and 19% (136%) higher costs of drug utilization. Higher drug expenditures for male obese adults were particularly due to diseases of the alimentary tract and metabolism and diseases of the musculoskeletal system, and for female obese adults due to diseases of the cardiovascular system. Altogether, yearly per capita costs of illness (direct plus indirect) in these 3 groups added up to €2116€ (95% CI €1427–€2805), €2643 (95% CI €1848–€3438), and €5453 (95% CI €4102–€6803). CONCLUSIONS: Results point to a considerable economic impact of obesity, especially obesity classes 2–3. The lesson for health care research is that obesity class 1 and obesity classes 2–3 should be analyzed separately.

POB4

COST-OF-ILLNESS ANALYSIS OF JUVENILE OBESITY AND OF CO-MORBIDITY TYPE 2 DIABETES MELLITUS (T2DM) IN GERMANY

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OBJECTIVES: Obesity among children has developed into a major public health problem in Germany. In 1999 15% of children aged 14–17 years were obese and approximately 1% of these were diabetics. Obesity and T2DM are important causes of morbidity among young people associated with high costs for the health system. The objective of this paper is to estimate the economic burden of illness of obesity and T2DM of children and adolescents in Germany. METHODS: Cost calculations are based on the top down approach and the prevalence method. Direct costs of illness are derived from aggregate statistical data and various scientific publications. Included are costs of hospitalization (ICD 10: obesity E 65–67; T2DM E 11), costs of rehabilitation and costs of special medical programs for obese children. Other direct costs (as e.g. costs of remedies and aids or costs of drugs) could not be included due to a lack of data; the same holds for indirect costs. Except for T2DM, co-morbidities of obesity are neglected in this analysis. RESULTS: During 1999–2003 the mean direct costs of obesity per year were €58.3 million with €51.8 million for rehabilitation, €3.2 million for hospital care and €3.3 million for special medical programs. The costs of juvenile T2DM were €9.7 million (hospital care). Mean costs per treated obese child added up to €3540 and to €5720 per treated obese child with T2DM. CONCLUSION: Obesity and T2DM are rapidly emerging as major disorders of childhood and adolescence and as important cost drivers for the health system. There is a need for further research in costs of obesity and T2DM of children and for studies on intervention to obviate a major public health crisis in Germany. The challenge for health policy is to identify effective and efficient prevention strategies.

POB5

AN ANALYSIS OF THE IMPACT OF BARIATRIC SURGERY ON HEALTH OUTCOMES AND PHARMACOLOGICAL TREATMENT AMONG OBESE PATIENTS

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OBJECTIVE: To identify the impact of bariatric surgery on health outcomes and pharmacological treatment among obese patients. METHODS: A comprehensive analysis of 833 patients with a diagnostic of obesity (ICD-9-CM = 278) with a CPT code of bariatric surgery (43,659, 43,842, 43,843, 43,846, 43,847, 43,999, S2085) was performed. The sample was drawn from a US administrative claims database covering 2.2 million lives. Diagnostics and pharmacological treatment were compared in the 180 days preceding the surgery and days 30–210 following the surgery. Frequency counts were performed on diagnostics using aggregated 3 digit ICD-9-CM codes and pharmacological treatment using AHFS (American Hospital Formulary Service) therapeutic classes. Pre- and post surgery frequencies were compared using chi-squared tests. RESULTS: Among the 833 patients (mean age = 42.3, 15.1% male), cardiovascular disease was cut by half (from 47.5% to 23.9%), diabetes mellitus was reduced from 18.0% to 12.9%, and respiratory disease in general was reduced from 57.7% to 14.8% while asthma in particular dropped from 11.2% to 3.7%. Diseases of the joints and muscles were reduced from 57.7% to 14.8% while asthma in particular dropped from 11.2% to 3.7%. Diseases of the joints and muscles were reduced from 36.6% to 24.0%. Psychiatric disorders fell from 18.4% to 9.7%. On the contrary, anemia diagnoses increased from 4.1% to 13.6%. The frequency of pharmacological treatment for the conditions identified above fell dramatically often to a greater extent than the reduction in the prevalence of the underlying condition. The percentage of patients receiving insulin treatment and oral antidiabetics decreased from 5.2% to 2.2% and from 12.7% to 4.3%, respectively. The proportion of patients receiving treatment for cardiovascular diseases (Ace inhibitors, calcium channel blockers, diuretics, betablockers, and other hypotensives) fell from 39.3% to 26.1%. Antiacid use also dropped from 26.8% to 22.2%. All differences between pre- and post surgery proportions are statistically significant (P = 0.05). CONCLUSION: Bariatric surgery is associated with significant improvements in health outcomes and reduced pharmacological utilization for major disease categories.

POB6

MODIFICATION OF LIFE STYLE AND OBESITY MANAGEMENT IN PRIMARY CARE

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OBJECTIVES: 1. Dietary behavioural in an overweight and obesity population in treatment, 2. Physical activity, 3. To evaluate if the group that reaches the minimum objective (weight loss > 5%), has got more life style changes. METHODS: Randomised controlled trial, 165-subjects: 70 control, 95 intervention. Weight-reduced intervention, one year follow-up: low-calorie diet, physical exercise promotion, behavioural modification techniques and health education. Variables: Sociodemography, nutrition behaviour, physical activity, anthropometry (weight-loss percentage, body mass index). Intention to treat analysis: ANOVA, ji2; SPSS 11.0. RESULTS: Age 47.1 (SD12.1). In total, 82.4% Women, 53.9% very unsatisfied with the body image, 24.8% has never tried a weight-loss programme, 13.3% has tried anorectic drugs. Meal Patterns: 93.3% eats at home, 65.9% in family, 76.4% cooks herself, 65.2% eats only 2-times/day, 61.9% snacks and 54% eats bing, secret or night. Medium meal-time: 20.1 min (SD8.45). Their favourite foods: 37.6% sweets, 21.8% animal fats, 11.5% bread or flour foods, 5.5% fruit and vegetables. Smoking 25.5%, drinks no alcohol 71.8%, no exercise 61.2%. Homogeneity between control-intervention groups: without significant differences in age, sex, socioeconomic characteristics and lifestyle behaviour. There are no differences in weight measurements. Seventy-two subjects are lost (43.6%). No significant differences between the lost group and these who complete the therapy in age, sex, previous pathology, habits or weight. In the group that reaches the minimum objective, there is declining of snacking, less appetence of binging, secret or night eating, increasing of the daily meals and more time needed in every meal (<0.05). Increasing physical exercise during and post-treatment are associated with weight loss >5% (p < 0.05). Higher intensity grade of physical activity during the diet is related with leaving obesity (p = 0.00) and returning normal weight (p < 0.001). People with successful outcome, experiment increasing satisfaction with the body image (p = 0.00). CONCLUSIONS: 1. Nutrition behaviour in overweight and obese patients are far away of the healthy lifestyle recommendations. 2. 61.2% no exercise. 3. The improvement in life style habits produces a significant weight loss >5%.

COSTS AND HEALTH CARE CONSUMPTIONS IN THE ABDOMINALLY OBESE POPULATION
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OBJECTIVES: Prospective Obesity Cohort of Economic Evaluation Determinants (PROCEED) is an ongoing longitudinal cohort of overweight subjects aged 35–75 intending to lose weight. The primary objective is to compare health care consumptions and costs in subjects who are overweight (BMI 25 kg/m²) with or without abdominal obesity (AO) (waist circumference 102 cm for male and 88 cm for female) versus non-overweight subjects (BMI 20–24 kg/m²). METHODS: Recruitment started in the US in November 2004. Internet-based follow-up assessments will occur monthly for weight and waist circumference of overweight subjects, and quarterly for health and economic outcomes (hospitalizations, ER, outpatient services, prescription medications for selected conditions) of all subjects. RESULTS: Baseline analysis was conducted on non-overweight subjects (100) and overweight subjects with waist circumference measurement (293 without AO and 674 with AO). Health care resource costs per participant were calculated by applying unit costs to health care resource consumption reported at baseline during the past 3 months. Mean costs in overweight subjects with AO were almost twice those in overweight subjects without AO ($132 versus $72), and over 3.5 times those of controls ($37). Overweight subjects with AO compared with those without AO were more likely to have reported current prescriptions for depression (21.1% versus 12.3%) and diabetes (11.9% versus 4.4%). The percentage of subjects with zero costs was 23% and 31% in the overweight group (AO and non AO, respectively) compared with 39% in the control group. CONCLUSION: Abdominal obesity appears to be associated with markedly increase costs, especially those related to prescriptions. As the PROCEED cohort progresses, further collection and analyses of economic outcomes will allow a deeper understanding of the impact of abdominal obesity on costs and health care consumptions.

POB7

VALIDITY OF DATA COLLECTED FROM AN INTERNET-BASED COHORT STUDY
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OBJECTIVES: Assessment Towards Tobacco Economical and Medical Prospective Trial (ATTEMPT) is a prospective multinational observational longitudinal cohort designed to examine the natural course of successive smoking cessation attempts and their impact on health and economic outcomes. In order to evaluate the validity of the data collected via the Internet, self-reported weight and waist circumference (WC) were compared to in-home assessed measurements. METHODS: Subjects were recruited from existing Internet consumer panels Harris Interactive in 5 countries: Canada, France, Spain, the UK and the US. Subjects had to be aged 35–65 years, smoke at least 5 cigarettes per day, and intend to quit smoking. Assessments included questions on smoking status, health conditions, medical resource use and quality of life. Study participants were mailed at home standardized weight scales and tape measures with instructions. In-home assessments were performed by a health professional in a random sample of the US subjects right after they completed the quarterly Internet survey. RESULTS: Out of the 4647 subjects included at baseline, 3242 (70%) completed the 3-month assessments and 2917 (63%) completed the 6-month assessments. In the US, 1147 (78%) subjects agreed to the in-home visit and 200 visits were conducted according to protocol specifications in December 2004 and January 2005. No statistically significant difference and high positive correlations were found between self-reported and observed weight (mean ± SD difference: under-self-reported +0.6 ± 6.3 kg; correlation: 0.95) and waist circumference (over-self-reported –0.3 ± 10.3 cm; 0.81). The distribution of demographic characteristics for the assessed sample was similar to characteristics of the remaining cohort. CONCLUSIONS: Based on good correlations between in-home visit and self-reporting on the web in the US, Internet is a reliable tool to collect health related data. As the ATTEMPT cohort progresses, this analysis will be reassessed with a greater sample size and further explored in other countries.

EVALUATION OF THE ASSOCIATION BETWEEN BODY MASS INDEX, WAIST CIRCUMFERENCE AND HEALTH-RELATED UTILITY (EQ5D)
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OBJECTIVE: A higher Body Mass Index (BMI) is associated with decreased quality of life (QoL). Additional anthropometric
measurements like waist circumference (WC) may define obesity and explain its health consequences. The objective of this study was to determine if utility (EQ5D index) varied by BMI category, as WC varied. **METHODS:** This retrospective study used the latest data from the England Health Survey (2003). A general linear model (GLM) was developed that included factors associated with utility, standardising for age and sex to generate estimates of utility with relation to obesity (obesity categories: normal [NL, BMI 18.5–24.9 kg/m²], overweight [OW, 25.0–29.9 kg/m²], obese [OB, ≥30 kg/m²], and thirties of WC, L = low, M = medium, and H = high). **RESULTS:** The standardised mean utility by BMI category for men was: NL = 0.887, OW = 0.894, OB = 0.858. Standardised mean utility by BMI category for women was: NL = 0.879, OW = 0.871, OB = 0.812. Standardised mean utility by WC category for men was: L = 0.887, M = 0.877, H = 0.866. Standardised mean utility by WC category for women was: L = 0.872, M = 0.873, H = 0.833. BMI and WC were dependent and interacting determinants of utility. For females in the nine obesity groups, the standardised mean utility was as follows: NL = 0.878, NW = 0.877, NH = 0.882, OW = 0.896, OW = 0.873, OH = 0.844, OB = 0.822, OB = 0.877, M = 0.882, NW = 0.882, NH = 0.888, OW = 0.907, OW = 0.893, OH = 0.883, OB = 0.892, OB = 0.856, OH = 0.828. **CONCLUSIONS:** In both women and men, the highest EQ5D

**POB10**

**VALIDATION OF A PATIENT-REPORTED OUTCOMES QUESTIONNAIRE FOR ASSESSING POSITIVE WELL-BEING ASSOCIATED WITH BEHAVIORAL CHANGES**

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Based on 31 concept-elicitation interviews of former smokers and individuals who wanted to lose weight, a questionnaire was developed simultaneously in three languages (French, US-English and US-Spanish). Draft items were generated in each language and culturally adapted into Spain-Spanish and UK-English. Face validity was assessed through 30 cognitive debriefing interviews; resulting in a 27-item questionnaire. **OBJECTIVE:** To validate a questionnaire that investigates the positive well-being associated with behavioral changes in adults. **METHODS:** The psychometric properties of the questionnaire were examined in US-English, US-Spanish and French through a stand-alone study in former smokers and individuals who wanted to lose weight. **RESULTS:** Based on an initial Principal Component Analysis (PCA) and item-item correlation analysis, 18 items were retained. A final PCA indicated that the questionnaire encompassed five dimensions: Serenity; Healthy Lifestyle, Support from Others; Self-Confidence, and Social Life. The questionnaire surpassed the threshold for internal consistency reliability for all dimensions and globally (Cronbach's alpha > 0.8) in both behavioral changes and in all languages. All items surpassed the criterion for item-convergent validity and item-discriminant validity was satisfactory for 17/18 items. Correlations between the questionnaire and the Psychological General Well-Being index (PGWBi) scores confirmed its validity and indicated that it supplements information obtained through the PGWBi. Known-groups validity was satisfactory in individuals who wanted to lose weight based on the amount of weight lost, BMI reduction and number of weight loss attempts, but was inconclusive in former smokers because the abstinence status and the discontinuation of smoking cessation aids were not confirmed. **CONCLUSION:** Results support the reliability and validity of this questionnaire making it a useful tool for determining the positive well-being associated with behavioral changes. The questionnaire is currently undergoing additional validity testing in a population where smoking status is assessed.

**URINARY/KIDNEY**

**PUK1**

**THE TIMELY CONSTRUCTION OF AN ARTERIOVENOUS FISTULAE: A KEY FACTOR IN REDUCING MORTALITY AND MORTALITY AND IMPROVING ECONOMIC EFFECTIVENESS**


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**OBJECTIVE:** To analyze morality, mortality and the impact on cost-effectiveness caused by the delay in having adequate arteriovenous fistulae (AVF) at start of hemodialysis (PHD).

**METHODS:** Prospective study of 110 patients who started PHD between January 1st 2002 and July 31 2004 with creatinine clearance of 5–10 mL/minute/1.73 m². Data: sociodemographic, Charlson Comorbidity Index (CCI), type and duration of the vascular access (VA), “de novo” morbidity and hospitalisations. Patients were separated into three groups according to the VA at start of PHD (AVF group): Group 1 (G1) having an adequate functioning AVF before initiating HD; group 2(G2) not having an AVF at the start of HD, but having it before three months; group 3(G3) using catheters during the first three months. Patients who had a delayed nephrology referral, those who suddenly started PHD and those with Diabetes mellitus were excluded because these are mortality risk factors. **RESULTS:** There were no significant differences between the three groups with respect to initial variables of patients: age (p = 0.10), sex (p = 0.45), diagnostic of renal disease (p = 0.24) and CCI (p = 0.76). G1 patients had lower “de novo” morbidity and less hospitalisations (p = 0.000). A logistic regression was applied with morbidity and hospitalisations as dependent variables and age, sex, CCI and AVF-group as co-variables: G2 and G3 were independently associated with higher morbidity and hospitalisations (p < 0.01). Kaplan-Meier analysis showed that G1 had better survival than G2 and G3 (33 months vs. 27 and 24) and patients without morbidity had better survival than those with. The Cox Regression (time dependent model) analysis showed that not having an adequate AVF at start of PHD (G2 and G3) reduced survival (RR: 11.32; CI: 1.06–120.6). Cost-effectiveness analysis showed that G1 patients with respect to G2 and G3 had better survival and lower cost per live gained month. **CONCLUSIONS:** “De novo” morbidity caused by not having an adequate AVF at start of PHD considerably decreases survival and implies higher cost.
Abstracts

PUK3

CLINICAL IMPACT OF NONCOMPLIANCE AFTER RENAL TRANSPLANTATION
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OBJECTIVES: Noncompliance to immunosuppressive medication regimens in renal transplant recipients is an important factor affecting graft survival. The objective of our study was to examine the prevalence of noncompliance, to verify factors associated with this condition as well as to assess the long-term impact of noncompliance on graft survival after renal transplantation in Latvia.

METHODS: Noncompliance with medication and follow-up care was retrospectively evaluated in 311 adult renal transplant recipients (mean age 48.7 ± 14.4 years, 48.2% female, 86.8% primary graft) with at least a 5 year follow-up period, using self-report questionnaires, clinician rating, 20% rate of missing outpatient visits and measurement of the amount of medication that remained unused (on account of pharmacists’ report of non-received pills). Thus, our patient compliance data included considerations of natural environment.

Long-term graft and patient outcomes in compliant and noncompliant patients were acute rejection rate and chronic allograft dysfunction, graft and patient one, three and five year survival.

RESULTS: The prevalence of immunosuppressive medication regimen noncompliance in this patient setting was 6.1% and prevalence of appointment noncompliance was 7.1%. Noncompliant patients had more acute rejection episodes (P < 0.05) and chronic allograft dysfunction (P = 0.02). Risk of all cause graft failure in the noncompliant group was higher—OR 9.3 (95% CI 3.0–28.8; P < 0.001) compared to the compliant group. Graft survival at one, three and five years was 88.3%, 81.3% and 75.7%, respectively, for compliant patients and 73.7%, 61.4% and 37.9% respectively for noncompliant patients (Log Rank 5.09; P = 0.02). The risk factors associated with noncompliance was younger age (P < 0.05) and a immunosuppressive regimen with the highest number of pills (P = 0.02).

CONCLUSIONS: Patients’ compliance with medication and follow-up care after renal transplantation shows long-term clinical benefits. Thus, it is of utmost importance to develop intervention strategies to enhance compliance in this population.

PUK4

BUDGET IMPACT ANALYSIS OF MIMPARA AMONG DIALYSIS PATIENTS IN BELGIUM USING A MARKOV SIMULATION MODEL
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OBJECTIVE: To demonstrate the impact of Mimparsa (MIM), a drug against secondary hyperparathyroidism (sHPT), on the dialysis health care budget in Belgium over time. METHODS: A Markov model was developed to compare cost of dialysis patients on standard treatment of care (SOC) with patients on MIM + SOC (add-on model). The model operates in 1/2 year cycles over 5 years starting with a cohort of 5,400 patients (prevalence data). Each year new cases were added to the cohort and a % dropped out due to death or renal transplant. Mortality risk was calculated from 2-year cohort dialysis database (CDB) (n = 13,000). Patient distributions for sHPT, calcium x phosphor values, and MIM dosages were taken from phase III trials for the MIM arm and from the 2-year CDB for the SOC arm. Patients withdrawing from MIM were treated as SOC patients. According to CDB 35% of the initial cohort may receive MIM (= % of sHPT). Drug uptake was 30% in first cycle with 20% increase per added cycle. MIM drug costs were €3109/year in first cycle and €2617/year per added cycle as only drug responders (85%) remained on study drug. Other treatment costs were taken from a retrospective cost study in Belgium using average daily cost of €214 per dialysis patient, plus €50/day for sHPT. Annual 3% discount rate was applied. RESULTS: Cumulative 5-year cost difference of €7.4 million was seen between SOC- and MIM-arm (<0.4% total cost increase with MIM). Running the analysis per year, cost savings early in MIM-treatment were observed due to reduction in treatment costs of morbidities related to shift from sHPT. Slight increase in treatment costs was seen later on due to observed survival benefit with MIM. CONCLUSION: Major budget shifts will not be seen with Mimparsa in its approved indication.

PUK5

ECONOMIC EVALUATION OF EVEROLIMUS WITH REDUCED-DOSE CYCLOSPORINE IN DE NOVO RENAL TRANSPLANT RECIPIENTS IN HUNGARY
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OBJECTIVE: The objective of this study was to assess the economic impact of everolimus with reduced-dose CsA in de novo renal transplant recipients in the Hungarian health care setting.

METHODS: Analyses of the trial RADB201 found that total direct medical costs (costs without everolimus, CsA and MMF) are mostly dependent on key clinical events, i.e., number of days on dialysis (hemo- and peritoneal), inpatient length of stay (LOS) due to adverse events (AE) or infection (INF), and episodes of biopsy proven acute rejection (BPAR). A multivariate regression model was applied on the RADB-201 database to predict total direct medical costs based on these clinical events. The obtained coefficients, adjusted for patient characteristics, were applied to the clinical data of the RADA-2306 trial, hence predicting the economic consequences of the reduced CsA dose . We applied Hungarian unit costs to the entire clinical database. The time horizon of the analysis was one year. RESULTS: The model predicted that the incremental cost for one day on hemodialysis and peritoneal dialysis was HF 134,617 and HF 50,149, one day of hospitalization due to AE and INF was HF 41,685 and HF 45,231 and the one BPAR event reached HF 523,907, all these...
parameters with p < 0.001. Compared to MMF, reduced-dose of CsA with everolimus decreased the one-year total direct medical cost due to major clinical events by HF 1,373,254 and HF 1,387,057 for everolimus 1.5 mg and 3.0 mg, respectively (see table) . Adjusted for patient characteristics, the cost savings become HF 940,380 for everolimus 1.5 mg and HF 838,570 for everolimus 3.0 mg. CONCLUSION: The use of reduced-dose CsA with everolimus 1.5 mg in de novo kidney transplant recipients improves transplant outcomes and reduces one-year total direct medical cost compared to an MMF based strategy.

**PUK6**

**ECONOMIC IMPACT OF EXTENDED-RELEASE TOLTERODINE VERSUS IMMEDIATE- AND EXTENDED-RELEASE OXYBUTYNIN AMONG COMMERCIALLEY-INSURED PERSONS WITH OVERACTIVE BLADDER**

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**OBJECTIVES:** To examine the economic impact of extended-release tolterodine (TOL-ER) versus immediate- (IR) or extended-release (ER) oxybutynin (OXY) in patients with overactive bladder (OAB). **METHODS:** This retrospective cohort study used the PharMetrics Patient-Centric Database to identify patients diagnosed with OAB who newly started therapy with TOL-ER, OXY-IR, or OXY-ER between January 2001 and December 2002. 12-month pretreatment and follow-up periods were established from the first prescription date. TOL-ER patients were matched to OXY-IR and OXY-ER patients based on an estimated propensity score for TOL-ER therapy (i.e., probability of TOL-ER use based on multiple logistic regression). Use of OAB pharmaceuticals and related medications: use of outpatient and inpatient services related to OAB, infection, depression, and other conditions; and all corresponding costs were compiled for 1 year. Costs were compared using Wilcoxon rank-sum tests, and total health care costs were validated in a multivariate context using a generalized linear model. **RESULTS:** A total of 7257 TOL-ER/OXY-ER (80% female) and 5936 TOL-ER/OXY-IR (72% female) matched pairs were created (mean age, 54 y). Because of matching, demographic and clinical characteristics between cohorts were not significantly different. Costs for services related to OAB, infection, and depression were significantly lower for TOL-ER vs. OXY-ER. Total health care costs were also significantly reduced for TOL-ER vs. OXY-ER ($2204 [S3944], p = 0.001). Medication costs were significantly higher for TOL-ER ($19,810) vs. OXY-ER ($18,864), p = 0.0109). Cost differences were caused by the reduced use of OAB medications and OAB-related medical services. Conclusions: Using TOL-ER was associated with reduced costs compared to OXY-IR and OXY-ER in patients with OAB, due to reduced use of OAB medications and OAB-related medical services.

**PUK8**

**COST-EFFECTIVENESS OF SCREENING FOR ALBUMINURIA AND SUBSEQUENT TREATMENT WITH AN ACE-INHIBITOR: A PHARMACO-ECONOMIC ANALYSIS**

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**OBJECTIVES:** Studies showed secondary prevention of cardiovascular (CV) events to be cost-effective, but only few reports proved cost-effectiveness in primary prevention, in particular with respect to nephrologic markers such as urinary albumin excretion (UAE). Our objective was to conduct cost-effectiveness analysis of screening for albuminuria in general population and subsequent ACE-inhibitor treatment to prevent CV-events. **METHODS:** Data is derived from the PREVEND-IT (Prevention REnal and Vascular ENdstage Disease Intervention Trial) and the PREVEND observational-cohort study. The PREVEND-IT was a randomised placebo-controlled trial to assess the effects of fosinopril 20 mg on CV-events in 864 subjects with UAE 15–300 mg/g, blood pressure <160/100 mmHg and plasma cholesterol <8.0 mmol/L. Evaluation of treatment was based on the PREVEND-IT; the screening part was primarily based on the observational data (PREVEND) gathered among trial participants and beyond. Cost-effectiveness was estimated for the Dutch population. Cost-effectiveness was expressed in net costs per life-year gained (LYG) with a 4% discounting rate and (stochastic) sensitivity analysis. Bootstrapping analysis was used to derive 95% CI for the cost-effectiveness ratio (CER) and threshold probabilities. **RESULTS:** Patients treated with fosinopril...
showed a strong trend for less CV-events (p = 0.098). Cost-effectiveness of screening for elevated albuminuria was €16,559/LYG (from €7,030 to €24,125 in sensitivity analysis). Stochastic analysis indicated that the probability of cost-effectiveness below the suggested Dutch threshold for cost-effectiveness of €20,000 per LYG is 60% in the baseline analysis, increasing to 91% if only those subjects are treated with fosinopril showing a UAE >50mg/24hr. Also, limiting screening to only those aged greater or equal than 50; improved cost-effectiveness of those found positive to reduce the incidence of CV events may well be cost effective.

PUK9
COST-EFFECTIVENESS OF PARICALCITOL IN THE TREATMENT OF SECONDARY HYPERPARATHYROIDISM: THE EXPERIENCE IN ITALY
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OBJECTIVES: To evaluate short-term (12 months) cost-effectiveness (CE) of intravenous (iv) vitamin D preparations (paricalcitol and calcitriol) to control hyperparathyroidism in hemodialysis patients. METHODS: A decision analytic model was constructed and analysed from the hospital and the Italian National Health System (INHS) perspectives. Following the indications of the Italian Nephrology Society on the use of iv Vitamin D analogues, patients were simulated to start a 12-month iv Vitamin D treatment when parathormone (PTH) plasmatic level was >700pg/ml. Starting doses were 27μg/week for paricalcitol and 9μg/week for calcitriol; subsequent maintenance dose was adjusted assuming decreasing PTH levels over time. Model parameters were derived from multiple published sources. Clinical course of treatment and efficacy in controlling hyperparathyroidism were based on a RCT (Sprague SM. Kidney Int 2003); effect on survival, hospitalisation rate and length-of-stay (LOS) were based on retrospective studies (Teng M. NEJM 2003; Dobrez DG. Nephrol Dial Transplant 2004). Cost included drug costs (hospital prices excluding taxes), cost per hospitalization (national mean DRG value, 2002), in the INHS perspective, or cost per day of hospitalization (general medical ward, Lucioni C. et al. Treat Endocrinol 2003), in the hospital perspective.

RESULTS: Per patient one-year drug acquisition costs were €3364.74 for paricalcitol and 1883.25 for calcitriol. Paricalcitol patients had an average of 0.846 hospitalizations/year more than paricalcitol at an incremental cost, in the INHS perspective (DRG tariffs), of €2868.69. Calcitriol patients had an average of 9.17 hospitalization/days more than paricalcitol at an incremental cost, in the hospital perspective (LOS), of €2249.58. Paricalcitol strategy resulted dominant in both perspectives. Robustness of these findings was demonstrated in multiple sensitivity analyses. CONCLUSIONS: In Italy, paricalcitol greater acquisition costs are offset by reduction in hospitalizations and LOS both from an INHS perspective and from the hospital perspective.

PUK10
COST-EFFECTIVENESS OF MIMPARA AMONG DIALYSIS PATIENTS IN BELGIUM USING A MARKOV SIMULATION MODEL
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OBJECTIVES: To demonstrate cost-effectiveness (ICER) of Mimpara (MIM), a drug against secondary hyperparathyroidism (sHPT) in dialysis, compared to standard treatment of care (SOC). METHODS: A Markov model operates in 1/7 year cycles and runs over 16 years until the starting cohort reaches 70 years. Mortality risk per cycle was calculated from a 2-year cohort dialysis database (n = 13,000). The model uses specific distributions for parathyroid hormone (PTH), Calcium (Ca) x Phosphor (P), age, vintage and MIM dosages (30–120mg/day) from phase III trials. Patients withdrawing from MIM were treated with SOC. Average drug costs were €3109/year first cycle and €2617/year subsequent cycles as only drug responders (85%) remained on study drug. Other treatment costs were taken from a retrospective cost study in Belgium using average daily cost of €214 per dialysis patient plus €50/day for sHPT-sufferer. Annual 3% discount rate was applied to cost and outcome data. RESULTS: Running the model in Monte-Carlo simulation (10,000 iterations) over 16 years, delivered a mortality difference of 0.17 years favoring MIM-use for an extra cost of €8027 (+ dialysis cost) resulting in an ICER of €47,218 per Life Year Gained. Excluding dialysis costs the ICER was €36,970. Sensitivity analyses ranging discount rates from 0% to 6% independently for both outcome and cost data showed ICERs of €36,970 and €59,459 for outcome and €64,517 and €35,088 for cost results, respectively. Evaluating the ICERs over time indicates that cost-savings may appear early in MIM-treatment (first 2 to 3 years) due to reductions in co-morbidities without observable survival benefit. CONCLUSION: Including dialysis costs in the ICER-equation maintained a reasonable CE-result (<€50,000/LYG) favoring the use of Mimpara for sHPT.

PUK11
COST ANALYSIS OF RENAL REPLACEMENT THERAPIES IN LATVIA
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OBJECTIVES: Kidney transplantation (KT) is generally acknowledged as the most clinically effective and cost-effective option in managing ESRD patients. The objective of our study was to identify costs and estimate cost-effectiveness of various ESRD treatment modalities in Latvia. METHODS: We retrospectively analysed files of 250 patients in an in-center hemodialysis treatment mode (HD), 60 patients in continuous ambulatory peritoneal dialysis treatment mode (CAPD) and 51 patients after successful KT for the first 3 years of treatment. All direct medical costs were registered. Cost-effectiveness was estimated by costs per 3 life-years gained. RESULTS: Mean direct costs (in 2003 €) for one patient for the first year and all three years of treatment were: for CAPD €16,230.0 + €1,577.4 and 48,327.7 ± 1, €162.2 respectively, for HD 14,131.7 ± 1, €1212.4 and 42,052.4 ± 1, €203.2 respectively, and for KT 15,880.0 ± €4,744.7 and 25,460.0 ± 2,994.4 respectively. Average treatment costs per patient over the 3 years were the highest in the CAPD group (P < 0.05 vs. HD, P < 0.001 vs. KT) and KT was the least expensive (as expected). The initial higher costs of KT were fully recouped within 15 months after surgery. Probability of life expectancy for CAPD, HD and KT for the first and third year were: 77.3%, 84.1% and 91.3% respectively, and 45.0%, 43.1% and 83.7% (P < 0.001 vs. CAPD and HD), respectively. The cost of 3 life-years gained by KT was significantly less (P < 0.001) than the cost associated with CAPD and HD (€29,598.5 vs. €106,661.1 and €97,798.5 respectively). CONCLUSIONS: Compared to CAPD and HD, KT provided greater survival ben-
ASSESSING THE EFFICIENCY OF INTERSTIM® IN FECAL INCONTINENCE (FI) IN THE SPANISH SETTING. A COST-EFFECTIVENESS SIMULATION MODEL

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Fecal incontinence (FI) is one of the most psychologically and socially debilitating condition in an otherwise healthy individual. Sacral Nerve Stimulation (SNS) is the option in cases where conservative treatments have been ineffective and before undergoing surgery procedures like dynamic graciloplasty or artificial anal sphincter in patients with intact anal sphincter (IAS) and before Sphincteroplasty in patients with structural deficient anal sphincter (SDAS). Interstim® is a relatively new effective and safety therapy that has shown to be more effective than surgery in almost all patients. OBJECTIVE: To assess the efficiency of introducing Interstim® in management of patients suffering FI in the Spanish setting using a cost-effectiveness model. METHODS: A decision analytic model was developed to estimate the costs and outcomes of patients with FI managed with and without Interstim®. Clinical and economic data were retrieved from published studies and an expert panel. The analysis was run over a 5 years time horizon from a NHS perspective and the primary outcome was quality-adjusted life years (QALYs). Cost data were obtained from SOIKOS® Spanish’s health care costs database. Costs and benefits were actualized to euros 2004 and discounted at 3% annum. Sensitivity analyses were performed in order to handle uncertainty. RESULTS: Preliminary results show that the introduction of Interstim® in the management of FI increases treatment costs in 1211 in IAS patients and 1024 in SDAS patients (5246 to 6456 and 7648 to 8671 respectively), yielding improvement in quality adjusted life expectancy of 0.234 and 0.228 respectively. Discounted cost per QALY gained of the introduction of Interstim® are 5182 and 4486. CONCLUSIONS: The use of Interstim® as an alternative to current surgical procedures in certain circumstances (as second or third treatment line in IAS and SDAS IF patients) is associated to an improvement of IF patients at a reasonable extra cost.

COST-MINIMISATION-ANALYSIS ON THE TREATMENT OF URINARY INCONTINENCE WITH TROSPIUM CHLORIDE IN COMPARISON WITH OXYBUTYNIN IN GERMANY

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OBJECTIVES: To compare both drugs in terms of efficacy and costs. METHODS: The efficiency of incontinence treatment, as perceived by third party payer, will be calculated. Due to comparable efficacy, a cost-minimisation-analysis was conducted to evaluate the costs of a treatment of urinary incontinence with trospium chloride and with oxybutynin. Based on data obtained from literature, a decision tree model was compiled to portray the course of treatment. Adverse drug reactions (ADR) were also be considered. Costs for treatment of incontinence, treatment of ADR, and for second-line therapy taken if the treatment failed, will be taken into consideration. After calculation of all the emerged costs, total costs were determined by means of the DATA-program. To analyse the influence of different parameters on total costs, from the perspective of the statutory health insurance, two sensitivity-analyses were conducted. RESULTS: Trospium chloride caused third party payer expenses amounting to €2,032, whereby the expenses for oxybutynin were €1968. Because of the higher drug costs of trospium chloride, the treatment costs were accordingly 3.3 % higher. The model was proven robust. CONCLUSION: Treatment of urinary incontinence with trospium chloride is as efficacious as the well-established oxybutynin and costs are comparable despite the higher price of trospium chloride. The advantages however of trospium chloride over oxybutynin are obvious by its adverse event profile—the risk of ADR is reduced. From the above mentioned facts, it may be concluded that the treatment of urinary incontinence with trospium chloride offers an adequate treatment alternative from the perspective of the statutory health insurance in Germany.
BPH AND IPSS SCORES EVALUATED AFTER 6 MONTHS ACCORDING TO THE TYPE OF DISEASE MANAGEMENT
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OBJECTIVES: Benign prostatic hyperplasia (BPH) occurs frequently in middle-aged and elderly men. Recent epidemiologic data suggest that 50% of men aged 50 years are concerned. Because of the growing elderly population in the industrialised countries, the management of the disease is becoming a major public health problem. A wide variety of medical treatment is available, and the financial burden associated to it is increasing. This is a public health problem with a number of diagnostic, therapeutic and economic facets. The severity of the problem is assessed by the score obtained on the IPSS, a well known and recognised questionnaire. METHODS: More than 700 patients with BPH diagnosed for less than 3 months will be included in the CHQ program by 250 general practitioners. Every 6-months, and for at least 3-years, the patient and his partner will fill out a quality of life questionnaire. This questionnaire is composed of a generic instrument that assesses the general health condition, and 5 specific instruments that investigate the consequences of the BPH on sexuality, sleeping and urinary symptoms. RESULTS: Using a follow-up cohort study, we isolated two groups presenting a recently diagnosed BPH: the first patient population was kept under watchful waiting (n = 101) versus a second patient population undergoing treatment with Serenoa repens (n = 112). For the patients under watchful waiting, the IPSS score was respectively 11.8 (5.7) and 10.9 (6.7) upon patient inclusion and after 6 months. This difference is not statistically significant. However, for the patients treated with Serenoa repens, the IPSS score was respectively 14.3 (6.6) and 11.9 (5.7) upon patient inclusion and after 6 months. The noted difference is statistically significant (p < 0.0001). CONCLUSIONS: Patients suffering from a recently diagnosed BPH and treated with Serenoa repens thus showed a statistically significant improvement as demonstrated by the IPSS score.

WITHDRAWN

ESTIMATION AND ANALYSIS OF DIRECT MEDICAL COST OF SECONDARY HYPERPARATHYROIDISM (SHPT) IN DIALYSIS PATIENTS
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Secondary hyperparathyroidism (SHPT) is frequently observed in dialysis patients leading to costly to treat health complications. OBJECTIVES: To assess whether direct medical costs significantly vary with SHPT conditions. METHODS: Direct medical cost and resource use data were retrospectively collected from patient medical files and invoices of 75 dialysis patients over maximum period of 2 years prior to death in 3 dialysis centres in Belgium. Total collection period was segmented into two SHPT condition episodes defined by PTH values ≤ or >300 pg/mL, using linear interpolation lines between subsequent PTH measurements. Costs were retrieved from hospital invoices, including start and stop date of each bill and cost category (hospitalisations, medications, dialysis, laboratory tests, honoraria, and other). To overcome problems of incomplete invoices, an invoice coverage factor was developed comparing available invoices with health care resource utilisation from medical files. Periods with insufficient coverage were discarded. Resource use and costs were attributed to each individual PTH condition episode. Statistical modeling: Because of heavily skewed cost data, incomplete data sets, the need to adjust cost results for time to death and centre effect, mixed models on non-transformed and log-transformed costs and General Linear Model (GLM) with a gamma response probability distribution and a loglink function were used. RESULTS: Results expressed as mean cost per day show that periods with elevated PTH-values lead to higher costs compared to normal periods (average cost-difference per day: approximately €50; p < 0.05). Results will further be discussed regarding distribution of residuals, and hypothesis testing. To assess robustness of results, three sensitivity analyses were performed: comparison of results using data showing a 6-month incremental time periods; cost deprecation factor. CONCLUSIONS: The statistical method allowed obtaining robust and valuable cost estimates for different SHPT conditions.

EXPLORING NEUROGENIC DETRUSOR OVERACTIVITY WITHIN AN OVERACTIVE BLADDER POPULATION
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OBJECTIVE: Overactive Bladder (OAB) syndrome is defined symptomatically and is suggestive of detrusor overactivity. Detrusor overactivity can occur due to an underlying neurological disease (neurogenic detrusor overactivity). Early identification of neurogenic detrusor overactivity may facilitate more effective management. The objective of our study was to explore the likely indicators supporting a neurogenic cause for detrusor overactivity within an OAB population, providing a clearer case for proactive investigation of bladder problems. METHODS: The DIN–LINK database was used to conduct a 1–year retrospective cohort analysis of patients across Great Britain with OAB and neurological disease. Patients who had an OAB symptom(s) and/or a prescription for an OAB–related therapy during the study period (September 2003–August 2004) were included in this analysis and constituted the OAB cohort. All the records of those within the cohort were analysed to identify whether the patient was diagnosed or receiving treatment for Parkinson’s disease, stroke, multiple sclerosis or spinal cord injury. Data was analysed by age, gender and OAB symptoms. RESULTS: The cohort contained 33,307 OAB patients, representing a prevalence of 1.7% of the population (n = 815,034) of whom 61% (n = 8130) were women and 43% were aged over 65. In total, 1314 (10%) patients had a neurological disease, this increased to 16% (948 patients) in those over 65. Incontinence was experienced by 29% (n = 384) of those with a neurological disease but in only 18% of the complete cohort. Those with neurological disease also more commonly experienced urinary frequency. CONCLUSION: This study suggests that there is value in assessing patients who present with OAB symptoms for early signs of underlying neurological conditions. It is important to identify neurological disease as the cause of detrusor overactivity. This will help clinicians understand the aetiological factors behind the condition and also help in its overall management.

PUK20
BENIGN PROSTATE HYPERPLASIA: MUST BOTHERSOMENESS OF SYMPTOMS BE PRIVILEGED?

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OBJECTIVES: The IPSS evaluates the frequency of lower urinary tract symptoms (LUTS). The SPI score (Symptom Problem Index) evaluates the degree of discomfort associated with each question on the IPSS. Our objective was to clarify the possibility of a substitution of the IPSS and SPI rating scales. METHODS: The IPSS and SPI questionnaires were self-administered to a cohort of 907 male patients presenting a BPH recently diagnosed. The relationship between SPI and IPSS was investigated through the correlation between the 2 scores and by the construction of quadratic curve estimations for each symptom. The degree of bothersomeness that each symptom induces was explored by the Area Under the Curve (AUC) corresponding to an IPSS item score equal to or greater than 2 points. RESULTS: The mean IPSS score was 12.6 +/- 6.4, the mean SPI score was 12.2 +/- 6.5. The correlation coefficient between the IPSS and SPI scores was 0.70; the scores from the 2 rating scales showed a very high variability. Induced bothersomeness varied from 0 to 33% according to the symptom evaluated. Nocturia seems to be the most important symptom taking into account the bothersomeness it caused. Despite weak urinary stream was the most frequent symptom in this cohort, it was only involved in 4% of induced bothersomeness. CONCLUSIONS: The two questionnaires do not collect the same information. The concept of induced bothersomeness allows a more refined analysis of the extent of bothersomeness associated with each question on the IPSS. If we accept the hypothesis that bothersomeness is the main parameter that leads to a treatment decision, the joint use of the IPSS and SPI seems appropriate.

PUK21
INDUCED BOTHERSOMENESS IN THE ANALYSIS OF THE IPSS QUESTIONNAIRE

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OBJECTIVES: The International Prostatic Symptom Score (IPSS) evaluates urinary disorders symptoms frequency associated with benign prostatic hyperplasia, but does not take into account the bothersomeness that they induce. The Symptom Problem Index (SPI) evaluates the degree of discomfort associated with each question on the IPSS. Our objective is to quantify the degree of bothersomeness induced by each BPH symptom. METHODS: A cohort of 907 male patients with BPH was monitored by French General Practitioners (GP). The IPSS and SPI questionnaires were self-administered. The IPSS and SPI scores were evaluable for 722 patients. The relationship between SPI and IPSS was investigated through the correlation between the 2 scores and by the construction of quadratic curve estimations for each symptom. The degree of bothersomeness that each symptom induces was explored by the Area Under the Curve (AUC) corresponding to an IPSS item score equal to or greater than 2 points. RESULTS: The mean IPSS score was 12.6 +/- 6.4, the mean SPI score was 12.2 +/- 6.5. The correlation coefficient between the IPSS and SPI scores was 0.70; the scores from the 2 rating scales showed a very high variability. Induced bothersomeness varied from 0 to 33% according to the symptom evaluated. Nocturia seems to be the most important symptom taking into account the bothersomeness it caused. Despite weak urinary stream was the most frequent symptom in this cohort, it was only involved in 4% of induced bothersomeness. CONCLUSIONS: The two questionnaires do not collect the same information. The concept of induced bothersomeness allows a more refined analysis of the extent of bothersomeness associated with each question on the IPSS. If we accept the hypothesis that bothersomeness is the main parameter that leads to a treatment decision, the joint use of the IPSS and SPI seems appropriate.

PUK22
PATIENT SATISFACTION: INTERNATIONAL DEVELOPMENT, TRANSLATABILITY ASSESSMENT AND LINGUISTIC VALIDATION OF THE OAB-S, AN OVERACTIVE BLADDER TREATMENT SATISFACTION QUESTIONNAIRE

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OBJECTIVE: The Overactive Bladder Treatment Satisfaction Questionnaire (OAB-S) is a self-administered instrument assessing treatment satisfaction in patients with overactive bladder. The OAB-S has been developed for worldwide use; moreover, its conceptual equivalence and cultural adaptability across countries were considered early in the development process. To date, the OAB-S is available in five languages including US-English, US-Spanish, UK-English, Spain-Spanish and German. METHODS: The cultural and linguistic equivalence of the OAB-S was ensured at different stages of the development and the translation processes: 1) the OAB-S was simultaneously developed in US-English and US-Spanish and tested for face and content validity; 2) the pre-final original questionnaire underwent a translatable assessment, an international critical review with the objective of suggesting re-formulations in the pre-final version considering the context and constraints of other languages and cultures; 3) finally, the OAB-S was translated into the three remaining lan-
guages according to an internationally accepted methodology: two forward translations, one backward translation by independent native speakers, review by one clinician per country and cognitive debriefing on five patients in each language. RESULTS: A common list of concepts in US-English and US-Spanish were developed following patients’ interviews, and were later used to generate the pre-final instrument. The translatability assessment allowed refinement of concepts (i.e., “focus on work” or “interference of OAB symptoms”), idiomatic expressions (i.e., pad, urgency to urinate) and responses scales. Once the final questionnaire was translated, patient interviews demonstrated a high level of understanding and an absence of any problematic wording. CONCLUSION: Since the conceptual equivalence of the OAB-S across cultures and languages was considered early in the development process, translation issues were reduced to a minimum. The OAB-S is a comprehensive measure that will enable documentation of patients’ satisfaction with treatment in international trials using these languages.

Validación de un instrumento de calidad de vida en mujeres brasileñas con incontinencia urinaria

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OBJETIVOS: El objetivo de este estudio fue traducir y validar el King’s Health Questionnaire (KHQ) en mujeres brasileñas con incontinencia urinaria.

MÉTODOS: El KHQ es una escala diseñada por Prof. Linda Cardozo et al. para evaluar la calidad de vida afectada por la incontinencia urinaria. Este cuestionario ha sido usado en varias estudios para evaluar los efectos de diferentes tratamientos. Los 134 pacientes con incontinencia confirmada, confirmados por el estudio urodinámico, fueron recogidos del sector de ginecología y urología del hospital de la Universidad Federal de São Paulo (UNIFESP). Primero, tradujimos el KHQ al portugués brasileño, en el lenguaje urodinámico, siguiendo las recomendaciones metodológicas internacionales. De acuerdo con la cultura y los cambios lingüísticos, implantamos un cuestionario y derechos de autor en el KHQ, en el que los pacientes fueron capaces de entender. Todos los pacientes respondieron al KHQ de la misma manera, con un intervalo de 30 min, aplicado por dos entrevistadores. Después de 7 a 14 días, en una segunda visita, el cuestionario fue aplicado de nuevo. Reliabilidad (intra e inter observador consistencia de las esp., constructiva y validación de consistencia de los resultados) se descartó. RESULTADOS: Se realizaron varias adaptaciones culturales hasta que se alcanzó la versión final. El cuestionario inter-observador consistencia de (alfa de Cronbach) de los dimensiones varió de moderada a alta (0.77–0.90), y la constante interna consistencia varied from 0.66 a 0.944. Moderately to strong correlation was detected among the specific KHQ urinary incontinence dimensions and clinical urinary incontinence manifestations known to affect the quality of life of these patients. CONCLUSION: KHQ was adapted to the Portuguese language and to the Brazilian culture, showing great reliability and validity. This questionnaire is now being evaluated in clinical trials on new therapeutic strategies for urinary incontinence in Brazil.

BPH: Consecuencias en el sexual de la pareja y la salud del paciente

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OBJETIVOS: Los problemas urinarios secundarios a la benigna hiperplasia prostática (BPH) se encuentran entre el 20 y 25% de la población de hombres mayores de 50 años. Es un problema de salud pública con un número de diagnóstico, terapéutico y económico. La severidad de este problema se evalúa por el IPSS, una prueba de reconocimiento. Como parte del creciente interés en la salud del paciente, es interesante evaluar la severidad del malestar para el cuidador. MÉTODOS: Como parte de un estudio piloto, se entregó el cuestionario a 137 pacientes y a 316 cuidadores. La sexualidad del paciente fue medida por el (IIEF) Index de función sexual. Spouses were asked about their Sexual Desire (SD) and Overall Satisfaction (OS).

RESULTADOS: BPH en pacientes, todos los IIEF dimensiones se deterioraron en comparación con el de la IPSS score. This is particularly true for the SD (52.8, 46.6, 35.2) and OS (69.6, 57.3, 40.4) dimensions. For the spouses who answered the questionnaires, the SD lack or the overall dissatisfaction are directly correlated with the IIEF score expressed by their partners for the corresponding dimensions p < 0.005—Spouse Sexual Desire: Nil to Weak: IIEF DS Dimension Score: 42.7—Medium to High: IIEF DS Dimension Score: 76.0—Spouse Satisfaction: Dissatisfied: IIEF OS Dimension Score: 46.1—Divided to Satisfied: IIEF OS Dimension Score: 67.2. CONCLUSION: The high spouse questionnaires’ response rate showed the interest and involvement of spouses in their husband’s disease. BPH patients’ sexuality is particularly true for the SD (52.8, 46.6, 35.2) and OS (69.6, 57.3, 40.4) dimensions. For the spouses who answered the questionnaires, the SD lack or the overall dissatisfaction are directly correlated with the IIEF score expressed by their partners for the corresponding dimensions p < 0.005—Spouse Sexual Desire: Nil to Weak: IIEF DS Dimension Score: 42.7—Medium to High: IIEF DS Dimension Score: 76.0—Spouse Satisfaction: Dissatisfied: IIEF OS Dimension Score: 46.1—Divided to Satisfied: IIEF OS Dimension Score: 67.2. CONCLUSION: The high spouse questionnaires’ response rate showed the interest and involvement of spouses in their husband’s disease. BPH patients’ sexuality is particularly true for the SD (52.8, 46.6, 35.2) and OS (69.6, 57.3, 40.4) dimensions. For the spouses who answered the questionnaires, the SD lack or the overall dissatisfaction are directly correlated with the IIEF score expressed by their partners for the corresponding dimensions p < 0.005—Spouse Sexual Desire: Nil to Weak: IIEF DS Dimension Score: 42.7—Medium to High: IIEF DS Dimension Score: 76.0—Spouse Satisfaction: Dissatisfied: IIEF OS Dimension Score: 46.1—Divided to Satisfied: IIEF OS Dimension Score: 67.2.
4 scores correlated moderately with the Visual Analogical Scale of the EQ-5D. The dimensions which measure secondary effects of immunosuppression (Side Effects of Corticosteroids-SEC) and Increased Growth of Gum and Hair-IGGH) showed low correlation with SF-36 and EQ-5D although they correlated with the episodes of acute rejection ($r > 0.4$). The correlations with clinical variables were low, but in accordance with expectations. The correlations of the scores at 3 and 6 months were moderate ($r = 0.7$). 6 patients suffered initial allograft dysfunction and these showed worse scores than the rest. Cronbach’s Alpha, which evaluates the reliability, were: 0.92 for the whole questionnaire; 0.86, LPC; 0.79, LCC; 0.66, CRD; 0.63, SEC; 0.74, IGGH; 0.78, TAPD. CONCLUSIONS: The feasibility, validity and reliability of the Spanish version of the ESRD-scl were adequate to evaluate the PHS of kidney transplant bearers.

**PUK26**

THE IMPACT OF THE OVERACTIVE BLADDER ON QUALITY OF LIFE (SF36) AND UTILITY (EQ5D)

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OBJECTIVES: To demonstrate the contribution of problems associated with an overactive bladder; namely continence, urgency and frequency, on health related quality of life and utility. METHODS: Patients treated by an academic urology unit in the UK were sent a self-completed survey that included the EQ5D and SF36 and urology disease-specific questions. Potentially confounding factors were controlled using multivariate linear regression analysis. The survey was undertaken with the Health Outcomes Data Repository (HODaR) framework, a large representative dataset linking clinical data to routine QoL and utility survey responses. RESULTS: In a routine survey without reminders, 609 surveys were returned (28% response rate). The mean age of respondents was 65 years (SD 15.5) and 68% were male. Sixty percent of valid responses reported some degree of incontinence. Of these, 60% reported stress incontinence; 85% had urinary frequency problems and 91% had urgency. Among the generally continent: 12% reported stress incontinence; 60% reported frequency problems and 54% reported urgency. Controlling for age, gender and body mass index (BMI), incontinence was associated with a reduction in the EQ5Dutility ($–0.11$; SE 0.026, $p < 0.001$) and SF36 scores across all domains (max: physical role $–14.51$ (SE 3.92; $p < 0.001$)). Under similar analytic conditions in continent respondents, urgency significantly reduced social and mental-role functioning ($–8.55$; $p = 0.069$ & $–14.51$; $p = 0.080$, respectively) whilst frequency reduced the energy domain ($–9.09$; $p < 0.05$). Among the incontinent, urgency reduced social functioning by $–17.61$ ($p < 0.05$), and the mental domain by $–11.58$ ($p < 0.05$) whilst frequency again reduced the energy domain by $–9.07$ ($p < 0.05$). CONCLUSIONS: Incontinence has a detrimental impact on quality of life comparable with diseases and conditions traditionally regarded as being more serious. Urinary urgency reduces social functioning and mental well-being, whilst increased urinary frequency increases tiredness.

**PUK27**

PSYCHOMETRIC VALIDATION OF THE UK ENGLISH INCONTINENCE-SPECIFIC QUALITY OF LIFE MEASURE (I-QOL)

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OBJECTIVE: The I-QOL is a 22-item incontinence-specific measure originally developed in the USA and subsequently adapted into numerous other language versions. The British-English language version has not yet been validated. The purpose of this presentation is to report the psychometric performance characteristics of the UK version of the I-QOL. METHODS: The I-QOL was included in a cross-sectional, descriptive health outcomes study among female care-seekers at 17 large primary care clinics throughout the UK. A total of 2400 women between 18 and 91 years of age took the survey while waiting to be seen by their care providers. Twenty-two percent ($n = 503$) of these women reported symptoms of stress urinary incontinence; 21% ($n = 538$) mixed; and 4% ($n = 85$) urge incontinence without overactive bladder. Other measures included the Scale for Activity Interference and Limitation (SAIL, incontinence-specific individualized activity limitations), the Symptom Frequency and Botheromeness scale (SFb-SUI), self-perceived severity, self-reported episodes, and a variety of other demographic and descriptive variables. Psychometric testing was conducted using standardized procedures. Reproducibility could not be assessed within the study design. RESULTS: Principal component analyses confirmed the original measurement model of three subscales (avoidance and limiting behavior, psychosocial impacts, and social embarrassment) and a total summary score. Internal consistency values were acceptable (alpha ranged between 0.87 and 0.95) and, as hypothesized, the I-QOL had strong associations with both the SFb-SUI (symptoms) ($r = 0.60$) and the SAIL (limitations) ($r = 0.67$) scales. Quality of life scores became significantly worse as the patients’ perception of severity increased ($p < 0.001$) and number of incontinent episodes increased ($p < 0.001$). CONCLUSION: This cross-sectional assessment of the British-English version has shown it to have similar psychometric performance to those previously published for the original measure, making this I-QOL English version a valid PRO for incorporation in community based studies of patients with varying types and severity of urinary incontinence.

**PUK28**

LONG-TERM DARIFENACIN TREATMENT FOR OVERACTIVE BLADDER: QUALITY OF LIFE OUTCOMES FROM A 2-YEAR, OPEN-LABEL EXTENSION STUDY

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OBJECTIVES: To investigate the impact of long-term treatment with darifenacin, a muscarinic M3 selective receptor antagonist, on quality of life (QoL) in patients with overactive bladder (OAB). METHODS: Patients with OAB for ≥26 months who participated in two 12-week, placebo-controlled, double-blind feeder studies of darifenacin controlled release 3.75, 7.5 or 15 mg qd were enrolled into this 2-year, multicentre, open-label extension. During the first 2 weeks of the extension all patients received darifenacin 7.5 mg, after which titration between darifenacin 15 and 7.5 mg was permitted. The King’s Health Questionnaire [KHQ] was used to assess QoL. Here, we report data from patients who received darifenacin 7.5 or 15 mg during the feeder studies and had a gap of ≤3 treatment days before entering the extension. RESULTS: A total of 303 patients who had received darifenacin 7.5 or 15 mg during the feeder studies entered the extension (22–89 years; 86.5% female) and 199 patients (65.7%) completed the study. Darifenacin 7.5/15 mg was associated with significant improvements in eight of nine KHQ domains (Incontinence impact, Severity measures, Role limitations, Physical limitations, Social limitations, Emotions, Personal relationships and Sleep/energy) from baseline to the end of the 12-week, double-blind feeder studies (all $p < 0.001$ vs.
feeder study baseline). These changes were maintained or further improved during the open-label extension, such that significant improvements (p < 0.001 vs. feeder study baseline) were observed for darifenacin 7.5/15 mg in the same eight KHQ domains after a further 24 months of treatment. Darifenacin was well tolerated and the overall long-term safety profile was consistent to that observed in the 12 week phase III studies. CONCLUSIONS: Darifenacin significantly improves QoL in patients with OAB, with improvements maintained for 2 years during open-label treatment.

**PUK29**

**DEVELOPMENT AND VALIDATION OF A COMPREHENSIVE SYMPTOM CHECKLIST IN URINARY INCONTINENCE**


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**OBJECTIVE:** To develop and validate a unique tool specific to urinary incontinence (UI) symptoms covering all types of incon tinence among both men and women. METHODS: An Advisory Committee (AC) of 5 urologists was set up, involved at all stages of questionnaire development and validation. A test questionnaire was developed by AC with content validity being assessed simultaneously on 3 men, 4 women suffering from UI and 3 clinicians. Clinicians were asked to comment items’ relevance and comprehensiveness; patients completed the scale and were asked to provide general comments regarding the scale and detailed comments regarding each element. The scale was redrafted and tested on 25 other patients. A longitudinal, multi-centre, anonymous, observational study was carried out to validate the scale. The scale was administrated by 21 urologists to 258 stable patients (206 UI sufferers and 52 not UI sufferers) until June 15th 2005. Patients filled in the scale, the ICIQ-SF and a diary twice at one-week interval and clinicians completed a medical form at baseline. RESULTS: The test scale contained 11 items covering urge, SUI, dysuria and pollakiuria. After initial cognitive debriefing and comments of patients and clinicians, 3 items were significantly modified. The pilot questionnaire still included 11 items. The validation study allowed assessing the internal consistency reliability, the test-retest reliability and the clinical validity of the scores. CONCLUSION: For the first time, psychometric properties were established for a simple-to-use, unique and UI specific symptom scale for men and women. This new instrument could be helpful for use in everyday medical practice and in clinical research.

**PUK30**

**BENIGN PROSTATE HYPERPLASIA: RELATION BETWEEN IPSS, SPI AND QUALITY OF LIFE IPSS ITEM SCORES**


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**OBJECTIVES:** The International Prostatic Symptom Score (IPSS) evaluates the frequency of symptoms associated with lower urinary tract symptoms (LUTS). An eighth question (q8) evaluates the patient’s overall satisfaction dealing with his urinary tract status but does not study in detail his bothersomeness. The SPI score (Symptom Problem Index) evaluates the degree of discomfort associated with each question on the IPSS. Our objective was to determine the relations between IPSS, SPI and quality of life IPSS item (q8) scores. METHODS: A cohort of 907 male patients with BPH has been monitoring by French general practitioners. The IPSS and SPI self-administered questionnaires have been evaluated on the 722 patients with complete data. Relationships between SPI, IPSS and q8 have been investigated through the correlation between those scores and by showing the individual answers dispersion of IPSS and SPI scores when one was fixed. RESULTS: The mean IPSS score was 12.6 +/- 6.4, the mean SPI score was 12.2 +/- 6.5. The correlation coefficient between the IPSS and SPI scores was 0.70 ; the scores from the two rating scales showed a very high variability. Q8 was also weakly related to SPI (r = 0.56) and to IPSS (r = 0.57). The response to the question on quality of life corresponded to highly varying SPI and IPSS scores. CONCLUSIONS: IPSS and SPI questionnaires do not collect the same information. One scale cannot be replaced by another. Quality of life question of the IPSS questionnaire isn’t enough to capture all the aspects of bothersomeness explored by the SPI questionnaire. Among patients suffering from LUTS, the joint use of the IPSS and SPI seems appropriate.

**PUK31**

**DEVELOPMENT AND PILOT TESTING OF A NEW SCALE SPECIFICALLY MEASURING THE IMPACT OF STRESS URINARY INCONTINENCE (SUI) ON COMMON PHYSICAL ACTIVITIES OF DAILY LIFE**


1. Mapi Values, Lyon, Rhone, France; 2. Caremeau Hospital, NiMés, France; 3. Mapi Values, Lyon, France; 4. Lilly France, Suresnes, France

**OBJECTIVE:** Since stress incontinence episodes frequency is highly related to maintenance or avoidance of activities causing leakages, the additional benefit of therapeutic options might be difficult to capture. Our objective was to develop a new specific and sensitive endpoint to evaluate treatment effects in Stress Urinary Incontinence (SUI) in clinical trials. METHODS: A comprehensive list of efforts provoking leakages was established from a systematic literature review and 30 clinician interviews. The list was updated according to comments collected during 8 semi-structured clinicians interviews. Clinicians were asked about the relevance, comprehensiveness, and ability of the listed activities to capture changes. They also reported how their patients managed to control the risk of leakage. Twenty SUI women were asked to assess the relevance, importance, and applicability of each effort, to reword the list and to describe with their own words how they control the risk of leakage. The scale was finalised according to their comments. RESULTS: A list of 72 daily life efforts provoking leakage was set from 15 UI specific scales and 21 studies selected from the literature. The clinician interviews allowed to group similar concepts and to establish a shortlist containing the 15 most relevant efforts. Answer choices covered the occurrence of leakage, and various behaviour adaptation such as seeking help, taking precautions, muscular control, and avoiding situations. After validation of format, items, wording, and answer choices, by the patients, the pilot scale was produced. CONCLUSION: This self-reported scale allows SUI patients to accurately describe their control on leakage risk in daily life efforts. This highly specific instrument will allow clinicians to better assess the true impact of therapeutics on patients’ life, in both clinical research and clinical practice. The scoring procedure and its properties will be assessed in a specific validation study.
VALIDATION OF THE INTERNATIONAL PROSTATE SYMPTOMS SCORE IN ITALIAN WOMEN WITH LUTS. THE FLOW STUDY
Zattoni F, Pesce F, Scarpa R, Prezioso D, Tubaro A, Artibani W, Simonelli L, Rizzi C. The FLOW Study Group 1
1S. Maria della Misericordia Hospital, Udine, Italy; 2 Policlinico GB Rossi, Verona, Italy; 3 San Luigi Gonzaga Hospital, Turin, Italy; 4 Federico II University, Naples, Italy; 5 A. Andrea Hospital, Rome, Italy; 6 University of Padua, Padua, Italy; 7 MedData, Modena, Italy; 8 Boehringer Ingelheim, Milan, Italy; 9 Italian Urology Centers, Italy

OBJECTIVES: The International Prostate Symptom Score (IPSS), a condition-specific questionnaire originally addressed to men, comprises seven items investigating symptoms (summed into a total score), plus 1 item on quality of life (QoL). The IPSS was translated into Italian and adapted to women. The so-obtained W-IPSS was thus validated by the FLOW study group in a sample of Italian women with lower urinary tract symptoms (LUTS).

METHODS: The validation process consisted of forward and backward translation, test of comprehension, discriminant validity and test-retest reliability. A first set of women was interviewed after filling-in the questionnaire and a comprehension rate was built as the percentage of correctly understood questions and pre-coded answers. A case-control study was then performed. Women aged > 18 year affected by LUTS for at least three months and with negative dipstick were consecutively enrolled as cases. Controls were defined as healthy women of comparable age. In order to evaluate reliability, cases were retested after seven days from baseline and a correlation analysis was performed (Pearson’s r). Discriminant validity was assessed by comparing the scores of cases and controls with ANOVA. RESULTS: During the translation process the QoL question about “prostate symptoms” was changed into “urinary symptoms” to adapt the IPSS to a female population (now “W-IPSS”). The comprehension rate obtained on 15 women was 86%. Eighty cases and 80 controls were then enrolled at baseline. All cases were eligible for the test-retest. Pearson’s coefficient between ratings was 0.81 for the symptom score and 0.89 for QoL. Cases and controls were discriminated by ANOVA (p < 0.001) for all items. CONCLUSION: Women-IPSS shows overall a satisfactory comprehension rate, a good test-retest reliability and high discriminant validity.

DEVELOPMENT AND TESTING OF A COMPOSITE SCALE TO ASSESS THERAPEUTIC RESPONSE IN STRESS URINARY INCONTINENCE
1 Mapi Values, Lyon, Rhone, France; 2 Lilly France, Suresnes, France; 3 Mapi Values, Lyon, France; 4 Caremeau Hospital, Nîmes, France

OBJECTIVE: Clinicians in charge of Stress Urinary Incontinence (SUI) patients miss specific tools taking into account patients’ perspective to support treatment decision. Our aim was to develop a global medical judgment scale to assess therapeutic response.

METHODS: The concepts useful to assess SUI treatment outcomes were identified from a literature review and 30 clinician interviews. A test version of the pragmatic assessment form (PAF) was developed. Eight clinicians involved in the care of SUI were interviewed to assess concept relevance, comprehensiveness, validity, accessibility to source information, clarity, applicability to various situations in real life, usefulness in clinical practice to form global medical judgment. The PAF was updated accordingly. Ten SUI patients reviewed the PAF for concept relevance, reliability and applicability in clinical practice. RESULTS: Eight broad concepts covering symptom and functional status, impact on daily life activities, well-being, coping, satisfaction and expectations were included in the test PAF. Seven of 8 clinicians found the PAF complete, relevant, and specific to SUI, clear and valid to support medical judgment. The clinicians were happy to have an assessment guide to support judgment, but did not request a formal scoring procedure to support decision. Satisfaction was divided into treatment benefit, undesirable effects and constraints. Patient’s intention was added. After validation by 10 SUI patients, the pilot version of the PAF was finalised in double A4 format including instructions. Concept elicitation can be pragmatic for clinical practice, or standardized for clinical research.

CONCLUSION: This short, simple and pragmatic composite tool will help the clinicians to easily manage the complexity of patients’ perspective by comprehensively covering the relevant outcomes to assess therapeutics and support medical decision making in SUI. Its properties in clinical practice and clinical research will be assessed in specific validation studies.

EVALUATION OF TWO TENSION FREE VAGINAL TAPES WITH URODYNAMICS AND ICIQ-UI SF QUESTIONNAIRE
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OBJECTIVE: To compare results of two surgical procedures for stress urinary incontinence (SUI) using conventional urodynamic study (objective measure) and the ICIQ-UI SF questionnaire (patient’s perspective outcome measure).

METHODS: Prospective study of 120 women with urodynamical diagnosis of SUI who received treatment with tension free vaginal tape by retropubic tract (RP) or by transobturador tract (TO). All the patients underwent urogynaecological history, physical examination, ICIQ-UI SF and urodynamic study. The treatment outcome was evaluated 6–12 months later by urodynamic study and ICIQ-UI SF. Patients were divided into 3 groups, “cured”, “improved” or “failed treatment”, according to the observed stress leakage during postoperative filling cystometry. According to the ICIQ-UI SF post-treatment score, patients were also divided into 3 groups: “cured” when it was 0; “improved” when it was lower than pre-treatment and “failed treatment” when it was equal or higher than pre-treatment score.

RESULTS: Tension free vaginal tape (RP) was applied to 77 women (64.2%) and (TO) to 43 (35.8%). No statistical differences in demographic and basal data were found between the two groups. According to the post-treatment urodynamic evaluation, 74 patients (96%) were “cured or improved” in the RP group and 39 (91%) in the TO group (p = 0.208). According to the ICIQ-UI SF, 71 (92.2%) were “cured or improved” in the RP and 37 (86%) in the TO group (p = 0.221). Considering cured and improved patients independently, in the RP group 66 patients showed no leakage during postcystometry stress test (86%) and 26 were cured (61%) in the TO group (p = 0.003). According to the ICIQ-UI SF only 55 (71.4%) felt cured of their symptoms in the RP vs. 22 (51.2%) in the TO group. CONCLUSIONS: There are important differences when evaluating the treatment outcome in urinary incontinence depending on what is considered a good outcome (cure improvement vs. cure alone) and on what method is used to assess the outcome (urodynamic study vs. self-reported questionnaire).
VALIDATION OF THE SYMPTOM FREQUENCY AND
BOTHERSOMENESS SCALE FOR STRESS URINARY
INCONTINENCE (SFB-SUI) IN A BRITISH POPULATION
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OBJECTIVE: The SFB-SUI is an 8-item symptom inventory for patients with stress urinary incontinence (SUI). It generates both a symptom-frequency score and a symptom-bother scale which describes symptom-linked psychological distress. The purpose of this presentation is to report the initial psychometric performance of the UK version of the SFB-SUI.

METHODS: The SFB-SUI was included in a cross-sectional, descriptive health outcomes study among female care-seekers at 17 large primary care clinics in the UK. 2400 women 18 to 91 years of age took the survey while waiting to be seen by their doctors. Twenty-two percent (n = 538) of those participating reported symptoms of SUI. Thirty percent (n = 733) reported no urinary symptoms at all, and the remaining 48% reported a variety of other urinary symptoms, including mixed stress and urge UI. Other measures included the Incontinence-specific Quality of Life (I-QOL), the Scale for Activity Interference and Limitation (SAIL), and other descriptive variables. Reproducibility was not possible within the study design.

RESULTS: The UK version of the SFB-SUI demonstrated internal consistency (α = 0.74 and 0.79 for symptom-frequency and symptom-bothersomeness scores, respectively) as well as the ability to discriminate between self-reported levels of SUI severity (mild/moderate/severe, p < 0.01) and severity based on the frequency of leakage (p < 0.001). As predicted, the symptom-bother scores were correlated with activity restriction (0.51, p < 0.001; by the SAIL). The SFB-SUI scores showed a good association with the I-QOL (0.27 to 0.43, p < 0.001). CONCLUSION: The SFB-SUI functions well in distinguishing between levels of stress UI severity. The convergent properties between the two SFB-SUI scores and the quality of life and activity limitation measures indicate that each score is addressing the intended domains. This 8-item measure is extremely low in patient and study burden and provides a good option for describing SUI patient symptoms and symptom-related distress in community studies as well as clinical trials.

PATIENT SATISFACTION: PSYCHOMETRIC VALIDATION OF THE OAB-S, AN OVERACTIVE BLADDER TREATMENT SATISFACTION QUESTIONNAIRE.
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OBJECTIVE: Several instruments that measure the impact of overactive bladder (OAB) on patients’ quality of life are available. However, neither the overall levels nor the multidimensional aspects of satisfaction with OAB treatment have been studied in patients living with OAB symptoms. This project aims to develop and validate an OAB specific satisfaction questionnaire, the OAB-S. METHODS: The OAB-S evaluates medication expectations (14 items), daily life with OAB (11 items), medication tolerability (7 items), medication satisfaction (16 items), and includes 3 stand-alone items that query patients on overall expectation, satisfaction, and willingness to continue treatment. The questionnaire was administered in a stand-alone validation study: the medication expectations module was administered at baseline and the other modules at week 2 and 4. Multitrait item and exploratory factor analyses were performed to assess the subscale structure. RESULTS: Preliminary results on 83 subjects indicated a low percent of missing data (<3.0%) but a high ceiling effect in the medication expectations (i.e., patients had high expectations) and in the medication tolerability modules (i.e., patients were not bothered by the medication’s side effects). Internal consistency reliability of each item reached satisfactory levels (Cronbach’s alpha >0.7). In addition, significantly high level of association (Pearson’s correlation >0.6) were found for most of the questionnaire’s items with items of related content from the SF-12, the OAB-q, a health-related quality of life questionnaire and the TSQM, a generic treatment satisfaction questionnaire. Results on the entire population (N = 250 patients) will be presented. The relationship between expectation and satisfaction will be further analyzed for naïve patients (i.e., without previous experience with an OAB medication). CONCLUSION: Results demonstrated that the OAB-s is performing well with little missing data, satisfactory internal consistency and content validity. The OAB-S will offer researchers a valuable tool for measuring patient satisfaction with OAB treatment.
COST-EFFECTIVENESS OF AN INTENSIVE TREATMENT WITH 80 MG ATORVASTATIN VS 40 MG PRAVASTATIN IN ACUTE CORONARY SYNDROME: AN ECONOMIC EVALUATION BASED ON THE PROVE-IT (PRAVASTATIN OR ATORVASTATIN EVALUATION AND INFECTION THERAPY)

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OBJECTIVES: PROVE-it is the first trial comparing an intensive lipid-lowering treatment with 80 mg Atorvastatin vs. 40 mg Pravastatin in acute coronary syndromes (ACS) with a 2-year follow-up. There were significantly less morbimortality with 80 mg atorvastatin vs. 40 mg pravastatin: 22.4% vs. 26.3% (p = 0.005). The objective of this economic evaluation is to estimate the incremental cost-effectiveness of atorvastatin vs. pravastatin with Spanish costs based on PROVE-IT. METHODS: Cost-effectiveness analysis was performed under the perspective of the Spanish health system, projected in the long-term by modeling with a decision tree, estimating average life expectancy by the Framingham cohort. Only drug acquisition costs and direct costs were considered. Costs were expressed in 2005€. Effectiveness was measured as primary events avoided (all cause mortality, AMI, unstable angina, revascularization and stroke) and life years gained (LYG). Mean cost per patient and incremental cost-effectiveness ratio were calculated as cost per event avoided and cost per LYG. A univariate sensitivity analysis was performed for different acute events costs. RESULTS: Mean cost expected per patient during the 2 years of follow-up was €3180 for atorvastatin and €3210 for pravastatin. Incremental saving of atorvastatin vs. pravastatin was €30 per patient, because the saving for events avoided by atorvastatin outweighs its higher acquisition cost. Benefit of atorvastatin vs. pravastatin was 0.103 life years per patient. Incremental cost-effectiveness of atorvastatin vs. pravastatin was €543 per event avoided and €296 per LYG. These results were robust to the sensitivity analysis. CONCLUSIONS: Under the perspective of the Spanish health system, intensive treatment with 80 mg atorvastatin is a more effective treatment and is less costly than 40 mg pravastatin, in acute coronary syndromes diagnosis without ST-segment elevation (n = 15, age 60 ± 16,5 years) were treated following ACS Guidelines during hospitalization (ASA 86.6%; heparin or low molecular weight heparin 100%; ACE inhibitor 73.5%; beta-blocker 85%; calcium-channel blocker 93%; lipid-lowering agent 85%, intravenous nitrate 100%). Their pre-hospitalization medical history was hypertension (73.3%), diabetes (40%) and smoking (40%), myocardial infarction (20%). In-hospital costs were €1515 per patient, including pharmacotherapy €60,5, interventions and investigations €1320.6 and overhead charges €133. Average length of stay in the hospital was 8.2 days. Subanalysis of evaluation showed higher hospitalization costs in women group (non-significant because of small number of patients). Post-hospitalization therapy was not observed and evaluated. CONCLUSIONS: The analysis showed: 1. Patients with acute coronary syndromes diagnosis were treated following ACS Guidelines in hospital; 2. The most financial resources were used for medical interventions and investigations; 3. The pilot pharmacoeconomic analysis study of the acute coronary syndromes showed the need of following studies they can compare using of various molecules and their effect on post-hospitalization quality of life.
COSTEFFECTIVENESS OF DRUG ELUTING STENTS FOR STABLE ANGINA

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OBJECTIVE: The aim of this study was to explore cost and health consequences of using drug eluting stents (DES) instead of bare metal stents (BMS) for patients with stable angina.

METHODS: We developed a Markov model which captures costs and outcomes the first two years after PCI with stent for stable angina. After each PCI, patients can become well, have a new intervention (PCI og CABG) or die. The model was based on meta-analyses of trials comparing DES with BMS. These trials indicate that the use of DES reduces the need for repeat revascularisation by 36% to 86%. We assumed that DES will reduce mortality because of fewer intervention related deaths, but also explored a potential increased mortality because the meta-analysis indicates a non-significant trend towards increased mortality of DES compared to BMS. One-way and Monte-Carlo sensitivity analyses were applied.

RESULTS: The estimated cost per avoided re-intervention was $5000 when BMS was replaced by DES, ranging from $200 to $16,000 in one-way sensitivity analyses. The price of a drug eluting stent would have to be reduced from currently $2000 to $1400 to make the use of DES cost saving compared to BMS (current purchasing price $560). The estimated cost per life year gained and quality adjusted life year gained were $121,000 and $46,000, respectively, when increased mortality was disregarded in the model. Probabilistic sensitivity analysis indicated a 64% probability that drug eluting stents were cost-effective if society is willing to pay $50,000 for one quality adjusted life year. When the increased mortality was included, BMS was the dominant strategy, with both lower costs and greater life expectancy.

CONCLUSIONS: The cost-effectiveness of DES depended heavily on purchasing price of the stents and rate of reintervention in routine practice and may not be cost-effective at current price level.

IMPACT OF STATIN THERAPY INTENSITY ON ALL-CAUSE MORTALITY FOLLOWING CARDIOVASCULAR HOSPITALIZATION IN A MANAGED CARE POPULATION

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OBJECTIVES: To examine if intensive statin therapy benefits demonstrated in randomized clinical trials (RCTs) could be substantiated in managed care patients hospitalized for cardiovascular events and procedures (CVEP). METHODS: An integrated US medical/pharmacy claims database (43 million members) was used to examine patient mortality risk following hospitalization for CVEP between January 2000 to June 2003. Patients were identified as receiving no statin therapy within 30 days after discharge (S-), or receiving statin therapy. Statin therapy was defined as standard (STD) or intensive (INT), < or >40% LDL-C lowering efficacy according to the package insert. Patients were matched (INT vs. S- vs. STD vs. S-) based on estimated propensity scores for statin therapy to adjust for baseline differences. Death was presumed from claims activity indicating a likely fatal event followed by health plan disenrollment. Mortality was compared among groups using Cox proportional hazards models controlling for prognostic factors.

RESULTS: Among matched pairs, crude death rates were 3.26% vs. 5.21% for INT vs. S- (n = 1688 matched pairs); 4.39% vs. 5.75% for STD vs. S- (n = 2346 matched pairs); and 2.33% vs. 3.26% for INT vs. STD (n = 3342 matched pairs). In Cox Proportional hazards models, risk of death was lower among patients treated with INT and STD therapy vs. S- (INT vs. S- Hazard Ratio [HR] = 0.581, 95% CI = 0.414, 0.816, p = 0.0017; STD vs. S- HR = 0.677, 95% CI = 0.525, 0.872, p = 0.0026). Patients receiving INT had 30% lower risk of death compared to STD (HR = 0.707, 95% CI = 0.528, 0.947; p = 0.0200). CONCLUSIONS: This real-world study validates benefits of intensive statin therapy reported in recent RCTs, and clinically significant reductions in mortality following cardiovascular hospitalization.

COST OF HOSPITALIZATION FOR PATIENTS WITH ARRHYTHMOGENIC RIGHT VENTRICULAR CARDIOMYOPATHY IN POLAND

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OBJECTIVES: Arrhythmogenic right ventricular cardiomyopathy (ARVC) is a genetically determined heart muscle disease associated with arrhythmia, heart failure and sudden death often being the first manifestation in probands. The aim of the study was to evaluate the costs of diagnosis of the disease in asymptomatic relatives in Poland. METHODS: A total of 239 asymptomatic subjects (mean age 35 years, 120 men) belonging to 42 families affected with ARVC were examined between May 2003 and May 2005. The costs of out-patients visit and additional diagnostic tests were included. Payer perspective was used.

RESULTS: In all individuals electrocardiogram and transthoracic echocardiography were performed. Magnetic resonance imaging and signal averaged electrocardiogram were performed in 35 patients suspected of having ARVC. The diagnostic criteria for ARVC were detected in 29 patients and 57 subjects fulfilled the borderline criteria for ARVC. Total costs of screening amounted to €13,086.35. The average cost per one case of ARVC detected was €451.25. CONCLUSIONS: Costs of early detection of ARVC in individuals with a family history of the disease are low and enable the family screening in asymptomatic subjects in Poland.
THE EFFECT OF ANTICOAGULATION FOR STROKE PREVENTION IN PATIENTS WITH ATRIAL FIBRILLATION—COMPARING EFFICACY AND EFFECTIVENESS

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OBJECTIVES: To investigate different scenarios of warfarin treatment for patients with non-valvular atrial fibrillation who are eligible to receive anticoagulation for stroke prevention. Scenarios include different proportions of eligible patients being treated, as well as the level of anticoagulation obtained (i.e. within and outside the recommended INR range). METHODS: A decision-analytical model was constructed from a third-party payer perspective for the US. The model runs for five years in yearly cycles. Strokes (fatal, major, minor and no deficit) and bleeding events (fatal, intracranial, major and minor) were modeled. Probabilities and costs associated with events were taken from published sources. Four scenarios were compared: 1) 100% of eligible patients warfarin treated and all within the therapeutic range; 2) 100% of eligible patients’ warfarin treated whereof 67% within and 33% outside the therapeutic range (randomized controlled trial-like); 3) 100% of eligible patients warfarin treated whereof 50% within/outside the therapeutic range (routine practice INR levels); and 4) 55% warfarin treated (of whom 50% within/outside recommended INR range), 5% no treatment, and 40% aspirin (routine practice for warfarin treatment rates and INR levels). RESULTS: At 5 years, total costs per patient (discounted at 3%) were for strategy 1: $8607 and 25, for strategy 2: $12,518 and 46, for strategy 3: $14,582 and 50, and for strategy 4: $15,480 and 129, respectively. CONCLUSIONS: In a real world setting, evidence demonstrates that patient’s eligible for anticoagulation may not be treated, and those treated with warfarin may not be in the therapeutic range for anticoagulation. This will lead to marked differences between the observed efficacy and effectiveness as demonstrated for the number of strokes and costs in this model. This will need to be addressed in any cost-effectiveness analysis using warfarin as comparator.
a consecutive 6-month period of stability and were at increased risk of thromboembolic events and bleeding. Age, morbidity at baseline and variability of INR control in the first three-months predicted instability using warfarin.

**PCV12**

**MANAGEMENT PATTERNS AND COSTS OF ATRIAL FIBRILLATION IN A LARGE COMMERCIALLY INSURED U.S. POPULATION**

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OBJECTIVES: Atrial fibrillation (AF) remains a major health problem, affecting 2.2 million adults in the US with an estimated cost burden of $3 billion annually. Treatment approaches vary significantly and can include both interventional and pharmacologic options. The purpose of this research was to characterize the clinical and economic impact associated with AF.

METHODS: Patients with continuous health benefit eligibility and a “new” diagnosis of AF (ICD-9-CM 427.3X) were identified from a large, geographically diverse administrative claims database in the US (N = 43 million) between 1 January 2000 and 31 December 2001 with a variable follow-up period of 26 months. Warfarin-treated (WT) (N = 6,846) and untreated (UT) (N = 40,849) cohorts were evaluated based on initial therapy associated with the AF diagnosis. Study outcomes included patient demography, treatment patterns and direct medical costs.

RESULTS: The AF cohorts were comprised of 58.5% males with a mean age of 79.7 ± 15.8 years; mean duration of follow-up was ~20 months. WT was initially received by 14% of this AF cohort with only 37% receiving warfarin sometime during follow-up. The WT cohort spent approximately 34% of their study follow-up exposed to warfarin (average number of days on therapy = 206.5; average study duration = 608.7 days). Annualized AF-related costs were $10,560 ± 290 (WT) versus $10,131 ± 143 (UT).

CONCLUSIONS: Significant proportions of AF patients do not receive pharmacotherapy. Furthermore, pharmacotherapy appeared to be sub-optimal among those who received it. Better management of AF pharmacotherapy or uses of newer therapies that provide appropriate anticoagulation are necessary to reduce the burden associated with this costly disease.

**PCV13**

**EPIDEMIOLOGY AND COSTS OF ATRIAL TACHYARRHYTHMIAS**

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OBJECTIVE: Atrial tachyarrhythmias (ATs) currently represent a major economic burden for society. Italian data on epidemiology and hospital costs of ATs are lacking. METHODS: Prospective systematic evaluation of all consecutive Emergency Room (ER) admitted patients with a diagnosis of AT in the Alessandria, Novara, Novi Ligure and Tortona Hospitals from November 2004 to January 2005. A group of clinicians and economists developed an ad-hoc questionnaire in order to collect data on hospital resources consumption. RESULTS: A total of 201 patients were enrolled in the study (mean age: 66.2 ± 15.4), of which 48.8% was male. Most of the patients (80.4%) were admitted the ER in the first 48 hours after the AT event. Out of the 201 patients (44.3%) declared that was their first AT episode.

At the moment of the event 46.7% of the patients were not assuming any pharmacological therapy, 21.9% were assuming anti-aggregate, 7.3% anti-coagulant, 39.8% anti-arrhythmic drugs and 5% were already implanted with a Pacemaker. A total of 818 diagnostic test and therapeutic procedures were performed, which means, on average, 4.1 per patient. The most performed were ECG followed by blood test, pharmacological cardioversion, chest X-ray, in-hospital ECG monitoring, 24-hour holder monitoring, and external cardioversion. Out of the total patients, 148 were discharged from the ER, 31 patients were hospitalized in the “department of short-term observation” (average length of staying (LOS): 1.3 days), 8 patients were hospitalized in the cardiological department (average LOS: 7 days), 12 were hospitalized in other departments (average LOS: 4 days) and only 2 patients had different destination. CONCLUSIONS: This study shows that ATs, even if they are not life-threatening diseases and most patients are discharged directly from ER, absorb a relevant amount of hospital resources. Future economic evaluation of this data will highlight also the impact of ATs on the hospital and NHS expenses.

**PCV14**

**THE COST OF ANTICOAGULATION MONITORING SERVICES IN THE UK NATIONAL HEALTH SERVICE**

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OBJECTIVES: To establish the current level of resource utilisation required to monitor International Normalised Ratio (INR) levels in patients treated with warfarin in the UK National Health Service. METHODS: Monitoring services in areas associated with six secondary care Trusts were studied. Accurate descriptions of services were obtained through one-to-one semi-structured interviews with NHS staff involved in the delivery of anticoagulant monitoring. Due to the complexity of the different systems, where possible, resource use was divided into the 3 main steps: taking blood (including transport of patients and/or bloods), INR analysis, and the communication of results and warfarin dose changes. Costs associated with running the service were identified and sourced from local settings or NHS reference costs as appropriate (2004 prices). RESULTS: The six monitoring services were responsible for an average of 3459 (Range 1422-4500) warfarin patients, with a mean frequency of INR monitoring of 14.2 times per year (SD 3.4). The average cost of a monitoring visit was £14.58 (SD 4.25), of which £6.88 as associated with taking bloods, £4.08 with analysis and £3.62 with communication of results and dose changes. The mean annual cost per patient of INR monitoring was £206.41 (SD 63.51). Three of the services had separate hospital and primary/shared care models of INR monitoring. In these services the cost per INR test tended to be lower in the hospital based model (Mean £13.39) than in models that included primary care (Mean £23.06). CONCLUSIONS: The cost of INR monitoring varies according to setting and system. Where monitoring involves primary care, it tends to be more costly than systems in which hospital anticoagulation clinics control monitoring and warfarin treatment. This may be due to economies of scale and the ability of specialist clinics to deal with the monitoring process more efficiently.
SURVEY OF CURRENT ANTICOAGULANT MONITORING SERVICES IN THE UK—A GENERAL PRACTICE PERSPECTIVE
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OBJECTIVES: Quantify how anticoagulant (INR) monitoring is delivered in the UK NHS and understand the impact on general practice. METHODS: GPs subscribing to an online medical portal completed an electronic survey on delivery of INR monitoring for their AF patients (Sept 2004). RESULTS: GPs (n = 171) reported a mean of 122 patients with AF per practice, with 55% receiving anticoagulation. Most patients were monitored every month (50%) or more frequently (34%). Bloods are taken most commonly in general practice, either at a standard appointment (40%) or practice anticoagulation clinic (21%); the remainder at the hospital (36%) or at home (3%). Future warfarin dose is determined by the hospital (59%), GP (28%) or a nurse (14%) and then communicated to the patient by hospital staff (59%), nurse (20%), receptionist (15%) or GP (6%). Patients either wait for results and dosage instruction (27%), or receive these by telephone (32%), post (21%) or post and telephone (19%). Delays in patients commencing anticoagulation due to capacity of secondary care system were reported by 48% of GPs. In the 32% of GPs running a primary care anticoagulation clinic some were motivated by payments for the provision of additional services (25%) or a specialist interest (16%) but most were addressing a lack of centralised service i.e. hospital inaccessible (27%), no hospital or community outreach service (16%), hospital and/or outreach full (15%). Similar reasons were given by the 55% of practices that monitored patients in practice appointments. Despite a monthly mean of 42 practice appointments for monitoring, GPs felt any more than 28 per month were compromising other clinical workload. CONCLUSIONS: INR monitoring is complex involving a mixed primary/secondary care model. Availability and capacity issues in centralised monitoring clinics are the most common reason for primary care monitoring and this appears to affect other primary care clinical workloads.

KNOWLEDGE AND USE OF TREATMENT GUIDELINES FOR STROKE PREVENTION OF PATIENTS WITH NONVALVULAR ATRIAL FIBRILLATION (AFib) IN GERMANY
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OBJECTIVES: Treatment guidelines are an important source for estimation of resource use in pharmacoeconomic models. Observation of recommendations in clinical practice is a possible element of uncertainty in the assessment of the results. For prevention of stroke in patients with nonvalvular atrial fibrillation (AFib) a number of national and international guidelines exist. Up to now there was a lack of studies which analysed the use of guidelines in prevention of stroke in Germany. METHODS: A telephone interview was conducted with a cross-section of GPs, internists and cardiologists randomly selected from a sub-set of 7,072 out of the 59,933 office-based physicians of these specialties in Germany. A total of 75 completed surveys (15.1% of 498 eligible respondents) were completed. Beside questions on knowledge of the treatment guidelines the physicians were requested to assess three case vignettes with need of primary and secondary prevention strategies. RESULTS: A total of 22% of the physicians stated that they didn’t know the national recommendations for stroke prevention. Especially GPs were uninformed. Only 66% of the GPs shared the opinion that guidelines are helpful for their daily clinical practice. On the basis of presented fictive patients the physicians showed a high degree of uncertainty. The unambiguous cases were better rated by GPs, whereas more cardiologist and internists proposed treatments according to the guidelines in the more complex patients. In the primary prevention of stroke half of the respondents assessed treatments with ASS in contrast with the guidelines as sensibly. In general physicians with higher qualification had better knowledge, but deficits exist independently from specialty. CONCLUSION: Results show heterogeneous use of treatment guidelines by German office-based physicians. In Germany, treatment guidelines don’t reproduce the clinical practice and should be used as a reference in pharmacoeconomic studies with caution.

VKA TREATMENT RELATED COSTS IN FRANCE IN PATIENTS WITH CHRONIC NONVALVULAR ATRIAL FIBRILLATION (NVAF): COST DATA FROM THE INTERNATIONAL STUDY OF ANTICOAGULATION MANAGEMENT (ISAM)
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OBJECTIVE: Vitamin K antagonists (VKA) have a narrow therapeutic window and numerous drug and food interactions and therefore require frequent INR monitoring. This study aimed to estimate VKA treatment related costs in patients with chronic nonvalvular atrial fibrillation (NVAF). METHODS: Data were collected as part of the French arm of ISAM—International Study of Anticoagulation Management. Cost analysis was from a societal perspective and limited to direct medical costs. A randomly selected sample of general practitioners (GPs) and cardiologists (43GPs, 20 cardiologists) established a register of all patients who had received at least 60 consecutive days of VKA treatment for chronic NVAF in the preceding year. Study data came from medical records and patient interviews. VKA treatment related costs included INR tests, blood sample draws, physician consultations, nurse cost and VKA related hospitalisations. Drug costs were not considered. RESULTS: Of 278 patients interviewed, 264 patients had at least two consecutive INR results within the study period. In total, 3,026 INR tests were collected over a cumulative follow-up time of 188.4 years. The mean cost for INR tests was €164.8/patient/year (ppy); 41.2% of blood samples were taken at the patient’s home by a nurse, with a mean driving distance of 4.6km, representing an additional cost of €6.3 for each INR taken at home (average €41.5/ppy). VKA treatment generated 630GP and 171 cardiologist face-to-face consultations, at a cost of €87.8/ppy. Of 71 hospitalisations reported, 13 were judged attributable to VKAs by an event adjudication committee. These hospitalisations added a further €193.1/ppy. CONCLUSIONS: The annual cost of ambulatory VKA follow-up was €294.1 per patient. VKA related hospitalisations in this patient sample added €193.1, but the exclusion of patients unable to be interviewed may have resulted in underestimation of costs associated with severe and fatal adverse events (stroke).
OBJECTIVES: The objective of the literature review was to provide a comprehensive overview of the costs of care for hospitalization among patients with atrial fibrillation. RESULTS: The average age (SD) of the patients ranged from 70.1 (10.4) to 71.1 (10.4). Therapeutic classes where use increased included: angiotensin-converting enzyme (ACE) or angiotensin II inhibitors (66.7% to 69.3%); beta-blockers (43.2% to 54.0%); statins (42.0% to 51.9%); and spironolactone (9.7% to 12.0%). Classes where use decreased included: digitalis (38.1% to 34.1%) and calcium channel blockers (35.7% to 32.4%). Diuretic use was relatively constant at 73%. All-cause and CHF mortality decreased from 9.6% to 7.3% and 34.1% to 32.4%, respectively. Cost effectiveness analysis of bisoprolol treatment for chronic heart failure (2000–2002) was conducted using PCV19, PCV18, PCV20, PCV21
OBJECTIVE: beta-blockers have provided evidence of improving survival in chronic heart failure patients. Specifically, the Cardiac Insufficiency Bisoprolol Study II has shown a significant reduction in mortality and morbidity among patients with moderate to severe chronic heart failure treated with bisoprolol. Our aim was to investigate the economic consequence of bisoprolol therapy in chronic heart failure patients in Italy. METHODS: Data were derived from the Cardiac Insufficiency Bisoprolol Study II trial. We conducted a cost-effectiveness analysis, comparing standard care with bisoprolol vs. standard care with placebo in the perspective of the Italian National Health Service. We identified and quantified medical costs: drug costs according to the Italian National Therapeutic Formulary; specialist visits for initiation and up-titration of bisoprolol therapy and hospitalizations were quantified based on the Italian National Health Service tariffs (2005). Effects were measured in terms of mortality and morbidity reduction (number of deaths, life years gained and frequency of hospitalizations). We considered an observational period of 1.3 years, i.e. the average follow-up recorded in the trial. Discounting was not performed because of the relatively short follow-up of patients. We conducted one and multi-way sensitivity analyses on unit cost and effectiveness. We also conducted a threshold analysis. RESULTS: The overall cost of care per 1.000 patients treated for 1.3 years was estimated in €2,075,548 in the bisoprolol group and in €2,396,265 in the placebo group, resulting in a net saving of €320,718. The number of additional patients alive with bisoprolol was 55 per 1000 patients; the number of life years gained was 36 at 1.3 year. CONCLUSIONS: Bisoprolol therapy is dominant since it is both less costly and more effective than standard care. Results of sensitivity analysis showed that bisoprolol therapy remains dominant even to changes in unit cost of drug and hospitalizations.

CASE-BASED-COSTING VS. MARKOV-MODELLING—A COMPARISON OF COST-EFFECTIVENESS-ANALYSES FOR CANDESARTAN IN PATIENTS WITH CHRONIC HEART FAILURE

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OBJECTIVES: To compare two different methods in evaluating cost-effectiveness (CE) of candesartan for patients with chronic heart failure (CHF) in Germany based on the CHARM (Candesartan in Heart failure: Assessment of Reduction in Mortality and Morbidity)-programme. METHODS: For both analyses, CE was measured by calculating incremental cost-per-avoided-event. Two analytical approaches were chosen examining two treatment groups of the CHARM-programme: “Added” (low left ventricular ejection fraction (LVEF <40%) and “Alternative” (LVEF <40% and intolerant of an ACE inhibitor). The first approach calculated average costs per patient based on all cardiovascular events happened (Hospital admissions due to worsening heart failure, cardiovascular deaths, and cardiovascular procedures). Absolute risk reduction (ARR) to avoid/delay an event also was derived from all events occurring in the clinical trial. The second approach simulated the real life situation of patients with CHF in a Markov-analysis over 12 periods (3 years). Risk tables on mortality and morbidity were derived from Kaplan-Meier-Curves of the CHARM-protocols. ARR was determined through a Monte-Carlo-Simulation for a cohort of 1276 patients. For both approaches, cost calculation was performed from the perspective of the German statutory health insurance (SHI). Base year for costing was 2004. Only direct costs (drug, hospital, general practitioner, specialist, ambulance, rehabilitation) were considered. RESULTS: In the case-based-costing-approach, the incremental costs to prevent/delay a cardiovascular death or a hospital admission were €516 (“Added”) and €1210 (“Alternative”). The Markov-Analysis presented corresponding ratios of €2117 (“Added”) and €2814 (“Alternative”). Sensitivity analysis on costs, discounting rates and effects size showed the robustness of both models’ results. CONCLUSIONS: Both analyses showed the cost-effectiveness of candesartan for patients with chronic heart failure. Conducting a simulation that considers real-life-conditions leads to higher ratios, but gives a more precise estimate of the cost-effectiveness of candesartan in a long-term-perspective.

ECONOMIC EVALUATION OF VALSARTAN IN PATIENTS WITH CHRONIC HEART FAILURE IN THE HUNGARIAN HEALTH CARE SETTING

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OBJECTIVES: To estimate the costs, benefits, and cost-effectiveness of valsartan as a treatment of chronic heart failure (CHF) in Hungary. METHODS: A country-specific economic analysis was undertaken by combining within-trial efficacy and resource data from the Valsartan Heart Failure Trial (Val-HeFT) with Hungarian cost estimates. Unit cost estimates were obtained from official data sources of the National Health Found in Hungary and were adjusted to 2004 Hungarian forints. Total within-costs were estimated for hospitalizations, inpatient and outpatient physician services, ambulance transportation, deaths outside the hospital, and outpatient cardiovascular medications. We estimated life expectancy using two different methods, by taking the reciprocal of the mortality rate observed in the trial and based on the percentages of patients who had died during the trial. We compared within-trial inpatient days and number of hospitalizations using a negative binomial model adjusting for follow up. T-tests were used to compare within-trial costs. We also estimated the incremental cost per life year saved. Analyses were conducted for subgroups identified in Val-Heft. RESULTS: The net incremental cost in the valsartan group was 208,766 Ft over 23 months of follow-up. Over the course of the trial, patients treated with valsartan had on average a net incremental cost of 183,619 Ft. Among patients not treated with an ACE inhibitor at baseline, the incremental cost-effectiveness ratio was 402,438 Ft per life-year saved when we estimated life expectancy by taking the reciprocal of the mortality rate observed in the trial. When we estimated life expectancy using the daily hazard rate, the incremental cost-effectiveness ratio was 450,597 Ft per life-year saved. CONCLUSIONS: Valsartan provided clinical benefits at a mean incremental cost of 108,921 Ft per year during the trial. In patients not taking ACE inhibitors, valsartan was economically attractive, increasing survival for a reasonable cost.

CASE-BASED-COSTING VS. MARKOV-MODELLING—A COMPARISON OF COST-EFFECTIVENESS-ANALYSES FOR CANDESARTAN IN PATIENTS WITH CHRONIC HEART FAILURE

PCV23

PCV22

PCV24

COST-EFFECTIVENESS ANALYSIS OF ALDOSTERONE BLOCKADE WITH EPLERENONE IN PATIENTS WITH HEART FAILURE AFTER ACUTE MYOCARDIAL INFARCTION (EPHEUS) IN THE FRENCH CONTEXT

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OBJECTIVES: The aim of the study was to assess the incremental cost-per life-year saved with Eplerenone, an aldosterone antagonist, alongside with standard treatment for patients with post AMI heart failure, versus standard treatment alone.
METHODS: A within trial study was designed. Survival gains were estimated using an extraction of comparable patients from the Saskatchewan Health Data Base. A piecewise regression model yielded death rates adjusted on patients’ characteristics. Resource use was collected alongside the clinical trial. Only direct medical costs were considered. Hospital costs were calculated using French DRG costs, and the National Fee Schedule for outpatient diagnostic procedures. All costs were in 2003 Euros. A sensitivity analysis using bootstrap was used to build a confidence interval for the Incremental Cost-Effectiveness Ratio, and an acceptability curve. Costs and outcomes were discounted at five percent. RESULTS: Overall mortality over the trial period was 478 (14.4%) in the treatment group vs. 554 (16.7%) in the placebo group (p = 0.008). Combined CV deaths and hospitalisations were 885 (26.7%) in the treatment group, vs. 993 (30.3%) in the placebo group (p = 0.002). The discounted gain of survival was 3.2 weeks. The incremental cost per life year saved was €15,382 (95% IC: €8274–€42,723). Following the sensitivity analysis, 74% of the values of the ICER fell under a €50,000 per life-year saved. CONCLUSIONS: In France, the ICER compares with those of heart transplantation (€17,626) and of rt-PAs in the prevention of thrombotic events during the acute phase of AMI (€12,190). The main limitation of the study is the restriction to the duration of the trial. Sub-group analysis was not performed in the EPHEBUS trial, and it was not possible to compute an ICER for severe heart failure patients, for which one can expect a lower cost per life-year saved.

PCV23

THE ADD-ON TREATMENT WITH METOPROLOL SUCCINATE IN PATIENTS WITH CHRONIC HEART FAILURE (CHF) LEADS TO COST SAVINGS IN THE GERMAN HEALTH CARE SYSTEM—A MODEL APPROACH
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OBJECTIVES: The health economic impact of an additional metoprolol succinate treat-ment (METsuc) in patients with chronic heart failure (CHF) was analyzed for “real life” treatment patterns on the basis of the MERIT-HF—Trial (Metoprolol CR/XL Randomized Intervention Trial in Congestive Heart Failure). METHODS: Based on the efficacy data of the MERIT-HF, a markov model was created to simulate the effectiveness of METsuc treatment under real-life conditions. The additional direct costs associated with METsuc were examined in relation to the number of fatalities and of hospitalizations avoided. The cost analysis was conducted from the perspective of the German Statutory Health Insurance (SHI). Base year for the cost data was 2004. Probabilities were derived from the MERIT-HF—Trial. Missing data for this approach were assessed with the help of a focus group with eight general practitioners and cardiologists. Further, the number of life-years gained was calculated by using the DEALE method (Declining Exponential Approximation of Life Expectancy). RESULTS: For the period observed (18 months), additional METsuc treatment does not lead to additional costs for the Statutory Health Insurance (SHI) in Germany. With the application of METsuc, costs of about 3400 EUR per fatality and almost 1800 EUR per hospitalization could be avoided. The life expectancy of a CHF patient is 1.51 years higher in comparison to standard treatment alone. Univariate sensitivity analyses were conducted to demonstrate the robustness of the results. CONCLUSIONS: The additional costs for METsuc in the outpatient sector are compensated by reduced expenditures in the inpatient sector as well as in the field of ambulance transportation. On the basis of the present analysis the treatment with metoprolol succinate represents an approach for integrated health care under a clinical as well as under an economical perspective.

PCV26

COST-EFFECTIVENESS OF CANDESARTAN IN GERMANY FOR PATIENTS WITH CHRONIC HEART FAILURE
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OBJECTIVES: To evaluate the cost-effectiveness (CE) of candesartan for patients with chronic heart failure (CHF) in Germany based on the CHARM (Candesartan in Heart Failure: Assessment of Reduction in Mortality and Morbidity)–programme. METHODS: Two CE-analyses were conducted: incremental cost-per-avoided-event and incremental cost per life-years gained. Effectiveness data were derived from the CHARM-programme which provided data on three treatment groups with CHF-patients: “Added” (low left ventricular ejection fraction (LVEF <40%), “Alternative” (LVEF <40% and patients’ ACE-inhibitor intolerance) and “Preserved” (LVEF>40%). Besides, an “Overall” analysis was processed. All cardiovascular events (Hospital admissions due to worsening heart failure, cardiovascular deaths, and cardiovascular procedures) were extracted. Absolute risk reduction (ARR; only first events counted) to prevent/delay one event was evaluated. Cost calculation was performed from the perspective of the German statutory health insurance (SHI). Base year for costing was 2004. Only direct costs (drug, hospital, general practitioner, specialist, ambulance, rehabilitation) were considered. Incremental costs between candesartan and placebo were used building a ratio with ARR. Long-term effectiveness was estimated calculating the incremental costs per life-year gained (LYG). LYG were generated using the DEALE (Declining Exponential Approximation of Life Expectancy)—approximation. RESULTS: The incremental costs to prevent/delay a cardiovascular death or a hospital admission were €2279 (“Added”), €2763 (“Alternative”), €31,015 (“Preserved”) and €7717 (“Overall”). The incremental costs per life-year gained were 47 EUR (“Added”), 131 EUR (“Alternative”), €11,054 (“Preserved”) and €231 (“Overall”). Sensitivity analyses were conducted for all treatment groups. The results were robust to variations of costs, discounting rates and effects. CONCLUSIONS: With regard to the results of the treatment groups “Added” and “Alternative”, candesartan is a cost-effective treatment option for patients with low left ventricular ejection fraction in Germany.

PCV27

COSTS AND OUTCOMES AFTER FIRST HEART FAILURE HOSPITAL ADMISSION: A LONGITUDINAL STUDY USING ADMINISTRATIVE DATABASES
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OBJECTIVE: To assess the economic and epidemiologic impact of CHF in Friuli Venezia Giulia (FVG) a region of approximately 1.2 million inhabitants in the north-eastern Italy. METHODS: All residents of FVG are registered in to Regional Health Service (RHS) database, which keeps tracks of the use of medical care admissions and reimbursement purposes. We selected residents of FVG who had during year 2000 a first CHF hospital admission and we followed them up till death, or December 31, 2004. (we a priory excluded people who during the period 1995–1999 had a previous CVD event). Mortality was investigated by collecting information from Regional Citizen Register file. We obtained information on medical costs from electronic databases
of prescriptions, hospitalizations, visits and diagnostic examinations in FVG. Direct medical costs were quantified in the perspective of the RHS and are expressed in Euro 2005. RESULTS: We enrolled 2122 patients with incident CHF (mean age 78 ± 11 y.o.), 55.3% were women. The average cost person/year was €5896, 54; 80% attributable to hospitalisations, 13.7% to drugs, 6.3% to other medical costs. A total of 1320 (62.2%) patients died during the follow-up period. Mortality was higher in male (p < 0.0001) and older subjects (p < 0.0001). CONCLUSIONS: CHF imposes a huge economic burden on NHS and society because of the large number of hospitalisation and the high rate of mortality after the first event. Future investigations will be conducted to assess the relationships between comorbidity, costs, drug therapy and survival.

IMPACT OF MODIFIED SYSTEM OF OBJECTIFIED JUDGMENT ANALYSIS (SOJA) METHODOLOGY ON PRESCRIBING COSTS OF ANGIOTENSIN CONVERTING ENZYME INHIBITORS (ACEIS)
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OBJECTIVE: SOJA is a structured approach to the selection of drugs for formulary inclusion. The aim of this study was to use a modified SOJA approach in the selection of ACEI products for use within a health board in Northern Ireland. METHODS: The modified SOJA approach involved three phases in sequence: an evidence based pharmacotherapeutic evaluation of all available ACEI drug entities, a separate safety / risk assessment analysis of products containing agents which exceeded the pharmacotherapeutic threshold and finally a budgetary impact analysis. A comprehensive literature review and expert panel judgment, informed selection of criteria (and their relative weighting) for the pharmacotherapeutic evaluation. The resultant criteria / scoring system was circulated (in questionnaire format) to prescribers and stakeholders for comment. Based on statistical analysis of the latter survey results, the final scoring system was developed. Drug entities which exceeded the evidence threshold score were entered into a tendering process with pharmaceutical suppliers. Products submitted as a result of the tendering process were sequentially entered into the second and third phases of the modified SOJA process (safety / risk assessment; budgetary impact analysis). RESULTS: Five drug entities (from the 11 currently available in the UK) exceeded the evidence threshold and 22 from 26 submitted product lines, containing these drug entities, satisfied the safety evaluation / risk assessment criteria. Three product lines, each containing a different drug entity, were selected for formulary inclusion as a result of the budgetary impact analysis. The estimated annual cost savings for ACEIs as a result of this selection (based on estimated annual usage in Defined Daily Doses) in this health board was 41%. CONCLUSION: The modified SOJA approach has a significant contribution to make in containing ACEI costs while retaining the same level of patient care.

USE OF CONTRAST ECHOCARDIOGRAPHY: A REVIEW OF CLINICAL DATA USING A SYSTEMATIC APPROACH
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OBJECTIVE: Risk assessment is important in determining the management of patients with suspected or confirmed coronary artery disease (CAD). However, evidence supporting the clinical impact of contrast echocardiography (CE) in this sphere is not well known. The objective was to review and summarise the clinical data for licensed and investigational applications of CE in CAD, using systematic review methodology. METHODS: Full publications of clinical studies of selected contrast agents were identified through searches of electronic literature databases and application of predefined inclusion criteria. Studies were categorised and key data were extracted and tabulated for analysis. No statistical pooling of data was undertaken due to study heterogeneity. RESULTS: 2275 abstracts were screened. 61 studies met inclusion criteria and were categorised as follows: effectiveness in image enhancement (23 studies); accuracy in the diagnosis of CAD, using coronary angiography as the diagnostic gold standard (23 studies); myocardial viability assessment (16 studies); prognostic accuracy (2 studies). Using second generation contrast agents, diagnostic images were obtained in 48–98% (median = 74%) of patients with suboptimal un-enhanced images and several studies reported improved intra- and inter-operator reproducibility. Reported sensitivities and specificities for CAD diagnosis ranged from 41–100% (median = 86%) and 44–100% (median = 81%). Two studies reported that information gained from myocardial contrast echocardiography (MCE) provided incremental diagnostic value to that from left ventricular function (LVF) assessment alone. Reported sensitivities and specificities of myocardial viability assessment by MCE for predicting LVF recovery ranged from 50–96% (median = 74%) and 44–96% (median = 83%). CONCLUSIONS: The body of evidence suggests that effective use of contrast agents in echocardiography extends beyond the licensed use in patients with suboptimal baseline images. MCE is effective in the assessment of myocardial perfusion in the diagnosis of CAD and the detection of myocardial viability. Interpretation is limited by the size of studies, lack of long-term outcomes and potential referral bias.
OBJECTIVES: The efficacy of platelet inhibition with clopidogrel for patients (pts) with non-ST-elevation acute coronary syndromes was demonstrated in CURE and PCI-CURE trials. The purpose of present analysis is to estimate the long-term cost-effectiveness of clopidogrel in Poland, using clinical outcomes and resource utilization from CURE and in PCI-CURE.

METHODS: Costs of hospitalizations and studied drugs were calculated based on resource utilization collected in case report form for all pts in CURE (clopidogrel, n = 6259, placebo, n = 6303) and in the subgroup of PCI-CURE pts (clopidogrel/n = 1313, placebo/n = 1345). Comedications were not included in the economic analyses as drug utilization was similar in clopidogrel and placebo group. Unit costs were calculated using drugs retail prices and medical procedures tariffs contracted by National Health Found. Because of lack of sufficient Polish epidemiological data two different sources (Framingham and Saskatchewan databases) were used to evaluate the lost life expectancy associated with death, MI and stroke. A discount rate of 3% was applied. Results are expressed in cost per Life Year Saved. RESULTS: Total cost per pt was higher in the clopidogrel arm for CURE and PCI-CURE (+€463 and +€454) respectively. The estimated number of LYS with clopidogrel for CURE pts was 69.9 per 1000 pts treated using Framingham and 68.2 using Saskatchewan data. Corresponding values for PCI-CURE were 69.8 per 1000 patients with Framingham and 88.5 with Saskatchewan data. The cost per LYS for clopidogrel versus placebo for CURE pts was €6624 with Framingham and €6789 with Saskatchewan database. For PCI-CURE pts these figures were €6504 and €5130 respectively. CONCLUSION: Based on the clinical findings of CURE and PCI-CURE trials clopidogrel appears to be cost-effective in Poland. Although results obtained from two different sources of survival data are consistent, the interpretation of present findings requires further adjustment to Polish epidemiological settings.

LONG-TERM COST-EFFECTIVENESS OF CLOPIDOGREL IN ACUTE CORONARY SYNDROMES BASED ON CURE AND PCI-CURE IN POLAND

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PCV32

A COST-EFFECTIVENESS ANALYSIS OF LOW-DOSE ASPIRIN IN THE PRIMARY PREVENTION OF CARDIOVASCULAR DISEASE IN FOUR EUROPEAN COUNTRIES

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OBJECTIVES: Low-dose Aspirin is standard care in patients with cardiovascular disease (CVD). In primary prevention the use of Aspirin is not fully established although meta-analyses and guidelines support its use in persons at increased CVD risk. This study assessed the health economic consequences of the use of low-dose Aspirin in the primary prevention of CVD in the UK, Germany, Spain and Italy. METHODS: Based on results reported in two meta-analyses, a Markov model was developed to predict the cost-effectiveness of Aspirin in the primary prevention of CVD. Different time horizons (1 to 10 years), 1-year cycles and direct costs from the healthcare payer’s perspective (2003) were used. Effects were expressed in Life-Years (LY) and QALY. Utility data (TTO) were obtained from published data. Country-specific discounting was applied. RESULTS: For patients with an annual risk of coronary heart disease (CHD) of 1.5%, the model results in average savings with low-dose aspirin after 10 years of €201 [95%CI €81–€331], €281 [95%CI €141–€422], €797 [95%CI €301–€1311] and €427 [95%CI €122–€731] per patient in the UK, Germany, Spain and Italy, respectively. Although the savings in the first year are modest (average €10–20), from the second year on they are significant in all countries. Sensitivity analysis showed the results robustness. The number of LY and QALY gained with aspirin were respectively 0.2 and 0.4 years in the four countries. Monte Carlo analysis showed aspirin-
dominance in ≥ 97% of cases for the three studied annual risks of CHD (0.6%, 1.0% and 1.5%) except for Italy, where dominance in ≥95% was seen at annual risks of 1% and 1.5%. CONCLUSIONS: Administering low-dose Aspirin to patients with an annual risk of CHD of ≥1% is significantly cost-saving from the health care payer’s perspective in all countries analysed. Savings start after one year of treatment.

PCV34

WITHDRAWN

PCV35

HOSPITALIZATIONS FOR CARDIOVASCULAR EVENTS:
FRENCH DRG ANALYSIS
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OBJECTIVES: This French DRG analysis aimed to obtain estimations of numbers and prices/costs of private and public hospitalizations in 2002 for following cardiovascular events: coronaryography, coronary angioplasty, aorto-coronary bypass, myocardial infarction, cerebrovascular accident, transient ischemic attack, stable and unstable angina, heart failure. METHODS: Anonymized databases were used: private and public PMSI 2002 databases of BAQIMEHP (“Bureau Assurance Qualité de l’Information Médico-Economique de l’Hospitalisation Privée”: Quality Assurance Committee of Health Economic Information of Private Hospitalization) and ENC 2004 (“Etude Nationale des Coûts”: National Study of Costs) database of public sector. The PMSI (“Programme de Médicalisation des Systèmes d’Information”) is the French equivalent of DRG system. The GHM (“Groupes Homogènes de Malades”: Homogeneous Groups of Patients) corresponding to cardiovascular events were determined from classifying medical procedure (CdAM: “Classification Des Actes Médicaux”) and/or from main diagnosis (ICD 10: International Classification of Diseases). The numbers of hospitalizations were then determined. The most representative GHM were selected, and associated prices/costs have been weighted by suitable numbers of hospitalizations in order to obtain an average price/cost of hospitalization. RESULTS: Average prices (private sector) and costs (public sector) have been estimated respectively in private and public sector at €1815 and €1315 for a coronaryography, €2704 and €2971 for a coronary angioplasty (€5750 and €5178 with stenting), €14,903 and €13,119 for an aorto-coronary bypass, €4271 and €4216 for a myocardial infarction (including procedures), €2967 and €3483 for a cerebrovascular accident, €1799 et €2570 for a transient ischemic attack, €1589 and €2350 for stable and unstable angina, €2433 et €3658 for a heart failure. CONCLUSION: It is difficult to isolate specific hospital prices/costs of cardiovascular events. Nevertheless those approximations seem to be the only way to assess these prices/costs, which in addition are likely to be used in pharmacoeconomic models.

PCV36

USE OF ABCIXIMAB IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION (PCI) IN FRANCE
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OBJECTIVES: To evaluate differences between public and private hospitals in abciximab prescriptions for patients undergoing PCI with coronary artery disease (CAD) in France. METHODS: Data were collected from the 2002 “PMSI” database (DRG for every patient admitted). To evaluate the total number of PCI performed for CAD in private and public hospitals, we selected the following DRGs (myocardial infarction, coronary endoprosthesis, and cardiac catheterization) and crossed them with the following acts performed during PCI (transluminal angioplasty, stent implantation, atherectomy). We computed the numbers of abciximab prescriptions from the French sales 2002 in each private and public hospitals. RESULTS: In 2002, 96,247 PCI were performed in patients hospitalized for CAD (52,046 in private setting, 44,201 in public setting). Abciximab was administered for 7719 and 2327 PCI procedures in public and private hospitals, respectively. Abciximab was used for only 18% of PCI in public hospitals and 4.5% in private ones, although, abciximab is the only drug indicated for prevention of cardiac ischemic complications in patients undergoing PCI and recognized by French authorities as correlated to a “major improvement” for these patients. CONCLUSION: The important difference in 2002 between public and private sectors can be mostly explained by different funding systems: global budget for public hospitals, fee for services, payment per day and low daily fixed fare for drugs in private hospitals. In France, a new DRG system of funding, close to the one for profit hospitals was implemented in public institutions in 2004. Before that, the results show a clear difference in the recourse to abciximab between public and private sectors for the same DRGs due to the difference in financing. If nothing happens, it can be foreseen that the results observed for profit hospitals will be the rule for public hospitals and patients undergoing PCI could no more benefit from abciximab.
USE OF TIME-STAMPED HOSPITAL DATA TO EXAMINE CARE PATTERNS OF ACUTE CORONARY SYNDROME PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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OBJECTIVES: Quality improvement initiatives in acute coronary syndrome (ACS) such as CRUSADE have found marked increase in treatment guideline adherence during the past several years. This descriptive study used time-stamped data to examine pharmacologic treatment and laboratory biomarker utilization patterns in ACS patients who underwent percutaneous coronary intervention (PCI).

METHODS: The data source consisted of 19 hospitals throughout the U.S. that used time-stamp data from January 2003–September 2004. ACS was identified in the dataset using ICD-9 diagnosis codes for unstable angina and/or myocardial infarction (MI). The time-stamp allowed more precise measurement of drug administration and biomarker sampling. Biomarker definition of MI was CK-MB >3 times upper limit of normal, troponin I and myoglobin >1 times upper limit of normal.

RESULTS: A total of 6,282 ACS patients who had been given clopidogrel were identified with adequate time-stamp information. The most common recorded comorbid diagnoses were ischemic heart disease 91.2%, hypertension 54.4%, lipid disorder 57.9%, and diabetes 21.7%. Aspirin (ASA) plus clopidogrel was received by 75.9% of patients and initiated on the day of PCI in 88.3% of patients. The majority of initial ASA plus clopidogrel administration was minus (−) 10 to plus (+) 14 hours from PCI. GPIIb/IIIa inhibitors were received by 68.6% and statins by 73% of patients, respectively during hospitalization. Post-procedure (>8 hours after PCI) biomarker monitoring (CK-MB, troponin I or myoglobin) was performed in 67.9% of patients. The majority of testing was CK-MB or troponin I.

CONCLUSIONS: This novel examination of ACS treatment using time-stamped data found ASA, clopidogrel; GPIIb/IIIa inhibitors and statins were often used in this cohort. A wide range of initial administration time for ASA plus clopidogrel around PCI was found. Post-procedure biomarker monitoring occurred frequently and was often positive.

TIENOPYRIDINE THERAPY IN ACUTE CORONARY SYNDROME PATIENTS RESIDING IN GERMANY

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OBJECTIVES: The European Society of Cardiology consensus treatment guidelines in 2002 support use of clopidogrel in many ACS patients for secondary prevention of cardiac events. This descriptive study used time-stamped data to examine pharmacologic treatment and laboratory biomarker utilization patterns in ACS patients who underwent percutaneous coronary intervention (PCI).

METHODS: The data source consisted of 19 hospitals throughout the U.S. that used time-stamp data from January 2003–September 2004. ACS was identified in the dataset using ICD-9 diagnosis codes for unstable angina and/or myocardial infarction (MI). The time-stamp allowed more precise measurement of drug administration and biomarker sampling. Biomarker definition of MI was CK-MB >3 times upper limit of normal, troponin I and myoglobin >1 times upper limit of normal.

RESULTS: A total of 6,282 ACS patients who had been given clopidogrel were identified with adequate time-stamp information. The most common recorded comorbid diagnoses were ischemic heart disease 91.2%, hypertension 54.4%, lipid disorder 57.9%, and diabetes 21.7%. Aspirin (ASA) plus clopidogrel was received by 75.9% of patients and initiated on the day of PCI in 88.3% of patients. The majority of initial ASA plus clopidogrel administration was minus (−) 10 to plus (+) 14 hours from PCI. GPIIb/IIIa inhibitors were received by 68.6% and statins by 73% of patients, respectively during hospitalization. Post-procedure (>8 hours after PCI) biomarker monitoring (CK-MB, troponin I or myoglobin) was performed in 67.9% of patients. The majority of testing was CK-MB or troponin I.

CONCLUSIONS: This novel examination of ACS treatment using time-stamped data found ASA, clopidogrel; GPIIb/IIIa inhibitors and statins were often used in this cohort. A wide range of initial administration time for ASA plus clopidogrel around PCI was found. Post-procedure biomarker monitoring occurred frequently and was often positive.

THE EFFECT OF GENDER ON HEALTH-RELATED QUALITY OF LIFE AFTER CORONARY STENT IMPLANTATION

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OBJECTIVE: The need for treatment of cardiac disease in women can go unrecognised and access to appropriate health care can be limited. We evaluated the effect of gender on changes in long-term health-related quality of life (HRQoL) after coronary stent implantation (CSI) in conventional treatment of coronary artery disease (CAD).

METHOD: In this prospective comparative multi-centre cohort study in Germany, patients with CAD undergoing coronary angioplasty were electively treated with stents. Standardised questionnaires were completed by patients at baseline, 3, 6, 12, and 18 months following angioplasty and documented patient health-related (SF-36) and disease-specific (MacNew heart disease questionnaire) quality of life, as well as clinical outcomes.

RESULTS: From April until August 2004, 103 women (16%, mean age 66, b11) und 546 men (mean age 64, b10) were treated with CSI. There were no significant differences in socio-demographic factors, cardiovascular risk factors and severity of CAD. At baseline, all aspects of HRQoL evaluated by SF-36 and MacNew were significantly poorer in women than in men (p = 0.004). Three months following stent implantation, the difference in improvement in the SF-36 aspects of general health (p = 0.005), role emotional (p = 0.034) and the mental summary score (p = 0.027) was significantly greater in women than in men, although their actual HRQoL remained significantly lower in most aspects. After 6 months, the difference in improvement in women was significantly greater to baseline in the aspect of role emotional than men (p = 0.019). Gender differences in improvement were not demonstrated in the follow-up MacNew questionnaires.

CONCLUSIONS: In comparison to men, baseline HRQoL in women may be lower before receiving CSI treatment. However, three and six months following implantation of a coronary stent, the difference in improvement in many aspects of HRQoL was greater in women than in men. Women may have a wider range of potential improvement after coronary stent implantation than men.
per year. CHD may adversely impact on the Quality of Life. The objectives of the study were to describe Health-Related Quality of Life (HR-QOL) in subjects with CHD and to compare their health state with the health state of subjects without CHD.

**METHODS:** We selected subjects with CHD (Cases) from a representative sample of the Italian general population aged from 40 to 79 years, enrolled in a population based naturalistic prospective survey. We matched each of them by age and sex with subjects without CHD disease (Controls). EuroQol (EQ-5D) was used to evaluate HR-QOL. We used Chi Square Test to evaluate differences in the five dimensions of the EQ-profile between the two groups. Paired sample T test was used to evaluate differences in EQ-VAS.

**RESULTS:** We analyzed two groups of 98 subjects per group. The mean age was 64.7 (SD 8.6) years, (69.4%) were male. More problems were reported in cases than in controls in the mobility dimension, usual activities, and self care and anxiety/depression dimensions. These differences proved statistically significant. Whereas in pain/discomfort domain there was no significant difference between the two groups. Mean values of the visual analogue scale assessing global health status indicated by case and control were 68.1 and 66.94, respectively (P = 0.005).

**CONCLUSION:** The study, comparing subjects of the same age and sex with and without CHD, suggests that the presence of CHD is associated with higher problems in HR.

**PORTUGUESE ACTIVE POPULATION HEALTH RELATED QUALITY OF LIFE RESULTS USING THE SF-6D**

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**OBJECTIVES:** This study aims to describe the health related quality of life (HRQOL) of the Portuguese population and investigates sociodemographic differences. **METHODS:** Subjects randomly selected from the Portuguese active population (n = 2459) were assessed using the SF-36, a generic measure of HRQOL, which was converted into the preference-based SF-6D, following the Brazier algorithm. Although the sample was randomly selected, it differed slightly from the whole population. In order to correct this, post-stratified statically techniques were used to weight the initial results by gender and age, according to the population values.

**RESULTS:** Mean global utility SF-6D scores were 0.70, and ranged from 0.73 (18–24 years) to 0.63 (55–64 years). The mean utility scores were 0.17 lower in the lower educational level than in the higher educational level (p < 0.000). Women, people living in rural areas and the elderly reported lower levels of utility scores. Nonparametric tests showed that health utility values were significantly related to employment (p < 0.000): the unskilled manual workers (0.68) reported lower utility values than the non-manual workers (0.74). For different diseases mean utility scores ranged from 0.66 (hepatitis) to 0.56 (stroke). This study was able to achieve normative data by age and gender for the SF-6D. Using QALYs as outcome measures, the difference between unskilled manual workers and non-manual workers would be equivalent to a difference of 4902€ in annual income. In this line of thinking, the difference between lower educational level and higher educational level would be equivalent to a difference of 13,889€ in annual income. **CONCLUSION:** We conclude that the SF-6D is an efficient tool for measuring the HRQOL in the community, so that different population groups can be compared. The preference-based utility measure used seems to adequately discriminate across different sociodemographic differences, showing that the HRQOL varies greatly between sociodemographic groups.
increased over the years; in 1996 13.7% of the patients started with at least an equipotent dose of four (simvastatin 20 mg or equipotent) while in 2004 88.4% of all patients started on at least an equipotent dose of four. Goal attainment increased from 42% in years prior to 2001 to 59% in 2002–2004 and was high in patients with cardiovascular disease and diabetes (43% versus 69%). CONCLUSIONS: Although in recent years aggressive statin treatment and lower baseline TC levels led to higher goal attainment 41% of the patients still did not reach goal. Therefore even more effective and well tolerated lipid lowering therapies seem to be required.

PCV44

COST-EFFECTIVENESS OF ROSUVASTATIN IN THE PREVENTION OF ISCHEMIC HEART DISEASE IN PORTUGAL
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OBJECTIVES: To analyse the cost-effectiveness of Rosuvastatin compared to Atorvastatin in the treatment of hypercholesterolemia and prevention of ischemic heart disease (IHD) in Portugal. METHODS: A probabilistic Markov model was developed to analyse the costs and consequences of lifetime treatment with Rosuvastatin and Atorvastatin. For this purpose, results from head-to-head, randomised, double-blind trials evaluating low-density lipoprotein (LDL) changes and from a meta-analysis defining the relationship between LDL levels and fatal and non-fatal IHD events were combined. Incidence of myocardial infarction was derived from a nine-year Portuguese observational study. Death rates due to IHD and other causes were obtained from official data. Resource use in the treatment of MI was estimated by a Delphi panel of 8 Portuguese cardiologists with at least 15 years of clinical practice. Calculation of costs was done on both the societal and patients’ perspectives. Eligible population was defined as untreated individuals over 35 years of age with LDL above 160 mg/dl. RESULTS: Rosuvastatin slightly increases life expectancy: 5.64 days per patient and 8832 years for the eligible population. Although the drug is more expensive, economic analysis shows that Rosuvastatin is cost saving. It saves €105 or €57 per patient on the society’s or the patients’ perspective, respectively. Therefore, Rosuvastatin dominates the alternative having a cost-effectiveness ratio of ~€6772 and ~€3682 per life year according to the society’s or the patients’ perspectives. In the 10,000 simulations carried out Rosuvastatin was always more efficacious than Atorvastatin, being cost saving in 56.05% of the cases. If the willingness to pay is higher than €162 (society) or €98 (patients) Rosuvastatin is cost-effective in all cases. CONCLUSION: Rosuvastatin dominates Atorvastatin in the prevention of IHD in Portugal.

PCV45

THE ECONOMIC ASSESSMENT OF SWITCHING TO DUAL INHIBITION CHOLESTEROL LOWERING THERAPY IN FINLAND
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While treatment guidelines recommend lowering cholesterol to target levels, many remain above recommended goal (TC >4.5 mmol/dl for CHD and diabetic patients). In a clinical trial patients switched from statin monotherapy to Ezetimibe/Sim-}

vastatin (dual inhibition therapy) experienced an additional 27.5% and an 18.8% reduction in LDL-C and TC, respectively. CONCLUSION: Assess cost-effectiveness of switching patients to Ezetimibe/Simvastatin (followed by titration on Ezetimibe/Simvastatin) versus an atorvastatin dose titration strategy in CHD/diabetic patients who are not at goal with atorvastatin monotherapy. METHODS: Previously published decision-analytic model was used to project lifetime costs and benefits of lipid therapy. Clinical trial data were used in the model to estimate TC reductions for different treatment strategies. The effect of TC reductions on CHD event rates was estimated using Framingham equations and Finnish statistics on nonCHD-related mortality. Direct costs of CHD events in Finland [Health 2000 Survey data at the 2003 price level and also from the literature], Finnish prices for atorvastatin and Ezetimibe/Simvastatin and age specific-quality-of-life weights were used to project cost/QALY. The model was run for a sample of Finnish CHD/diabetic patients (N = 25) that participated in the Finrisk 2002 study and were not at TC goal while on therapy with atorvastatin and having data on all Framingham risk factors. RESULTS: The mean age of the study sample was 60.4 (SD 7.7) years, 60% male, lipid profile on atorvastatin TC 5.4 (SD 0.9) mmol/L, HDL-C 1.3 (SD 0.3) mmol/L, triglycerides 1.8 (SD 1.1) mmol/L. Switching to Ezetimibe/Simvastatin (followed by 11% titration on Ezetimibe/Simvastatin) compared to atorvastatin titration (11%) is projected to increase undiscounted life expectancy by 0.75 years for CHD/diabetic patients with a discounted incremental cost/QALY of €9172. CONCLUSION: Switching to dual inhibition therapy, (Ezetimibe/Simvastatin) in CHD/diabetic patients not at goal on atorvastatin is projected to be a cost-effective alternative to atorvastatin titration.
ditures for health insurance funds have been remained under control.

**PCV47**

**ROSUVASTATIN 40 MG VERSUS ATORVASTATIN 80 MG IN HIGH-RISK PATIENTS WITH HYPERCHOLESTEROLAEMIA: ECONOMIC ANALYSIS OF THE POLARIS STUDY**

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**OBJECTIVES:** POLARIS is a 26-week, double-blind, randomised study comparing the efficacy of rosuvastatin (RSV) 40mg with atorvastatin (ATV) 80mg in high-risk patients (known CHD or CHD-risk equivalent, as defined by NCEP ATP III) with hypercholesterolaemia. Using a secondary prevention model, results from POLARIS were used to estimate longer-term costs and benefits. METHODS: Efficacy data from POLARIS (TC, HDL-C, and TGs) were used as input to the model. Markov models were run in 4-year cycles over 20 years, from age 55 to 76 years for men and women separately. Secondary CHD risk was based on Framingham data (d’Agostino et al. AHJ 2000) but calibrated to British Regional Heart Study (Brindle et al. BMJ 2003). Estimates for life expectancy, health-care costs and quality-adjusted life years (QALYs) were assigned to patients as they transitioned through the model. RESULTS: RSV 40mg improved levels of TC and HDL-C more than ATV 80mg (-41% vs. -39%; +1.0 vs. +6.2%, respectively). The model predicts that more secondary CHD events and deaths are avoided with RSV 40mg compared with ATV 80mg in both high-risk men and women; hence, more life-years and QALYs are generated and event costs are lower. More patients survive on treatment and therefore total costs with RSV 40mg are slightly higher. Cost per life year gained (men: £1113, women: £1065) and QALY gained (men: £2091, women: £3079) are favourable higher. Cost per life year gained (men: £1113, women: £1065) and therefore total costs with RSV 40mg are slightly higher. CONCLUSION: Compared to atorvastatin, switching patients not at goal on statin monotherapy to ezetimibe/simvastatin followed by titration is projected to get 36.6% additional patients to goal and reduce LDL-c by 13.7%.

**PCV48**

**ASSESSMENT OF MAXIMUM LDL-C REDUCTION AND GOAL ATTAINMENT BY SWITCHING PATIENTS TO DUAL INHIBITION THERAPY (EZETIMIBE/SIMVASTATIN) IN SPAIN**

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While treatment guidelines recommend lowering cholesterol to target levels, many remain above goal (LDL-C >100mg/dl for CHD/diabetic patients and LDL-C >130mg/dl for other non-CHD high risk individuals). OBJECTIVE: To assess the change in LDL-C and goal attainment rates due to switching patients to an Ezetimibe/Simvastatin dose titration strategy, compared with a simulated statin monotherapy dose titration strategy. METHOD: A decision-analytic model was developed to project goal attainment at end of 1-year after therapy change. Clinical trial data were used to estimate LDL-C reductions for different treatment strategies. The model was run for a population of 594 Spanish patients (237 CHD/diabetic and 267 non-CHD high risk patients) that had not reached LDL-C goal levels 3-months after starting statin therapy. Patients not at goal where up titrated (till goal attainment or to the maximum dose whichever was first) every 3 months both in the Ezetimibe/Simvastatin (only simvastatin titrated) and in the statin monotherapy titration arms. RESULTS: Mean age was 60.8 (SD 9.8) years, 47.8% female, lipid profile (mg/dl) at three months on statin monotherapy was LDL-C 182.3 (SD 35.1), TC 262.1 (SD 39.5), HDL-C 50.8 (SD 14.1), triglycerides 150.1 (SD 82.5). Ezetimibe/Simvastatin therapy is projected to achieve a 82.6% goal attainment rate, compared with 46.0% projected for the statin titration strategy. With respect to LDL-C reductions, Ezetimibe/Simvastatin would achieve a 38.2% reduction over baseline, compared with a 24.5% with the statin titration strategy. In the statin arm, 73.9% of the patients reached the statin maximum dose, whereas in the Ezetimibe/Simvastatin arm, only 23.5% of the patients did so. CONCLUSION: Compared to statin monotherapy titration, switching patients not at goal on statin monotherapy to Ezetimibe/Simvastatin followed by titration is projected to get 36.6% additional patients to goal and reduce LDL-c by 13.7%.

**PCV49**

**BELGIAN EVALUATION OF SCREENING AND TREATMENT OF HIGH RISK PATIENTS BASED ON WAIST AND AGE (BEST)**


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**OBJECTIVE:** The objective of this study was to describe the burden of modifiable risk factors and of the total CV risk in a population, free of CVD, in general practice, on the basis of age (40–75yrs) and waist circumference (>94cm in men and >80cm in women). METHODS: In total, 619 Belgian GPs recruited consecutive patients during spring 2004. A central lab analysed fasting blood samples. RESULTS: Complete data on 8587 patients were obtained. Mean age was 58yrs (47% women). Mean BMI and waist were 30.1kg/m² and 99cm for women and 30.1kg/m² and 107cm for men. Eighteen-percent had diabetes (D) either known and treated (14%) or newly detected, based on fasting glucose levels (4%). Of the non-diabetic subjects (ND), 25% had ° 3 metabolic syndrome risk factors (NCEP-ATP III criteria). Twenty-four percent of the total population was smoking and 20% of women. 10yrs was present in more than 40% of men and in more than 20% of women. CONCLUSION: Waist measurement is an easy and inexpensive tool to detect, in the middle-aged population free of CVD, a subgroup with a large variety of modifiable risk factors and at high risk for CV death. A large majority of them is physically inactive, an unacceptable proportion is smoking and both total cholesterol and blood pressure are insufficiently managed.

**PCV50**

**A MULTILEVEL ANALYSIS ON PRESCRIBED STATINES IN A BOLOGNA HEALTH AUTHORITY FROM 2000 TO 2003**

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**OBJECTIVES:** The main aim is to evaluate the variability of practitioners’ prescribing behaviour on statines in AUSL Bologna South from 2000 to 2003, as well as to quantify how much such a behaviour depends on culture, education and policy of practitioner. METHODS: A multilevel model has been built to reflect
the hierarchical data structure: patients with prescribed statines, nested in their prescribing general practitioner. The multilevel model advantage lies on the fact that one can insert, in the same analysis, independent variables related either to the general practitioners (level-2) or to the patients (level-1). Furthermore, one can quantify the variability at each level, which is, prescribing practitioners’ variability and patients’ variability. Particularly, a random intercept model has been built, where the response variable is the sum of the daily dosages given in the prescriptions for each patient. Actually, we refer to generalized linear model theory, because the dependent variable is Gamma-distributed.

RESULTS: The regressors referred to the patients (level-1) and inserted into the model are: age, sex, and use of other cardiovascular drugs. The level-2 independent variables, hence referred to practitioner, are: age, sex, specialization (yes/no) on cardiology, ratio of statines’ prescriptions on total number of prescriptions of cardiovascular drugs and percentage of patients over 65 years old. The largest part of variability is obviously due to patients’ effect. Regarding the regressions of level 2, the age of the practitioner provides a negative and significant coefficient, indicating a tendency towards “prescriptive thrift” by older doctors.

CONCLUSIONS: It appears to be a clear evidence that the consumption of statines and, generally, of drugs cannot be simply reduced to individual characteristics. From a methodological point of view, it has been shown that multilevel approach provides a coherent framework, in spite of the lack of applications to health sciences.

**PCV51**

**PROJECTED LDL-C REDUCTION AND GOAL ATTAINMENT BY SWITCHING PATIENTS TO DUAL INHIBITION THERAPY (EZETIMIBE/SIMVASTATIN 10/20MG) IN SPAIN**

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While treatment guidelines recommend lowering cholesterol to target levels, many remain above goal (LDL-C >100mg/dL for CHD and diabetic patients and LDL-C >130mg/dL for other non-CHD high risk individuals). **OBJECTIVE:** To project the change in LDL-C and goal attainment rates by treating patients observed in clinical practice with statin monotherapy. **METHOD:** A decision-analytic model was developed to project goal attainment at end of one year after therapy change. Short term clinical trial data were used to estimate LDL-C reductions for Ezetimibe/Simvastatin 10/20mg, and compare it with what was observed in clinical practice with statin monotherapy. **RESULTS:** The model was run for a population of 504 Spanish patients (237 CHD/diabetic and 267 non-CHD high risk patients) that had not reached LDL-C goal levels 3 months after starting statin therapy. Patients were assumed to remain treated with Ezetimibe/Simvastatin 10/20mg for 12 months from then, and their results compared with those observed in real life in the same period. **CONCLUSIONS:** Mean age of study population was 60.8 (SD 9.8) years, 47.8% female, lipid profile (mg/dl) at three months on statin monotherapy was LDL-C 182.3 (SD 35.1), TC 262.1 (SD 39.5), HDL-C 50.8 (SD 14.1), triglycerides 150.1 (SD 82.5). Ezetimibe/Simvastatin 10/20mg therapy is projected to achieve a 53.4% goal attainment rate, was a 2.0% goal attainment rate was observed in clinical practice (were 8% of patients were up titrated on statin dose during first year). With respect to LDL-C reductions, Ezetimibe/Simvastatin 10/20mg, could achieve a 31.5% reduction over baseline, vs. a 4.9% achieved in real life clinical practice during similar time period. **CONCLUSION:** Treating patients not at goal on statin monotherapy with Dual-inhibition therapy (Ezetimibe/Simvastatin 10/20mg) is projected to greatly improve the results of lipid-lowering therapy compared to statin monotherapy observed in real life clinical practice.

**PCV52**

**IMPACT OF COMPLIANCE AND PERSISTENCE OF TREATMENT WITH VALSARTAN ON HYPERTENSION CLINICAL OUTCOMES**

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**OBJECTIVES:** The relationship between compliance and persistence with hypertension therapies and clinical outcomes has not previously been quantified. In addition, little information is available regarding the “real-world” effectiveness of hypertension therapies. In this study, we evaluated the impact of compliance and persistence with valsartan (Diovan®) therapy on blood pressure outcomes using office-based effectiveness data. **METHODS:** We analyzed data from the Geisinger Clinic, a U.S. regional health care network with 52 primary care and specialty clinics. Information on patient characteristics and longitudinal data on prescribed medications and use and office blood pressure reading were obtained from the network’s electronic health record database. Hypertension status was based on JNC VII guidelines. **RESULTS:** Increased compliance with use of valsartan therapy (i.e., taking therapy as prescribed) was associated with a significant decrease in systolic and diastolic blood pressure 6 and 12 months after the initial prescription. At 12 months, a 10% increase in compliance resulted in decreases in systolic and diastolic blood pressure of 1.3 and 0.5mmHg (respectively) and a 17% increase in having controlled blood pressure. Greater persistence with valsartan therapy (i.e., time on therapy following control of blood pressure) was also associated with significant decreases in blood pressure. For each additional month of treatment persistence following blood pressure control, systolic and diastolic blood pressure at one year decreased by 1.4 and 0.5mmHg, respectively. **CONCLUSIONS:** We have demonstrated that both compliance and persistence with valsartan therapy are associated with significant improvements in blood pressure control. Further, having access to office-based blood pressure data, we were able to evaluate treatment effectiveness rather than only efficacy. Improved compliance and persistence with hypertension therapy is likely to result in long-term improvement in patient outcomes, such as decreased cardiovascular complications.

**PCV53**

**PATIENT PROFILE AND STATINS EFFECTIVENESS IN USUAL CARE**

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Atorvastatin produces the highest cLDL reduction among the statins commercialized in Spain, as demonstrated in clinical trials. **OBJECTIVE:** To retrospectively compare the effectiveness of different statins in terms of CVRF control, in daily clinical practice. **METHODS:** A total of 9001 subjects from four primary care centres in Catalonia were retrospectively examined. A total of 9001 hypertensive and/or dyslipidemic patients from Managed Care programmes were selected. The following variables were retrospectively compared for the different statins: 1) the level of cardiovascular risk as defined by ATP III criteria; 2) average number of CVRF; and 3) average proportion of subjects with appropriately controlled CVRF according to ATP III criteria. **RESULTS:** 1) The average proportion of patients with pre-
vions history of cardiovascular disease or equivalent was substantially higher (p < 0.001) for those treated with atorvastatin (53.54%) than for those treated with any other statin; lovastatin: 29.49%; simvastatin: 42.58%; pravastatin: 52%; fluvastatin: 41.1%; 2) Atorvastatin was used in patients with a significantly higher number of CVRF (2) than that of lovastatin: 1.7; simvastatin: 1.8; pravastatin: 1.9 and fluvastatin: 1.8 (p < 0.0001); and 3) the use of Atorvastatin with a higher proportion of subjects under optimal cLDL control in comparison with all the other statins as a group (52.8% vs. 46.47%; p < 0.01) and individually considered (lovastatin 50.7%; simvastatin 41.3%; pravastatin 43%; atorvastatin 52.8%; fluvastatin 39%).

CONCLUSIONS: In daily clinical practice in Spain, atorvastatin is used in patients with more cardiovascular risk factors and worse risk profile, in comparison with other commercialized statins, however, treatment with atorvastatin is related with a higher proportion of patients with appropriate control of cLDL as per ATP III criteria. Even in a high quality environment, there is room for improving the average proportion with appropriate control of CVRF.

PCV54

CARDIOVASCULAR RISK CONTROL IN HYPERTENSION AND/OR DYSLIPIDEMIA IN PRIMARY CARE
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OBJECTIVE: To determine cardiovascular risk factors profile (CVRF) and the percentage of patients reaching goals as defined by ATP III, in a population of patients with dyslipidemia and/or hypertension, in daily clinical practice. METHODS: A total of 9001 patients with dyslipidemia and/or hypertension, assigned to four Catalan primary care centres were selected. 1) CVRF profile; 2) a classification of the patients by LDL cholesterol (cLDL) levels, as for the ATP III criteria; and 3) the percentage of patients reaching optimal control goals, were estimated for the three groups: hypertensives without dyslipidemia (HT without DL), patients with dyslipidemia without HT (DL without HT) and hypertensives with dyslipidemia (HT with DL).

RESULTS: 1) Cardiovascular heart disease or equivalent was present in 36.8%. A 7.9% had one CVRF; 29.2% two CVRF; 43.2% three CVRF; 17.1% four CVRF and 2.1% five CVRF 2) Percentage with optimal cLDL control was 40.1% for HT without DL, 29.6% for DL without HT and 27.8% for HT with DL. 3) A 27.1% simultaneously had optimal levels of cLDL and blood pressure (BP). That percentage was 30.1% for HT without DL; 27.5% for DL without HT and 21.9% for DL with HT (p < 0.0001). CONCLUSIONS: More than one-third (36.8%) of patients with hypertension and/or dyslipidemia have a previous history of cardiovascular disease or equivalent. Almost two-thirds (62.9%) presented with one or more additional CVRF. Despite high quality standards, the proportion of patients with optimal levels of cLDL and BP (27.1%) is small and there is much room for improvement.

PCV55

EVALUATION OF COSTS RELATED TO HYPERTENSION IN PATIENTS WITH UNCONTROLLED HYPERTENSION IN POLAND
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OBJECTIVE: To assess costs related to hypertension in the elderly and in patients less than 65 years of age with uncontrolled hypertension in Poland. METHODS: The time horizon of the analysis was 12 months and a retrospective approach was applied. Calculations were made from the societal perspective and third party payer perspective. Both direct medical costs and indirect costs were included. A detailed cost analysis was made for the 4392 patients with uncontrolled hypertension, comparing elderly patients with patients under 65. Resource utilisation data were derived from a scientific project conducted among GPs in the whole of Poland in the year 2000. Data concerning the efficiency of blood pressure control were gathered from the Polish epidemiological study. Unit costs were obtained from the Polish National Health Fund. RESULTS: Among the 8.4 million hypertensive patients in Poland 57% receive active treatment, 80% (3.8 million) of which do not reach the appropriate blood pressure target. The distribution of the direct medical costs in patients with uncontrolled hypertension was as follows: drugs 29%, laboratory, diagnostic tests 13%, hospitalisation 27% and physicians’ consultations 31%. Taking the societal perspective, the direct medical costs were higher by 8% in the elderly uncontrolled patients and amounted to €249.30 but indirect costs were more than 12 times lower in the elderly as compared to €241.85 in patients under 65. The total costs in the elderly uncontrolled patients assessed from the third party payer perspective were higher by 14% and amounted to €201.74. CONCLUSION: The costs related to uncontrolled hypertension constitute a considerable economic burden. Uncontrolled hypertension might be the cause of increasing expenditure on health care in the near future. Wider use of more efficient antihypertensive drugs may help to avoid this phenomenon.
control and a positive influence on organ complications related to hypertension may result in avoidance of huge costs due to the complications incidences.

PCV57

COST-EFFECTIVENESS OF NEBIVOLOL VERSUS ATENOLOL AND ACE INHIBITOR MONOTHERAPY IN PATIENTS WITH MODERATE HYPERTENSION

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OBJECTIVE: To assess the cost-effectiveness of antihypertensive treatment with nebivolol, atenolol or ACE inhibitor monotherapy in 60-year and 70-year-old patients with moderate hypertension in Germany. METHODS: Using a decision-analytic Markov model, we determined incremental cost-effectiveness ratios (ICER) of treatment with nebivolol, atenolol and ACE inhibitor monotherapy from third party payers’ perspective over a 5-year time horizon. Effects on diastolic blood pressure were obtained from a pooled analysis of published randomized clinical trials using response and compliance data. The 5-year absolute risk for an initial coronary, cerebrovascular event or cardiovascular death was computed using the gender specific algorithm based on Framingham Heart Study data. Costs were derived from published tariff lists. Direct medical costs per patient included cost of drug treatment over the 5-year period and cost of acute care for coronary and cerebrovascular events. RESULTS: The comparison of nebivolol vs. ACE inhibitors showed that 3.5 (60-year-old men) and 3.4 (70-year-old men) life years more per 100 patients could be gained with nebivolol. With higher incremental costs, ICER for nebivolol versus ACE inhibitors was €2025 (60-year-old men) and €1824 (70-year-old men). In comparison to atenolol, 6.3 (60-year-old men) and 5.7 (70-year-old men) life years more per 100 patients could be gained. ICER for nebivolol versus atenolol was €4672 (60-year-old men) and €4704 (70-year-old men) per life-year gained. For women, the number of incremental life years gained was lower. ICER for nebivolol versus ACE inhibitors were €2347 (60-year-old women) and €1,904 (70-year-old women) and for nebivolol versus atenolol €11,648 (60-year-old women) and €9060 (70-year-old women) per life-year gained. CONCLUSION: Based on our decision analysis, the use of nebivolol was more effective than antihypertensive therapy with ACE inhibitors and atenolol. Antihypertensive treatment with nebivolol is a cost-effective treatment option from third party payer’s perspective in Germany in the selected patient groups.

PCV58

COST-EFFECTIVENESS OF INDAPAMIDE IN PATIENTS WITH MILD-TO-MODERATE HYPERTENSION

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OBJECTIVE: Indapamide is one of the most frequently prescribed diuretics in Greece and the most expensive too. The purpose of this study was to compare the cost-effectiveness of indapamide with propranolol, amiodipine, enalapril and irbesartan in the management of mild-to-moderate hypertension in Greece. METHODS: A cost-effectiveness analysis was performed from a third-party payer perspective, in 2004 Euros (€). A decision analysis model was developed to compare the five alternative interventions. Clinical inputs were derived from randomized controlled trials and cost data from public sources. The evaluation of the cost of managing hypertension includes the cost of drug therapy, monitoring, treating side-effects, poor compliance and switching. The DerSimonian and Laird method was used for the meta-analysis. The time horizon was five years. Future costs and health benefits were discounted at 5%. Extensive sensitivity analyses were performed. RESULTS: Old and new drugs provided similar protection against total mortality and major CVD events in mild-to-moderate uncomplicated hypertension. The five-years total treatment cost was €550.99, €582.04, €864.32, €622.30, and €128.39 for indapamide, propranolol, amiodipine, enalapril and irbesartan respectively and the estimated total cost to prevent one major cardiovascular event was €16,239.77, €17,154.91, €25,474.88, €18,341.68 and €37,844.09 respectively. Sensitivity analyses confirmed the lower cost-effectiveness ratio of indapamide in comparison with propranolol, amiodipine, enalapril or irbesartan. CONCLUSION: In the management of mild-to-moderate hypertension in Greece, indapamide is more cost-effective than propranolol, amiodipine, enalapril or irbesartan. The results of this study support the last recommendations of the Joint National Committee and the International Society of Hypertension. Indapamide should be considered as the first choice of antihypertensive treatment in uncomplicated hypertension.
According to these findings, treatment with 160 mg valsartan/25 mg HCTZ totally dominates and it should be preferable. Sensitivity analysis confirmed the results from this base case.

**PCV60**

**COST-MINIMIZATION ANALYSIS OF TREATMENT OF MILD-TO-MODERATE HYPERTENSION IN UNITED STATES**

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**OBJECTIVES:** Hypertension is a highly prevalent risk factor for cardiovascular disease (CVD), which affects approximately 50 million Americans. The outcome data from several clinical trials and meta-analyses prove that new and old classes of antihypertensive drugs provide similar reductions of cardiovascular morbidity and mortality. The purpose of this study was to compare the costs associated with the prescription of first-line antihypertensive agents in United States (US). **METHODS:** A cost-minimization analysis was performed. A decision analysis model was developed to compare the five alternative interventions: chlorthalidone, propranolol, amlopidine, enalapril and losartan. Clinical inputs were derived from randomized controlled trials and cost data from 2004 Red Book and Centers for Medicaid Services. The evaluation of the cost of managing mild-to-moderate hypertension includes the cost of drug therapy, monitoring, treating side-effects, poor compliance and switching. All costs were calculated from a health system’s perspective, in 2004 US. Future costs and clinical benefits were discounted at 5%. The time horizon was 5 years. **RESULTS:** The total cost to achieve and maintain hypertension control in US setting was $2194.42, $3181.79, $3566.36, $2855.69 and $3747.57 for chlorthalidone, propranolol, amlopidine, enalapril and losartan respectively. The drug acquisition cost was 27.54%, 51.28%, 58.18%, 47.83%, and 61.55% respectively. Sensitivity analysis tested the effect of modifying the prices of the antihypertensive agents and laboratory monitoring, the doses of the alternative drugs and the compliance rate on the economic endpoints and confirmed the superiority of chlorthalidone. **CONCLUSION:** In patients with mild-to-moderate hypertension in US, treatment costs to prevent CVD are much lower with chlorthalidone than with the other first-line antihypertensive agents.

**PCV61**

**THE FRENCH CV@GOAL EDUCATIONAL PROGRAM FOR IMPROVING HBP MANAGEMENT BY PATIENTS AND PHYSICIANS: ASSESSMENT OF ITS IMPACT ON PATIENT’S KNOWLEDGE AND PATIENT-PHYSICIAN RELATIONSHIP**

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Despite therapeutic advances, High Blood Pressure (HBP) remains a health issue in Western countries. Few programs have sought to improve physician-patient relationship and the effect of educating HBP patients. CV@Goal is a French educational programme (2002 to 2003) aimed at training physicians to educate HBP patients. **OBJECTIVES:** Assessing the impact of CV@Goal on HBP patients and physicians. **METHODS:** A 6-month before-after comparison of physician and HBP patient populations. Four HBP patients per GP were included. GPs were trained to educate HBP patients and included four new HBP patients. **RESULTS:** In total, 1208 HBP patients and 308 physicians completed the “before” questionnaire, and after training 512 new patients and 169 physicians completed the “after” questionnaire. According to GPs, there were in both phases “important” or “insurmountable difficulties” concerning patient sedentary lifestyle (40%), diet compliance (60%) and alcohol (75%). The proportion of GPs who considered patient knowledge to be “good” or “very good” increased for: general issues (22% to 38%), the disease natural history (8% to 14%), risks (29% to 49%), complication prevention (13% to 24.5%) and alarm symptoms (21% to 35%); the proportion also increased for patient awareness of the importance of smoking cessation (69% to 77%) and special dietting (52% to 67%). Changes in patients’ blood pressure were not significant. Most patients believed smoking, diabetes, alcohol, hypercholesterolemia, treatment compliance, obesity, age, heredity and diet could alter blood pressure; knew HBP could relate to heart, brain, arteries, eyes, kidneys complications; that smoking cessation, weight loss, physical exercise and salt reduction could improve HBP. After CV@Goal, improvements were observed in patient knowledge about the importance of weight loss, physical exercise and salt consumption. Nevertheless, most patients declare they have not changed lifestyle since the HBP diagnosis. **CONCLUSION:** CV@Goal had an impact on patient knowledge about HBP, but not on lifestyle and BP.

**PCV62**

**LIPID PROFILE IN HYPERTENSIVES WITH AND WITHOUT CARDIOVASCULAR DISEASE: HAS THE HDL COLESTEROL BEEN FORGOTTEN?**

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**OBJECTIVES:** Hypertensive patients with cardiovascular (CV) disease or diabetes are at a particularly high CV risk. LDL-cholesterol (cLDL) levels are an important CV risk factor and total cholesterol/cHDL (TC/HDL) ratio is also related to cardiovascular risk. Although HDL-cholesterol (cHDL) is a protective factor, available therapeutic strategies are not effective enough. The objective of this study is to compare LDL and C/HDL between two groups: patients with previous CV disease/diabetes and those without it in a hypertensive population from a programme for CV risk control. **METHODS:** A total of 5094 subjects from primary care centres in Spain were retrospectively studied. Levels of cLDL, cHDL and TC/HDL were compared for the above mentioned groups by Student t test for independent samples. **RESULTS:** There were 41.4% men. Mean age 66.3 years. Average TC levels were: 214.4mg/dL; cLDL: 141.9mg/dL; cHDL: 45.5mg/dL and TC/HDL: 4.98. Levels of cLDL were significantly lower for those with CV disease/diabetes: 148.6mg/dL (SD 32.8) vs. 132.3mg/dL (SD 35); p < 0.0001. Similarly, Levels of cHDL were significantly lower for those with CV disease/diabetes: 47.1mg/dL (SD 12.3) vs. 43.1mg/dL (SD 11.4); p < 0.0001. There were no significant differences of CT/HDL ratio between groups. **CONCLUSIONS:** In a population of treated hypertensives, cLDL levels are lower for those with previous CV disease/diabetes, which is appropriate taking into account their higher cardiovascular risk. On the contrary cHDL levels are lower in the group at highest risk. There is a wide room for improvement of cardiovascular risk in hypertensive patients with previous CV disease or diabetes, by increasing cHDL.

**PCV63**

**CARDIOVASCULAR DRUG USE IN NIS REGION**

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OBJECTIVE: The aim of this study was to analyze the outpatient cardiovascular drug utilization in the city of Nis. The prevalence of cardiovascular disease is high in Serbia. Analysis of cardiovascular drugs utilization in a population is the basis for the assessment of cardiovascular pharmacotherapy.

METHODS: Using the ATC/DDD methodology, we analyzed the utilization of cardiovascular drugs dispensed on prescription in Nis region in 2003–2004. A retrospective study on cardiovascular drugs utilization according to ATC classification, was conducted on the basis of data received from Central City Pharmacy Nis. RESULTS: Results were presented in DDD/1000 inhabitants/day. The most frequently prescribed drug in 2003–2004 was Enalapril (32.16: 41.71 DDD/1000 inhabitants/day). Besides, consumption of other ACE inhibitors was small (2.94: 6.48 DDD/1000 inhabitants/day). The next most commonly used drugs were selective beta blockers (atenolol: 8.48 DDD/1000 inhabitants/day; metoprolol 5.85 DDD/1000 inhabitants/day) in 2003. The use of amiodipin had a significant increase in 2004 (10.21 DDD/1000 inhabitants/day: 6.41 DDD/1000 inhabitants/day). Marginal use of diuretics was detected (4.48 DDD/1000 inhabitants/day: 5.19 DDD/1000 inhabitants/day).

CONCLUSION: The present analysis for 2003–2004 pointed to therapeutic irrationalities which could be overcome with education concerning cardiovascular drugs consumption in Nis region (south-east Serbia).

HEALTH CARE UTILIZATION OF ANTIHYPERTENSIVE MEDICATION WITHIN THE SLOVAK REPUBLIC
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OBJECTIVES: To analyse the utilisation of antihypertensive drugs within Slovakia between 2000 and 2004 and to assess the economic consequences of antihypertensive medications.

METHODS: For 2000–2004, the data about consumption of drugs for cardiovascular disease were collected, in accordance with the Anatomic Therapeutic Chemical classification (ATC: C01- C10) and Defined Daily Dose (DDD) measurement unit. This analysis focused on the situation in antihypertensive medication in more detail. Data of wholesalers, who are legally obliged provide this information to the SUKL, was used for the analysis.

RESULTS: A significant increase in the medication of cardiovascular disease (in 2000 (290.27), in 2002 (376.30) and in 2004 (388.06) in term of DDD/1000/day can be seen from this study. The results show that the consumption (in term of DDD/1000/day) of β-blockers was (in 2000 (32.04), in 2002 (41.91) and in 2004 (42.78)), ACE inhibitors (in 2000 (57.01), in 2002 (81.86) and in 2004 (88.79)), Ca-blockers (in 2000 (39.72), in 2002 (55.42) and in 2004 (63.25)), diuretics (in 2000 (28.20), in 2002 (32.82) and in 2004 (31.67)), peripheral vasodilators (in 2000 (20.89), in 2002 (22.12) and in 2004 (19.63)), vasoprotective (in 2000 (33.89), in 2002 (41.67) and in 2004 (34.23)), serum lipid reducing agents (in 2000 (12.79), in 2002 (22.12) and in 2004 (31.50)). In financial terms, the consumption of β-blockers was (in 2000 (€7,024,000) and 2004 (€10,515,000), ACE inhibitors in 2000 (€18,714,000) and 2004 (€32,290,000), Ca-blockers in 2000 (€16,971,000) and 2004 (€19,454,000), diuretics in 2000 (€1,609,000) and 2004 (€2,478,000) can be seen from this study.

CONCLUSIONS: Inseparable components of the Slovak drug policy must be viewed realistically with regard to the antihypertensive drugs' consumption. Adherence to principles of antihypertensive treatment's guidelines lead to fundamental short and long term financial savings within health care systems.

PATIENTS ON ARBS (AND VALSARTAN AS A REPRESENTATIVE) EXPERIENCE HIGHER PERSISTENCE AND COMPLIANCE (ADHERENCE) WITH THERAPY COMPARED TO OTHER ANTIHYPERTENSIVE CLASSES IN A GERMAN SICKNESS FUND POPULATION
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OBJECTIVES: To investigate if there are differences in the persistence and compliance to therapy depending on the antihypertensive drug class prescribed first (index drug). METHODS: Prescription claims data were analysed for the 2000 to 2003 time period. Index prescriptions were determined for: ACE-inhibitors (ACEi), angiotensin receptor blockers (ARB), beta blockers (BB), calcium channel blockers (CCB), and diuretics (DIU). Patients regarded as newly diagnosed i.e., without any antihypertensive medication 180 days before the index time point) with a follow-up of at least 360 days were included in the study. Persistence rates (percentage of beneficiaries on continuous therapy with the index drug at 180 and 360 days) were calculated for each drug class. Compliance was determined in terms of the medication possession ratio (MPR) for 180 and 360 days (dispensed supply in defined daily dose (DDD) within 180 and 360 days...
divided by the total number of days). RESULTS: Most of the 62,754 beneficiaries had an index prescription of BETA, followed by ACEi, DIU, CCB, and ARB. Persistence rates at 180 and 360 days were highest for ARB (71.0 and 52.7%), valsartan 77.1 and 59.3%), followed by CCB (51.5 and 34.4%), ACEi (50.2 and 34.5%), DIU (41.3 and 26.0%), and BETA (25.1 and 13.6%). After adjusting for age, sex, and diabetic comorbidity, the persistence remained significantly higher for ARB compared to all other drug classes. The MPR for 180 and 360 days showed a similar pattern with the highest ratio for ARB (0.88 and 0.84); valsartan 0.92 and 0.87), followed by CCB (0.73 and 0.66), ACEi (0.72 and 0.67), DIU (0.70 and 0.63), and BETA (0.51 and 0.45). CONCLUSION: ARBs, and valsartan as a representative of the class, showed the highest persistence and compliance suggesting that a more sustained blood pressure control could be expected from utilization of ARBs and Valsartan.

FACTORS DETERMINING COMPLIANCE IN PATIENTS WITH HIGH CARDIOVASCULAR RISK IN DAILY CLINICAL PRACTICE

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Lack of compliance is a major factor responsible for the differences between clinical trial results and real effectiveness in daily medical practice, contributing to an insufficient control of the cardiovascular risk factors (CVRF). Knowledge of the factors contributing to lack of compliance is limited, and in Spain data are scarce. OBJECTIVES: 1) To indirectly determine the level of compliance among patients with hypertension and/or dyslipidemia; 2) To determine factors associated with compliance.

Patients and METHODS: A total of 9001 hypertensive and/or dyslipidemic patients from four primary care centres in Catalonia were enrolled in Disease Management Programmes during the previous four years. Compliance was estimated by the relationship between the amount of dispensed and prescribed pills. 1) The levels of compliance of dyslipidemic patients without hypertension (DL-non HT), hypertensive patients with dyslipidemia (HT + DL) and hypertensives without dyslipidemia (HT-non DL) were compared. 2) An stepwise, multivariate, descriptive; multiple regression model was designed in order to explain compliance. RESULTS: 1) Compliance was 79% in DL-non HT, significantly lower than in HT + DL (81.2%, p < 0.0001) and in HT-non DL (82.4%, p < 0.0001). There were also statistically significant differences between these last two groups (p = 0.0014). 2) Explanatory variables of a better compliance in the multivariate analysis were a) patient related factors: labour inactivity (p < 0.0001); b) management related factors: specific doctor (p < 0.0001) and intensity of follow-up (p = 0.04) and c) drug related factors: the drug group (p < 0.0001); the drug price (the price more the more compliance (p = 0.0062) and the number of active principles used (the more number the more compliance, p = 0.019). CONCLUSIONS: 1) Dyslipidemic patients show a worse compliance than hypertensive patients, and dyslipidemia worsened global compliance in hypertensive patients. 2) Patient characteristics, doctor attitude, follow-up intensity, drug group and simplicity of treatment are related to compliance in medical practice.

COST-EFFECTIVENESS OF RAISING HDL-C WITH PROLONGED-RELEASE NICOTINIC ACID (NIASPAN®) IN STATIN-TREATED PATIENTS WITH PERSISTENT DYSLIPIDEMIA IN AUSTRIAN, SWEDISH AND NORWEGIAN SETTINGS

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OBJECTIVES: To evaluate the long-term clinical and cost outcomes of adding Niaspan® to statin treatment in patients with persistently low HDL-c on statin monotherapy. METHODS: Two models were developed to project long-term clinical and economic outcomes. The first model (second order Monte Carlo simulation) simulated the evolution of lipid levels with treatment and the second (Markov model) was designed to calculate the risk of coronary heart disease (CHD) events each subsequent year. Transition probabilities for CHD events were derived from the Framingham risk formulae. Baseline cohort characteristics and simvastatin treatment effects were taken from the 4S lipid trial sub-group. Patients with persistently low HDL-c (<1.03 mmol/L) on statin treatment received either add-on Niaspan® 1g to 2g daily or continued statin monotherapy. Niaspan® dosing followed maintenance dose recommendations and treatment effects were taken from several clinical trials (European SPC). Direct medical costs were accounted (cardiovascular complications and drug costs). Annual discount rates of 0% and 3.5% (Austria), 3% (Sweden and Norway) were applied to clinical outcomes and costs. RESULTS: 68.9% of patients were projected to have persistently low HDL-c levels after statin treatment. In these patients mean undiscounted life expectancies (LE) of 20.96 years and 20.46 years were projected for the Niaspan® and statin monotherapy arms respectively. Lifetime direct medical costs were higher by €8079 in Austria, €4723 in Sweden and €5638 in Norway with addition of Niaspan®. Incremental cost-effectiveness ratios based on discounted LE were €16,306 (€17,635) per life year gained in Austria, €16,543 (€16,652) in Sweden and €19,748 (€21,194) in Norway for statin plus Niaspan® 1g and 2g versus statin monotherapy. CONCLUSIONS: In Austria, Sweden and Norway, raising HDL-c with the addition of Niaspan® to statin therapy was projected to be cost-effective compared to statin monotherapy in patients with dyslipidemia and persistently low HDL-c.

COST-EFFECTIVENESS OF ADD-ON THERAPY WITH PROLONGED-RELEASE NICOTINIC ACID (NIASPAN®) IN STATIN-TREATED PATIENTS WITH DYSLIPIDEMIA AND PERSISTENTLY LOW HDL-C IN THE UK AND GERMANY

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OBJECTIVES: To evaluate the long-term clinical and cost outcomes of adding Niaspan® to statin treatment in patients with persistently low HDL-c on statin monotherapy. METHODS: Two models were developed to project long-term clinical and economic benefits of treatment. The first simulated the evolution of lipid levels with treatment utilising second order Monte Carlo methodology, and the second was designed to calculate the risk of coronary heart disease (CHD) events each subsequent year using standard Markov modeling techniques. Transition proba-
bilities for CHD events were derived from the Framingham risk formula. Baseline cohort characteristics and Niaspan® treatment effects were taken from the ARBITER II study. Patients with persistently low HDL-c (<1.03 mmol/L) on statin treatment received either add-on Niaspan® 1 g daily or continued statin monotherapy. Direct costs (2004 Euros) were accounted (cardiovascular disease and treatment costs). Annual discount rates of 5% (Germany) and 3.5% (UK) were applied to clinical outcomes and costs. Undiscounted life expectancy (LE) was also calculated. Sensitivity analyses were performed. RESULTS: A total of 53.75% of patients were projected to have persistently low HDL-c levels after statin treatment. In these patients mean undiscounted LE of 16.12 years and 15.85 years were projected for the Niaspan® and statin monotherapy arms respectively. Lifetime direct medical costs were higher by €3563 in Germany and by £2820 in the UK with addition of Niaspan®. Incremental cost-effectiveness ratios based on discounted LE were €26,624 per life year gained in Germany and £17,262 in the UK for statin plus Niaspan® versus statin monotherapy. Results were most sensitive to the gender distribution, as women have a lower risk of CHD events. CONCLUSIONS: In patients with dyslipidaemia and persistently low HDL-c, addition of Niaspan® to statin therapy was projected to be cost-effective compared to statin monotherapy in Germany and the UK.

THE COSTS OF METABOLIC SYNDROME
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OBJECTIVES: To estimate the medical costs directly related to the Metabolic Syndrome (MS) in Italy. METHODS: A retrospective study was conducted on a general sample of 4,974 patients, to whom an oral blood glucose lowering drug, a serum lipid reducing agent and an antihypertensive drug had been prescribed at least once during the observation period (2001–2003). An equal sized control group (matched by sex and age) and a sub-sample of 1,401 patients from the general sample (actual consumers of the above prescribed drugs at least once in each of the observational years) were also used. The general and sub-sample showed no considerable differences in the primary outcomes. All data was obtained from a Northern Local Health Unit database. The prospective was the Italian NHS’s point of view. The specific costs of the MS (drugs and hospitalisation) were calculated as incremental costs, comparing the affected patients (study group) to the general population (control group). RESULTS: The Metabolic Syndrome affects both males (49.5%, mean age 64.6) and females (50.5%, mean age 68.2). Yearly mortality among patients with MS does not differ from mortality in the general population. All the costs in the study group were significantly higher than the corresponding costs in the control group. The total average cost per year for a patient with MS was estimated at €1522 (drugs: €358; hospitalisation: €964), versus the lower corresponding estimation for the general population at €361 (drugs: €155; hospitalisation: €206). So, on a yearly and per capita basis, the incremental cost of the metabolic syndrome amounts to €1161. Mortality and age were shown to be the major cost drivers. CONCLUSIONS: To the NHS in Italy the cost for MS might be as high as €670 million a year (0.9% of the total public health expenditure).

COST-EFFECTIVENESS OF ROSUVASTATIN COMPARED WITH GENERIC SIMVASTATIN IN THE UK NHS
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OBJECTIVES: To assess the long-term cost-effectiveness of titration from initial doses of rosuvastatin (RSV) and generic simvastatin (SIM). METHODS: Efficacy data from the STELLAR clinical trial (TC, HDL-C, and TG) were used as input to the model. Markov models ran in 4-year cycles for 20 years, from age 55 to 76 years to predict primary and secondary CHD based on Framingham risk equations in four gender/risk cohorts. In year one quarterly titration up to a maximum dose of 40mg (RSV) or 80mg (SIM) was based on a total cholesterol (TC) target of 5 mmol/l. Risk was calculated using the average TC: HDL-C ratio of 1000 simulated patients, with adjustment for Framingham’s hypothesised over-prediction of UK risk. RSV and generic SIM prices for September 2004 and recent UK CHD event cost data were applied. Relative mortality risks and health-state utilities were used to derive quality-adjusted life years (QALYs). Discounting was performed at 3.5% (costs and outcomes). RESULTS: The STELLAR trial found RSV 10mg lowered total cholesterol significantly more than SIM 10–40mg (~32.9% vs. ~20.3%, ~25.7%, 27.9%, respectively), and RSV 20mg lowered total cholesterol significantly more than SIM 80mg (~37.6% vs. ~29.2%). Based on this model less CHD events and deaths are expected among patients on RSV compared with SIM. Hence RSV delivers more QALYS at an acceptable cost per patient, e.g. £3458 per QALY for high-risk males compared with SIM. Insensitivity analysis when generic SIM is priced at zero, the cost per QALY gained for RSV ranged from £11,169 (male high risk) to £21,752 (female base case). CONCLUSIONS: More CHD events are likely to be avoided using RSV than SIM. RSV will be a cost-effective strategy, as defined by UK NICE thresholds for cost per QALY gained, even as the generic SIM price approaches zero.

UTILIZATION PATTERNS OF ASPRIN AMONG NSAID TREATED SUBJECTS WITH VARYING CARDIOVASCULAR RISK PROFILES IN A HEALTH BENEFITS POPULATION
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OBJECTIVES: To understand the patterns of aspirin utilization among users of Nonsteroidal Anti-Inflammatory Drugs (NSAIDs) with varying cardiovascular risk profiles. METHODS: A telephone survey was completed using a large health benefits company population. The survey consisted of 10-items used to characterize aspirin consumption and identify motivation for utilization. Subjects were randomly selected from a dataset of members aged 18 and older, who had an NSAID prescription claim between April 1, 2003 and June 30, 2003, while maintaining continuous plan enrollment during a 24-month period. Subjects were also required to maintain chronic NSAID utilization, defined as at least a 90 days’ supply during a 12-month period. Study subjects were stratified based on their NSAID utilization into: 1) cox-II selective inhibitors; 2) non-selective NSAIDs (excluding naproxen); and 3) naproxen. Subjects were further stratified based upon the presence or absence of risk factors associated with cardiovascular events. RESULTS: The study population consisted of 1250 subjects, of which 52.3% were treated with non-selective NSAIDs, 19.4% with naproxen, and 28.3% with cox-II inhibitors. In total, 77.1% of the popu-
Abstracts

USE OF PROPENSITY SCORE METHODOLOGY IN CARDIOVASCULAR DEVICE TRIALS: U.S. FOOD AND DRUG ADMINISTRATION PERSPECTIVES

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OBJECTIVE: Randomized, controlled trials (RCT’s) are considered to be the gold standard of scientific evidence to assess safety and effectiveness of cardiovascular devices. However, RCT use is challenging to implement in certain device trials, due to logistical and ethical reasons. The FDA understands that assessment of device technologies must balance the competing demands of maximizing scientific validity against the practical realities of performing and effectively completing these clinical studies. Hence, non-randomized clinical trials are sometimes used in device evaluation. Propensity score analysis, as an alternative to traditional covariate adjustment methods, has been increasing in popularity as a technique to control for baseline differences between treatment groups in non-randomized cardiovascular device studies. METHODS: Propensity scores provide a convenient methodology for covariate adjustment when multiple covariates are involved. However, propensity score methodology does not eliminate many of the scientific limitations of non-randomized studies compared to RCT’s, and should not be viewed as a substitute for performing a randomized study. In using propensity score modeling, a full pre-specification of covariates to be included and the model to be used is recommended to minimize the concern of bias introduced by post hoc model development. RESULTS: Furthermore, sensitivity analysis should be performed to demonstrate the robustness of study outcome in the face of hidden bias due to unmeasured or unquantifiable covariates. Lastly, it is recommended that conventional covariate adjustment as well as propensity score adjustment should be performed to demonstrate consistency of outcomes between techniques. CONCLUSION: Propensity score methodology has increased in popularity for covariate adjustment in non-randomized cardiovascular device studies. However, there are limitations to this methodology, which must be fully appreciated to avoid erroneous inferences from study data. Randomized trials are still preferred and strongly encouraged whenever possible, especially for the evaluation of novel cardiovascular devices.

A BUDGET IMPACT MODEL FOR EPLERENONE IN THE TREATMENT OF HEART FAILURE POST MYOCARDIAL INFARCTION

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OBJECTIVES: The Eplerenone Post-Acute Myocardial Infarction Heart Failure Efficacy and Survival Study (EPHESUS) showed that the addition of eplerenone to optimal medical therapy reduced both morbidity and mortality in patients with acute myocardial infarction (AMI) complicated by left ventricular dysfunction and heart failure whilst reducing the number and duration of heart failure re-hospitalisations. A budget impact model was developed to estimate the effects of adding eplerenone to standard care in the UK National Health Service (NHS).

METHODS: Within the model the efficacy of eplerenone is based on the EPHESUS study. This is applied to UK epidemiological data on the incidence of AMI, proportion of survivors developing heart failure and their prognosis. UK drug acquisition costs and NHS hospital inpatient costs and average length of stay for England are included. All costs are expressed in pounds sterling. The model estimates the incremental costs and benefits of adding eplerenone to standard care in heart failure resulting from AMI from the perspective of NHS health care decision makers over a three-year period. Input variables include population, incidence of AMI and annual rate of eplerenone uptake.

RESULTS: If all eligible patients are treated in an NHS Primary Care Trust of population 250,000, the estimated cost per life year saved is £6,701 pounds in year three, for an additional expenditure of £256,959. This level of treatment results in a reduction of 101 bed days for re-hospitalisations due to heart failure, at a cost per bed day avoided of £1207.

CONCLUSIONS: With hospital inpatient care the biggest single health care cost in heart failure, reduction in hospitalisation is a key priority within the UK NHS. Models such as the one described here enable the economic consequences of using a new drug to be identified and clarify the role of drug treatment in delivering NHS priorities.

A COST-EFFECTIVENESS OF EPTIFIBATIDE IN NSTEMI PATIENTS IN POLAND

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OBJECTIVES: To estimate incremental cost-effectiveness of adding a GPIIb/IIIa inhibitor (eptifibatide) to percutaneous coronary intervention (PCI) and standard medical management (MM) versus PCI + MM alone in Poland for patients with non-ST-elevation myocardial infarction (NSTEMI) at high risk of recurrent ischemia or cardiovascular death.

METHODS: A Markov model was constructed to estimate the additional costs and benefits of a GPIIb/IIIa inhibitor on top of standard care. The model has 4 disease states (no event, post-ischemia, post-MI, death) and two tunnel states (refractory ischemia, non-fatal MI). PCI + MM include beta blockers, ACE inhibitors, aspirin, heparin and clopidogrel. The model takes the Polish national health payer perspective and runs for the expected lifetime of the patient. The effectiveness parameters were taken from a 6-month GPIIb/IIIa clinical trial and extrapolated to 45 years with an estimated Weibull function. Event and follow-up costs are based on assumed treatment patterns. The results of the model were expressed in total (discounted) costs and life years per patient, and incremental cost per life year gained. A series of one-way sensitivity analyses has been conducted on the major model inputs.

RESULTS: The lifetime discounted costs for the base case analysis are 13,856 PLN per patient for the PCI + MM group and 15,570 PLN for the eptifibatide group (a difference of 1714 PLN). The use of eptifibatide provides an additional average of 0.05 year of life per patient compared with PCI + MM. The incremental cost effectiveness ratio for the lifetime model, with
COST-EFFECTIVENESS ANALYSIS OF THE USE OF ACETYLSALICYLIC ACID COMPARED TO CLOPIDOGREL IN THE SECONDARY PREVENTION OF PATIENTS WITH PREVIOUS MYOCARDIAL INFARCTION

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OBJECTIVES: To perform an economic evaluation of the use of low dose acetylsalicylic acid (Adiro) in comparison with clopidogrel (Plavix) in the prevention of cardiovascular events in patients with a previous myocardial infarction (MI) using a cost-effectiveness analysis in the setting of the Spanish National Health Service. METHODS: Using the efficacy data from the CAPRIE study on the incidence of new cardiovascular events in a group of patients with a previous MI, the sanitary and economic consequences of the use of the two treatments, acetylsalicylic acid and clopidogrel, in this indication were modeled. The costs used in this analysis refer to the year 2004 in the Spanish National Health Service setting. RESULTS: In the base case, the total cost of the acetylsalicylic acid treatment (€1515) was considerably inferior to that of clopidogrel (€2942). The efficacy results in the subgroup of patients with a previous MI, are comparatively better with acetylsalicylic acid, however the difference is not statistically significant. With the assumptions adopted in the base case, treatment with acetylsalicylic acid is superior (better or equal efficacy and less cost) when compared to treatment with clopidogrel. The treatment with acetylsalicylic acid was found to be superior to that of clopidogrel in all of the scenarios studied in the analysis of sensitivity. CONCLUSIONS: The treatment with acetylsalicylic acid is effective, safe and cost-effective in the secondary prevention of cardiovascular events in patients with a previous MI, and is still the first choice antiplatelet therapy for this indication.

COST AND OUTCOMES AFTER FIRST ACUTE MYOCARDIAL INFARCTION HOSPITAL ADMISSION: A LONGITUDINAL STUDY USING ADMINISTRATIVE DATABASES

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OBJECTIVE: to assess the economic and epidemiologic impact of AMI in Friuli Venezia Giulia (FVG) of a region of approximately 1.2 million inhabitants in the north-eastern Italy. METHODS: All residents of FVG are registered in to Regional Health Service (RHS) database, which keeps tracks of the use of medical care admissions and reimbursement purposes. We selected residents of FVG who had during year 2000 a first AMI hospital admission and we followed them up till death, or 31 Dec 2004 (we a priory excluded people who during the period 1995–1999 had a previous CHD event). Mortality was investigated by collecting information from Regional Citizen Register file. We obtained information on medical costs from electronic databases of prescriptions, hospitalizations, visits and diagnostic examinations in FVG. Direct medical costs were quantified in the perspective of the NHS and are expressed in Euro 2005. RESULTS: We enrolled 1185 patients with incident AMI (mean age 71 ± 13 y.o.), 59% were men. The average cost person/year was €4913.32; 71.2% attributable to hospitalisations, 19.3% to drugs. The 38.5% patients died during the follow up period, with a mean age of 79.3 ± 10.1 statistically different (p < 0.0001) from survivors (mean age 65.0 ± 12.0 y.o.). There was a no significant difference in mortality between men and women adjusting for age. CONCLUSIONS: AMI imposes a huge economic burden on NHS and society because of the large number of hospitalisation and the high rate of mortality after the first event. Future investigations will be conduct to asses the relationships between comorbidity, costs, therapy and survival.

THE DIRECT COSTS OF SELECTED CARDIOVASCULAR DISEASES IN AUSTRIA

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OBJECTIVES: To measure the direct costs of selected cardiovascular diseases within the Austrian health care system for the first year including the event, as well as from the second year onward. METHODS: In this study, we analyzed the direct costs of angina pectoris (AP) and myocardial infarction (MI) in Austria. The direct costs were identified as resource consumption for hospitalization, inpatient rehabilitation, outpatient treatment, medication and transportation. Costs for inpatient care were calculated according to the tariffs of the Austrian Diagnosis Related Group (DRG) system and the average number of allocated points to AP and MI. Costs for inpatient rehabilitation treatment were calculated with tariffs per day taken into account the mean duration of stay. For outpatient treatment costs we considered the average number of consultations and the fee for service, which is mainly paid by social insurance. Medication costs were calculated and assessed with tariffs according to the distribution of type and amount of prescribed agents. Costs for transportation after the event were included with the tariffs per ride. RESULTS: The total costs for the treatment of MI in the first year of event in 2004 were calculated with €8.960, rehabilitation contributing to 68% of this amount. Since there were no inpatient rehabilitation costs to consider from the second year onward, costs declined to approximately €1.490 per year. Costs due to AP amounted about €2.180 for the first year and declined on average to €1.190 from the second year onward. CONCLUSIONS: In line with the study direct costs for cardiovascular diseases were calculated for the first time in Austria. As one of the main finding we would like to point out the high direct inpatient rehabilitation costs as the main cost driving factor for MI in the first year of event.

POSTMYOCARDIAL INFARCTION CARDIAC REHABILITATION IN LOW RISK PATIENTS: RESULTS WITH A COORDINATED PROGRAM OF CARDIOLOGICAL AND PRIMARY CARE

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OBJECTIVES: To assess the efficacy of cardiac rehabilitation with a mixed primary and cardiological care program in patients
with low-risk myocardial infarction. METHODS: The participants in this 12-month prospective study were 153 consecutive patients with low-risk myocardial infarction (MI) referred to their primary care center for follow-up care. Of these patients, 113 were referred to a mixed primary and specialized care program that included physical exercise, cardiovascular risk control, an antismoking program, health education talks and psychological evaluation. The other 40 patients served as controls. We analyzed the results after three months and 1 year of follow-up. RESULTS: There were no differences between the two groups at baseline. After 1 year, improvements were seen in smoking habit (4.6% vs. 15.6%; P < 0.05) and body mass index (26 [2] vs. 29 [2]; P < 0.05). Dyslipidemia, glucose and blood pressure were similar in both groups after follow-up. Greater improvements in the group of patients who participated in the program were seen after 1 year in quality of life (78 [2] vs. 91 [2]; P < 0.05), exercise capacity (10.3 [2] vs. 8.4 [3]; P < 0.01) and return to active employment (84.6% vs. 53.3%; P < 0.05). CONCLUSIONS: After one year of follow-up, the cardiac reha-bilitation program coordinated by cardiological and primary care services for low-risk post-MI patients improved quality of life, and increased exercise tolerance, active employment, and the number of participants who quit smoking. The mixed program also reduced body mass index. These results suggest the need for similar programs.

PCV80
COST ESTIMATION IN PATIENTS WITH AN AHEROTROMBOTIC EVENT
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OBJECTIVE: To estimate the direct medical costs in patients at high risk that suffered an atherothrombotic event (AE), i.e., the cost of the acute event and the costs related to the disease during a two year follow up period in patients with myocardial infarction and stroke, treated in third care level in private institutions in the Mexican Health System. METHODS: This is a descriptive observational and multicentric study. Each patient included in the study cohort has an active medical file with a complete record for at least a 2-year period after the AE. This study is based on an incidence costing approach and only includes the perspective of the payments. The unitary costs used are those officially published by private institutions. All the amounts are set in 2005 Mexican pesos. The 2005 exchange rate is 11 Mexican pesos per US dollar. RESULTS: A patient who experiences a stroke stays at least 5 days in Intensive Care. The expected cost per treated patient with stroke reaches US$7876. The most important category of cost during the acute phase is hospitalization (US$3924; 50%). On the other hand, the total direct cost incurred per patient with acute coronary syndrome (ACS) is US$3367 per year of follow-up and US$16,381 in the acute event. The most relevant costs are both pharmacy costs (US$2354) and revascularization procedures (US$9319). Coronary artery stent implantation is the most common revascular- ization procedure (70%). CONCLUSIONS: AE are associated with high costs during the years after the acute event, in special high incidence of hospitalization and drug cost. These results, especially the proportions between cost items, are consistent with international studies. Effective prevention and treatment of AE should be targeted not only on patients and medical professionals but also on health decision makers.

PCV81
DISCRETE EVENT SIMULATION OF LONG-TERM HEALTH BENEFITS AND COST-EFFECTIVENESS OF IMPLANTING DUAL CHAMBER VS. SINGLE CHAMBER VENTRICULAR PACEMAKERS IN ITALY
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OBJECTIVE: To estimate the long-term economic and health impact of managing bradycardia due to sinoatrial node disease or atrioventricular block with a dual (DDD or DDDR) vs. single chamber ventricular pacemaker (VVI or VVIR). METHODS: A discrete event simulation was constructed to evaluate the outcomes over five years. During the simulation, each patient may develop post-operative complications, severe pacemaker syndrome leading to replacement of the VVI(R) with DDD(R), atrial fibrillation (which may become chronic and require anticoagulants), or have a stroke. A time for each event is sampled from the distribution of failure times specified by the individual’s risk profile. Life expectancy was estimated and assumed the same with either device. Model risk functions are based on long-term randomized trials (Canadian Trial of Physiological Pacing and Mode Selection Trial in Sinus-Node Dysfunction). Probabilistic sensitivity analyses were performed for key input parameters. Direct medical costs are reported in 2004 Euros (€). Benefits and costs are discounted at 3% per year. RESULTS: Chronic atrial fibrillation was estimated to be 24% lower with DDDR(R). Discounted costs over 5 years were about €10,000 per patient in either cohort, mean net additional cost of €106 with DDDR(R). DDDR(R) led to 0.09 additional QALY; a mean cost-effectiveness ratio of €1177/QALY, with 21% of replications indicating dominance for DDDR(R). Severe pacemaker syndrome requiring switch to DDD(R) occurred in 16.8% with VVI(R); the results are sensitive to the proportion that would seek replacement. CONCLUSION: Lower initial costs with VVI(R) were offset by second operations to switch to DDD(R) and costs of atrial fibrillation. Thus, dual chamber pacemakers are economically attractive in management of patients with bradycardia.

PCV82
COST-UTILITY OF CILOSTAZOL FOR THE TREATMENT OF INTERMITTENT CLAUDICATION IN SCOTLAND
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OBJECTIVE: To evaluate short-term cost-effectiveness (cost-utility) of cilostazol for the treatment of intermittent claudication from the perspective of the Scottish NHS. METHODS: A decision analytic model was constructed and analysed from the perspective of the Scottish NHS. Costs include direct medical costs including drug costs - evaluated at retail prices excluding taxes, and treatment costs. Treatment costs included the cost of primary and specialist care of intermittent claudication patients based on an independent survey of expert clinical opinion in Scotland. Short-term effectiveness was based on two published 24 week randomised clinically controlled trials of cilostazol (100mg) versus placebo. Placebo was chosen as the comparator since the majority of patients in Scotland do not currently receive intermittent claudication specific medical treatment. Health-related quality of life was measured in the trials using the SF-36; these scores were translated into utilities using a validated mapping algorithm. QALYs were estimated over various scenarios including the base-case analysis of the most conservative assumption of immediate return to placebo utility post treatment. RESULTS: The incremental cost-utility ratio for cilostazol over placebo was estimated at approximately £12,500 per QALY. The data were not discounted due to the short time
horizon of the trial. Sensitivity analysis suggested that the results were most sensitive to the cost of an angiography, the utility values estimated, and the price of cilostazol. CONCLUSIONS: Cilostazol is expected to be a cost-effective treatment for intermittent claudication patients in Scotland.

**PCV83**

**COST-EFFECTIVENESS OF ENDOVASCULAR VERSUS CONVENTIONAL ABDOMINAL AORTIC ANEURYSM REPAIR AT ONE YEAR; RESULTS OF A RANDOMIZED TRIAL**

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OBJECTIVE: Reduced hospital stay and intensive care unit stay after endovascular aneurysm repair (EVAR) compared to open repair (OR) of abdominal aortic aneurysms (AAA) are expected to result in reduced costs of AAA repair. The cost and cost-effectiveness of OR and EVAR in the first postoperative year were compared in a randomised trial. METHODS: In a multicenter randomised trial comparing OR and EVAR we randomly assigned 149 patients to OR and 151 to EVAR. Complications, costs and cost-effectiveness were determined one year after surgery. The uncertainty surrounding the cost-effectiveness ratios (iCER) was addressed by bootstrapping. RESULTS: Ten patients had died in the OR group and 9 in the EVAR group (chi-square test p = 0.8). In the OR group, 32 patients had one or more severe complications and in the EVAR group, 27 patients (chi-square p = 0.5). EVAR was associated with €4,480 additional direct costs per patient (€18,138 versus €13,659) and a decrease in QALYs of 0.72 as compared with 0.73 (difference 0.01 year, 95% CI −0.04–0.06). With regard to event free survival over 85% of the bootstrap estimates EVAR indicated favourable health outcomes for EVAR, but against prohibitively higher costs. From a health economic perspective OR is preferred. CONCLUSION: In patients suitable for both treatments, EVAR is not cost-effective in the first postoperative year.

**PCV84**

**SURGICAL TREATMENT OF ABDOMINAL AORTIC ANEURISM: ANALYSIS OF OPERATING COSTS. ENDOVASCULAR TREATMENT VERSUS TRADITIONAL SURGERY**

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OBJECTIVES: Open Surgery (OS) of abdominal aortic aneurysms (AAAs) is a major surgical procedure with elevated morbidity and a low but definite mortality. Endovascular repair (EVAR) has now emerged as a minimally alternative to OS, and its effectiveness has now been reported in the literature with reduced peri-operative mortality and complication rates. The aim of this study was to compare the full cost of the two treatments. METHODS: A prospective, observational study was conducted in a Vascular-Surgery Division from October 2003 to April 2004. Data for patients undergoing treatment of an AAA were collected. Cost assessment was carried out from the hospital perspective according to the Activity Based Costing principles. RESULTS: Data for 44 patients were gathered: 73% underwent OS and 27% EVAR. The mean age was 66.7 (+6.7) years and 7% of the patients were female. Comorbidity rates were similar in the two treatments group. There was no difference in mean hospital length of stay (LOS) between the two options (ten days). Mean post-operative LOS was 6.5 days (±4), with significant difference between the two groups (OS 7.5 ± 4

**PCV85**

**CLINICAL OUTCOME AND COST-EFFECTIVENESS OF DIFFERENT BYPASS MATERIALS IN VASCULAR SURGERY**

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OBJECTIVES: Bypass surgeries to circumvent occluded arteries are common procedures not only in cardiac surgery but also for occlusions in lower extremities or thorax. Different materials for the bypass procedures are available: venous, arterial and synthetic; each with different properties, advantages and costs. The objective is to assess and compare the effectiveness and benefit of various bypass materials in leg bypass surgery from a medical and economic perspective. METHODS: A systematic review of the literature was performed using established electronic data bases including Medline, Embase, Cochrane Library and others for literature from 1999–2004 in English and German. Of 4526 articles originally retrieved, 630 were examined in detail. RESULTS: The systematic review of literature resulted in two systematic reviews and eleven randomized trials comparing the medical effects of different bypass materials in leg bypass surgery. Therefore a model has been developed to determine cost-effectiveness of different bypass materials including the cost of the prosthetic material and operation time. For long-term results complication rates have to be considered as well. CONCLUSIONS: From a medical perspective autologous material is the superior choice compared to prosthetic materials in leg bypass surgery. According to the developed model the cost-effectiveness of different bypass materials depends on the costs and structure of the hospital. The experience of the surgeon is an important factor.

**PCV86**

**THE ECONOMIC BURDEN OF EXPERIENCING MAJOR COMPLICATIONS DURING PERCUTANEOUS CORONARY INTERVENTION**

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OBJECTIVES: Technological advances have enabled percutaneous coronary intervention (PCI) to be applied to expanding indications. However, escalating costs are of concern to patients, providers and payers. This study assessed the incremental medical costs of treating major in-hospital procedural complications incurred by patients undergoing PCI. METHODS: We con-
considered all patients undergoing elective, urgent, or emergent PCI at Mayo Clinic Rochester between 3/1/1998–3/31/2003 in analyses. Clinical, angiographic, and outcome data were derived from the Mayo Clinic PCI Registry. In-hospital PCI complications included major adverse cardiac and cerebrovascular events (MACCE) (defined as death, myocardial infarction [MI], emergent coronary bypass surgery, repeat PCI, or stroke) and bleeding of clinical significance. Administrative data was used to estimate total costs (hospital and physician) in standardized, year 2004 constant-dollars. We used generalized linear modeling to estimate the incremental costs associated with complications adjusting for demographic, clinical, angiographic, and procedural characteristics. RESULTS: 1071 (13.2%) of patients experienced at least one of the selected complications during hospitalization. Patients experiencing complications were older, more likely to present with emergent PCI, recent or prior MI, multi-vessel disease, B2/C type lesions, and comorbid conditions than patients who did not experience these events. Unadjusted total costs were, on average, $27,865 ± $39,424 for patients who experienced any complication compared to $12,279 ± $6796 for those who were free of complications (p < 0.0001). Adjusted mean total costs were $7000 higher for patients experiencing complications compared with patients who were complication free (95% CI of cost difference: $5,854, $8,145). Incremental costs associated with only bleeding events, only MACCE, or for patients experiencing bleeding and MACCE events were $5813, $5151, and $15,699, respectively (p < 0.0001). CONCLUSIONS: This observational study highlights the significant economic burden associated with in-hospital procedural complications. Interventions to reduce the risk of adverse events likely enhance financial as well as clinical performance.

PCV87

VITAE THROMBOSIS STUDY: THE PREVALENCE AND BURDEN OF VENOUS THROMBOEMBOLIC DISEASE (VTE) IN EUROPE
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OBJECTIVE: The prevalence of VTE and its associated morbidity and mortality is difficult to assess. This is due to its often silent nature, difficulty of diagnosis and follow up, and lack of routine post-mortem. This is thought to result in marked underestimates of its true burden. VITA is the first large-scale study that aims to determine the burden of VTE at a European level.

METHODS: A modified incidence-based epidemiological model was developed to estimate the number of VTE events and deaths taking into consideration recurrence and complications. Separate models were constructed for France, UK, Germany, Italy, Sweden and Spain; the total number VTE events were extrapolated for the EU. These comprehensive models were populated with published literature when available and expert observation when necessary. Both community-acquired and hospital-acquired events were derived. The former were based on a large European epidemiological study (EPI-GETBO) and the latter were derived using a hospital episode statistics database in conjunction with a “bottom-up” approach.

RESULTS: The total annual burden of VTE across the EU was estimated to be 641,275 symptomatic deep-vein thromboses (DVT), and 382,550 pulmonary emboli (PE). VTE-related deaths were estimated at 478,500. Of these deaths, 34,450 (7%) patients had been diagnosed with VTE and treated, 163,050 (34%) were estimated to be sudden fatal PE and 281,000 (59%) followed undetected PE. These findings were tested using probabilistic sensitivity analyses.

CONCLUSIONS: The VITAE study confirms that VTE is a major public health problem in the EU. Many of these events and deaths were sudden or due to undetected disease. Given the availability of effective VTE prophylaxis, many of these events and deaths are preventable. This is of particular importance in the medical setting where the implementation of prophylaxis remains suboptimal. Further research to estimate the impact of increased prophylaxis use is urgently needed.

PCV88

TREATMENT PATTERN, RESOURCE UTILIZATION AND COSTS OF INPATIENT THROMBOPROPHYLAXIS IN POLAND
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OBJECTIVE: There are limited data documenting common strategies used for inpatient thromboprophylaxis or describing the costs associated with common treatment modalities. The aim of the study was to assess treatment patterns, utilization of health care resources and hospital costs associated with thromboprophylaxis in real-world clinical practice in Poland.

METHODS: Data from inpatient records were collected prospectively for patients hospitalized in 25 departments between 31.04.2004 and 31.05.2005. Stratified analyses were performed by baseline risk of thrombosis and means of total cost for each group were calculated, using participating hospitals account systems. Cost comparisons related to risk groups were performed using non-parametric tests with significance level of 0.05.

RESULTS: The database contains information about 5348 patients. Of these 35% were general surgery, 23% medical, 15.3% vascular and 13% orthopedic surgery patients. 59% of patients were at highest risk of VTE (I), 24% at high (II), 10% at moderate (III) and 7% at low risk (IV). Thromboprophylaxis received 84%, 77%, 71% and 60% patients in I, II, III, and IV group respectively. Most admissions (76%) involved LMHHS treatments, administered for mean 10.2, 6.3, 6.0 and 5.8 days in group I,II,III and IV respectively. Adverse events related to thromboprophylaxis occurred in 2% of patients; 85% of these were minor hemorrhages, 9% major hemorrhages, 2% thrombocytopenia. Post-discharge thromboprophylaxis was indicated for 34.6% patients, most frequently in patients after orthopedic surgery (81.3%), trauma (66.3%) or cardiac hospitalizations (49%). The most common regimen of extended thromboprophylaxis was LMWHs (77%). Mean cost of thromboprophylaxis was 999 (±/–5964) PLN in I, 327 (±/–1598) PLN in II, 260 (±/–695) PLN in III and 232 (±/–842) PLN in group IV (1 EURO = 4 PLN, 2005) (p = 0.0001).

CONCLUSION: Results from this study indicate that inpatient thromboprophylaxis is in line with clinical guidelines. The risk stratification of hospitalized patients allows for the estimation of costs.

PCV89

COST-EFFECTIVENESS OF AN EXTENDED-FOUR-WEEK FONDAPARINUX PROPHYLAXIS REGIMEN FOR THE PREVENTION OF THROMBOEMBOLIC EVENTS IN PATIENTS UNDERGOING MAJOR ORTHOPEDIC SURGERY
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OBJECTIVES: Patients undergoing major orthopaedic procedures such as hip fracture surgery (HFS) and total hip replacement (THR) are at increased risk of developing venous thromboembolic events (VTE). It was shown in the Penthifra plus trial that extending fondaparinux prophylaxis from 1 week to 4 weeks reduces the risk of VTE by 96%. Whether prolonged
prophylaxis with fondaparinux is cost-effective was addressed in this study. METHODS: A decision analytic model was developed to compare a four-week fondaparinux regimen with a one-week regimen. Clinical input parameters were derived from clinical trials and other published sources. Cost data for Swiss university hospitals were obtained from the single service tariffs database (Tarmed), the Swiss Drugs Compendium and the diagnosis related groups database (AP-DRG) and were expressed in 2004 Swiss francs (CHF). The model simulates a cohort of HFS and THR patients over 30 days and 5 years. Outcomes were measured in life-years gained (LYG). Future costs and outcomes were discounted with an annual rate of four percent. RESULTS: In a hypothetical cohort of 1000 HFS patients, extended prophylaxis avoids 10 fatal events and 9 VTEs over a time horizon of 30 days. The corresponding ICER is CHF 2801 per LYG. With a lower baseline risk for VTE in THR patients, extended fondaparinux prophylaxis prevents one fatal event in 1000 patients over a time horizon of 30 days, yielding an ICER of CHF 2294 per LYG. After five years, extended prophylaxis is cost saving in both HFS and THR patients. The model results were robust to variations of major clinical and cost parameters. CONCLUSIONS: Extended prophylaxis with fondaparinux in THR and HFS patients is cost-effective from a Swiss health care perspective using a time horizon of 30 days. With a longer time horizon of five years, extended prophylaxis with fondaparinux is cost-saving.

PCV90

COST EFFECTIVENESS OF FONDAPARINUX COMPARED WITH ENOXAPARIN FOR EXTENDED PROPHYLAXIS AGAINST VENOUS THROMBOEMBOLISM IN PATIENTS UNDERGOING HIP FRACTURE SURGERY USING DUTCH ESTIMATES OF COSTS

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OBJECTIVE: To determine the cost-effectiveness of fondaparinux compared with enoxaparin for extended prophylaxis against venous thromboembolism in patients undergoing hip fracture surgery using Dutch estimates of costs. METHODS: Costs and effects are modeled using a cohort simulation model. Short term transition probabilities (until day 30) are based from placebo controlled trials. Long term probabilities are obtained from the literature. Resource use and costs were obtained from a Dutch costing study concerning bleedings and symptomatic events. Outcome measures were rates of symptomatic thromboembolic events, deaths avoided and health care costs. Costs were in 2003 values. “Confidence intervals” (CI) are obtained by probabilistic sensitivity analysis. RESULTS: Fondaparinux was estimated to prevent an additional 158 symptomatic venous thromboembolic events (per 10,000 patients) at 1 year after major orthopaedic surgery compared with enoxaparin (95% CI:163–371). The cost savings (per patient) of using fondaparinux compared with enoxaparin are estimated at €103 (£34–£178). The number of deaths avoided (per 10,000 patients) is estimated at 103 (57–165). The probability that fondaparinux is both more effective and cost saving is estimated at 0.9996. CONCLUSION: Extended prophylaxis with fondaparinux after major orthopedic surgery can be expected to result in both better outcomes and cost savings when compared with extended prophylaxis with enoxaparin.

PCV91

COST EFFECTIVENESS OF EXTENDED PROPHYLAXIS WITH FONDAPARINUX TO PREVENT VENOUS THROMBOEMBOLISM IN PATIENTS UNDERGOING HIP FRACTURE SURGERY USING UK AND DUTCH ESTIMATES OF COSTS

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OBJECTIVE: To determine the cost effectiveness of extended prophylaxis with fondaparinux to prevent venous thromboembolism in patients undergoing hip fracture surgery compared to short term using UK and Dutch estimates of costs. METHODS: Costs and effects are modeled using a cohort simulation model. Short term transition probabilities (until day 30) are obtained from placebo controlled trials. Long term probabilities are obtained from the literature. UK resource use and costs were obtained from a published analysis concerning short term prophylaxis. Dutch resource use and costs were estimated in a separate costing study concerning bleedings and symptomatic events. Outcome measures were rates of symptomatic thromboembolic events, deaths avoided and health care costs. Costs were in 2004 values. “Confidence intervals” (CI) were obtained by probabilistic sensitivity analysis. RESULTS: At one year extending prophylaxis with fondaparinux after major orthopaedic surgery from 7 to 22 days was estimated to prevent 343 symptomatic venous thromboembolic events (per 10,000 patients) (95% CI:283–391). The additional cost (per patient) of extending the prophylactic period is estimated at £164 (£117–£212) in the UK and at €1915 (€392–€4021) in The Netherlands. Costs per death avoided (per 10,000 patients) is estimated at 138 (89–192). Costs per symptomatic VTE avoided are estimated at £4,788 (£3258–£6906) in the UK and at €1915 (€392–€4021) in The Netherlands. Costs per death avoided are estimated at £11,932 (£7220–£20,480) and €4773 (€892–€11,629). When assuming the average survival after surgery at 6 years, costs per life year gained are estimated at under £3,000 for the UK and at under £900 for The Netherlands. CONCLUSION: Our estimates indicate that extending the prophylaxis with fondaparinux from 7 to 21 days has an acceptable balance between cost and outcomes both in the UK and The Netherlands.

PCV92

HEALTH RELATED QUALITY OF LIFE (QOL) IN PATIENTS RECEIVING VITAMIN K ANTAGONISTS (VKA): A STUDY USING EQ-5D QUESTIONNAIRE

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Oral anticoagulation is indicated for a number of conditions, including prevention of systemic embolism in patients with mechanical heart valves, valvular heart disease, myocardial infarction and atrial fibrillation. VKA are frequently prescribed as long term treatment. Due to the features of treatment, VKA have the potential to cause dissatisfaction and reduce QoL. OBJECTIVES: To assess Health-Related Quality of Life (HRQOL) in patients receiving VKA comparing their health status with matched controls. METHODS: Ninety-two consecutive patients receiving VKA (53 male; age range 37–81 years) were enrolled among those followed by our anticoagulation clinic. The more frequent indications for VKA treatment were atrial fibrillation and venous thromboembolism. Each patient was matched by age and sex with one control from a database of a population based naturalistic prospective survey. The EuroQoL, completed during the enrolment visit, was used to evaluate HRQOL. To evaluate differences in the five dimensions...
between the two groups was used Chi Square Test. To evaluate differences in EQ VAS was used both Paired sample T test and a regression analysis using bootstrap estimated of standard error.

RESULTS: No statistically significant differences were reported in all dimensions between the two groups: mobility (P = 1.000), self care (P = 0.064), usual activities (P = 0.213), pain/discomfort (P = 0.213) and anxiety/depression (P = 0.512). The figures obtained using VAS to assess the global health status was: 72.8 (SD, ± 19.7) in patients treated with VKA and 73.9 (SD, ± 16.0) in matched controls; this difference was not statistically significant (p = 0.708 Paired sample T); also bootstrap confident intervals indicated that there was no statistically significant differences between the two groups. CONCLUSIONS: Even if it is conceivable that different settings would give different results, our study show that in patients on oral anticoagulant treatment the overall perception of health status was not significantly different from that of matched controls.

ENDOCRINE DISORDERS

LONG-TERM QUALITY OF LIFE (QoL) OUTCOMES IN THE TREATMENT OF ADULTS WITH GROWTH HORMONE DEFICIENCY (GHD)—A 5 YEAR STUDY

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Although the beneficial effect of growth hormone replacement on QoL in adults with GHD is well recognized, the long-term effect of this therapy on QoL remains uncertain. OBJECTIVES: To determine the effect of long term GH replacement on QoL in patients compared with country-specific normative data for the general population (GP). METHODS: QoL was measured using Quality of Life Assessment for Growth Hormone Deficiency in Adults (QoL-AGHDA) in patients and GP in Sweden and England & Wales (E&W). QoL-AGHDA is a 25-item questionnaire that elicits yes/no responses that are used to compute a summary score. GP data were obtained from 1682 randomly selected individuals from Sweden and 892 from E&W. These data were compared with KIMS (Pfizer International Metabolic Database) data for 121 patients from Sweden and 77 from E&W with 5 years of complete follow-up. Age-range was 20–79 years. Linear regression methods were used to estimate age- and gender-adjusted differences between patients and the GP at one-year intervals. The significance level was set at 5%. RESULTS: The (adjusted to age 50) mean QoL-AGHDA score at baseline were 8.21 and 15.2 (SEM 0.44 and 0.68) for the Swedish and E&W patients, respectively. For the GP samples the corresponding mean scores were 3.80 and 6.6 (SEM 0.12 and 0.20). The mean difference between patient scores at baseline and GP scores were −4.4 for Sweden and −8.6 for E&W (p < 0.0001). However, these differences reduced markedly over the first year of treatment and were subsequently maintained at statistically non-significant differences compared to the general populations.

CONCLUSIONS: This study shows that adults with GHD who receive long-term GH replacement benefit most with respect to QoL during the first 12 months of therapy and that this improvement was maintained at levels close to normalization in QoL over 5 years of follow up.

A PROSPECTIVE REAL-LIFE STUDY OF QUALITY OF LIFE IN PATIENTS WITH ACROMEGALY

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OBJECTIVES: To evaluate the impact of acromegaly on health-related quality of life (HRQOL) in European patients treated with Sandostatin® LAR®. The secondary objectives were to investigate the correlation between HRQOL and subpopulations based on exploratory variables [sociodemographic and disease-
specific markers, e.g. growth hormone (GH) and insulin-like growth factor [IGF-I], and to compare the results of the 22-item [8 physical and 14 psychological] Acromegaly Quality-of-Life questionnaire (ACROQOL) and Short Form-36 Health Survey (SF-36] in this population. Some of data collected will also support the ongoing validation of ACROQOL questionnaire. METHODS: This is the largest European multinational, open, non-comparative, single evaluation, observational trial evaluating the HRQOL of patients with acromegaly treated with Sandostatin® LAR®. This preliminary analysis presents interim results from 208 Italian and 71 Spanish patients. Recruitment is ongoing in England, France, Germany, Greece, Portugal, and Turkey. A total of more than 500 patients are expected. GH and IGF-I levels were measured within two months of completion of the questionnaires and sociodemographic data were also recorded. Multivariate analyses were used to explore relationship between HRQOL score and clinical and sociodemographic variables. RESULTS: From this preliminary analysis, there was no apparent relationship between HRQOL and sociodemographic variables; and no correlation with levels of GH or IGF-I. There was a marked correlation between ACROQOL and physical component score of SF-36, but less significant correlation between ACROQOL and mental component score. The overall impact of acromegaly on HRQOL in patients treated with Sandostatin® LAR® has not yet been analysed. CONCLUSIONS: ACROQOL may be a more descriptive measure of HRQOL in the acromegaly population than the SF-36. In terms of the SF-36, there was a superior correlation between the physical function component and ACROQOL than with the mental component score, suggesting that the ACROQOL is more sensitive to the psychological impact of the disease.

**PED4**

**SUSTAINED IMPROVEMENT IN PATIENT-REPORTED OUTCOMES (PRO) AND NORMALIZATION OF HEALTHCARE UTILIZATION (HCU) DURING GROWTH HORMONE (GH) REPLACEMENT THERAPY IN HYPO PitUITARY ADULTS IN THE NETHERLANDS**

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OBJECTIVES: To investigate whether long-term GH replacement in GH deficient adults results in improvements in PRO and HCU in comparison with Dutch population data. METHODS: Analyses were performed using data from KIMS (Pfizer Internationale Metabolic Database). Data were available for 164 Dutch patients (78 men) for the first year of treatment, whereas 2 and 3-year follow-up data were available for 107 and 62 patients respectively. Quality of life (QoL) was assessed using the Nottingham Health Profile (NHP) and disease-specific QoL-AGHDA questionnaire. HCU data were obtained with the Patient Life Situation Form (PLSF). Statistical analyses were performed with repeated measurements technique (all values presented as mean ± SEM or mean [95% CI]. Normative data for the QoL-AGHDA questionnaire are currently being collected and will be compared with patient data. RESULTS: Both QoL measures showed a significant sustained improvement over the 3-year treatment period (from 7.5 ± 0.55 to 5.0 ± 0.59 for NHP, from 10 ± 0.5 to 6.8 ± 0.7 for AGHDA). Data collected with the PLSF showed a sustained improvement in patient-reported PRO and normalized HCU in The Netherlands.

**GI DISORDERS**

**CLINICAL OUTCOMES OF RABEPRAZOLE IN PATIENTS WITH GASTRO-OESOPHAGEAL REFLUX DISEASE IN REAL-WORLD CLINICAL PRACTICE**

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OBJECTIVES: To evaluate the timing and degree of symptom relief with rabeprazole in a real life setting of patients with gastro-oesophageal reflux disease (GERD). METHODS: A prospective, multi-centre, observational study was conducted in which Canadian general practitioners (n = 115) prescribed rabeprazole to adults with GERD. Subjects had to be newly diagnosed or demonstrate insufficient control on their current PPI, H2-antagonist and/or antacid and not have used rabeprazole previously. At the baseline office visit (Day 0), physicians collected demographic and clinical history data. Subjects were prescribed rabeprazole (2 × 10 mg daily) and sent home with a seven-day diary to record symptom severity and symptom control. Subjects also completed a Global Symptom Rating on Day 7 with improvement defined as equal to or greater than 1 point change in severity rating. RESULTS: Of the 312 subjects who reported taking rabeprazole on Day 0, more than half were over 50 years of age and 56% female. The number of subjects reporting baseline daytime Heartburn (D-HB), baseline Night-time Heartburn (N-HB), and Regurgitation (R) were 245, 230 and 194 respectively. 63% of D-HB, 73% of N-HB and 72% of R reported improvement within the first 2 days of therapy. Of the subjects experiencing improvement during the first two days of therapy, 83% of D-HB, 83% of N-HB and 82% of R maintained or further improved symptoms to the end of the study. Overall, the majority of patients (76%) indicated marked (56%) or moderate (20%) improvement for the onetime Global Symptom Rating on Day 7. CONCLUSIONS: Rabeprazole demonstrated a high level of effectiveness within the first two days of therapy, which was maintained in subjects with a prolonged history of GERD, including those with prior PPI treatment. The results of this real world study provided valuable information on the true efficacy of rabeprazole.

**PGI2**

**COST EFFECTIVENESS AND BUDGET IMPACT OF LAMIVUDINE ANTIVIRAL TREATMENT FOR CHRONIC HEPATITIS TYPE B PATIENTS IN TAIWAN**

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OBJECTIVES: To evaluate cost-effectiveness and budget impact of short and long-term lamivudine antiviral treatment for chronic hepatitis type B (CHB) in Taiwan. METHODS: A
Markov model was constructed to analyse CHB patients’ life expectancy (LE) of no antiviral treatment versus 18-month, 36-month, and unrestricted duration of lamivudine treatment, and their associated reimbursement cost from Taiwan National Health Insurance (TNHI) perspective. Disease progression, clinical effectiveness and patient population information were obtained from systematic review of published studies. Costs of medication, diagnostics, physician’s fees, and hospitalization were included. Incremental cost-effectiveness ratios (ICERs) compared to disease progression without antiviral treatment were derived. The annual cost of lamivudine treatment was based on a 10% recruitment rate from 120,000 eligible 30-year-old CHB patients. All costs and health outcomes were discounted at 3%.

RESULTS: CHB without antiviral treatment results in LE loss of 21.7 years for 30-year-old CHB patients. Lamivudine used for 18-months, 36-months, and unrestricted treatment duration could increase LE by 2.5, 4.0, and 5.1 years respectively; continuing treatment in patients with cirrhosis could increase LE by 10.2 years. Expected lifetime costs to the TNHI for no antiviral treatment were US$12,854 per patient. Incremental costs of using lamivudine for 18-month, 36-month, and unrestricted duration were US$697, US$1031 and US$1278 respectively. ICERs for 18-month, 36-month, and unrestricted were US$757.7, US$542.5, and US$330.3; and US$1820.4 for treating cirrhotic patients. Expected maximal annual budget for lamivudine was US$13.0m, US$15.3m, and US$15.3m for 18-month, 36-month, and unrestricted respectively; and US$32.3m for continuing treatment in cirrhotic patients.

CONCLUSIONS: CHB results in marked LE loss to patients. Lamivudine treatment notably improves LE. The effectiveness of lamivudine increased with increased treatment duration and when continued in cirrhotic patients. Long-term antiviral treatment of CHB with lamivudine is a cost-effective strategy in Taiwan with a manageable impact on budgets.

GPI3
COST-EFFECTIVENESS OF HELICOBACTER PYLORI TESTING FOR PATIENTS WITH PERSISTENT DYSPESIA IN THE UK
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OBJECTIVES: To assess the cost-effectiveness of three tests for HP detection in adults and develop decision analysis models to compare “test—no test” strategies for the treatment of persistent dyspepsia. METHODS: Two decision analytic models were constructed and analysed from the perspective of the health service. The first model was a simple decision tree of three types of HP test, allowing for true and false test results, with the ‘number of true outcomes’ as the measure of effectiveness. Tests considered were the serological test, the C-urea breath test and the monoclonal faecal antigen test. The second model was based on published guidelines for managing dyspepsia and procedures in secondary care. Measures of effectiveness for the second model include numbers in each end state, number of endoscopies performed, and number of HP eradication treatments given inappropriately and the extent of wasted resources consumed. Data used to furnish the models were gathered from the literature and available published costs. RESULTS: The monoclonal faecal antigen test was the most cost-effective solution with an ICER of £2 per additional true outcome, but was highly dependent on the sensitivity and specificity of the serological test. The stool test and the breath test either dominate or are relatively cost effective in relation to the serological test unless the specificity of the serological test exceeds 0.93. The stool test either dominates or is relatively cost effective in relation to serological test up to a cost of £18.67 per stool test. Preliminary results from the second model suggest that the decision is highly dependent on values attached to the variables in the model, especially in relation to costs of treatment and costs associated with malignancy.

CONCLUSION: In the UK, the faecal antigen test is a cost-effective solution to testing for HP in dyspepsia patients.

GPI4
TREATMENT OF CIRRHOSIS OF THE LIVER WITH SILYMARIN, A COST-EFFECTIVENESS ANALYSIS, BASED ON GERMAN DATA
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OBJECTIVES: To clarify whether the therapy of liver cirrhosis with silymarin shows a higher cost-effectiveness than a treatment without from of the third party payers perspective. METHODS: To calculate the incremental cost-effectiveness based upon a clinical study, the liver-related morality rates of patients with liver cirrhosis after four years, treated with or without silymarin, were compared. Adverse effects (AE) and adverse drug reactions (ADR) were also be considered. Comparative parameters were costs, effectiveness and tolerability of both alternatives. Costs were generated by the drug therapy of liver cirrhosis, medical care, and treatments of AE and ADR, which were derived from previous studies and portrayed in a core-model. The calculation of the model was performed by utilising the program DATA Professional. Two sensitivity-analyses were conducted. RESULTS: For liver-related mortality total costs of €5467 for silymarin and €3333 without silymarin were generated. The effectiveness-adjusted costs were calculated at €5970 for silymarin and €4009 for treatment without silymarin. This entails that for the longer survival time of 9.12 months, incremental costs of €1961 were calculated per silymarin patient. However, as an effect, less AEs occurred and longer survival of patients could be achieved with silymarin treatment of liver cirrhosis. CONCLUSION: With silymarin treatment of liver cirrhosis less AEs and longer survival of patients could be achieved. By considering the concept of prolonged life, cost amounting to €2580 was estimated per life year gained (lyg).

GPI5
THE COST-EFFECTIVENESS OF PEGINTERFERON ALFA-2B (12KD) PLUS RIBAVIRIN VS. INTERFERON ALFA-2B PLUS RIBAVIRIN FOR CHRONIC HEPATITIS C (CHC) IN A DEVELOPING COUNTRY—BRAZIL
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OBJECTIVES: Peginterferon alfa-2b (12KD)/ribavirin (PEG2b) has been shown to produce a higher rate of sustained virological response (SVR) than non-pegylated combination therapy (non-PEG) in CHC, but the cost effectiveness of this improved efficacy has not been assessed in Brazil. METHODS: We developed a Markov model to describe the clinical history of CHC in which the cohorts of hepatitis C virus (HCV) patients received PEG2B or non-PEG for either 48 or 24 weeks according to genotype and liver histology and were followed for their expected lifetime. The reference patient was a 30-year-old male with CHC without cirrhosis. The SVRs to PEG2B and non-PEG were 48% and 34% for HCV genotype 1 and 88% and 80% for non-1, respectively. Quality of life for each health state was based on literature. Costs for each health state were based on three Delphi panels, one with hepatologists, one with intensivists and another with oncologists. Costs in 2004 reais and benefits were discounted at 3%. RESULTS: In HCV genotype 1, PEG2B increases life expectancy (LY) by 1.79 years and quality adjusted life expectancy (QALY) by 0.82 years compared to non-PEG. The
ESOMEPRAZOLE IS COST-EFFECTIVE COMPARED WITH PANTOPRAZOLE IN THE ACUTE AND MAINTENANCE TREATMENT OF REFLUX ESOPHAGITIS IN FINLAND

OBJECTIVES: To assess the cost-effectiveness of two treatment strategies for reflux esophagitis (RE) in Finland: acute treatment with esomeprazole 40mg qd followed by maintenance treatment with 20mg qd, or acute treatment with pantoprazole 40mg qd followed by maintenance treatment with 20mg qd.

METHODS: A decision analysis model was developed to compare the two treatment strategies with regard to direct medical costs (drugs, physician visits, investigations, procedures) and productivity costs (loss of work and reduced productivity while at work) using a 7-month time horizon. Probabilities for treatment success were based on results from a large multinational, randomised, double-blind clinical study of up to 8 weeks acute ($n$ = 3170) and 6 months maintenance ($n$ = 2766) treatment of RE.

The proportion of patients with treatment success and an estimated number of weeks with symptoms of gastro-esophageal reflux disease (GERD) were used as effectiveness measures. Sensitivity analyses were made by using upper and lower 95% confidence limits of the clinical study results, as well as by changing patient management assumptions. RESULTS: The proportion of patients with treatment success, defined as healed RE within 8 weeks acute treatment and no relapse during subsequent maintenance treatment, was 83.4% and 69.6% for esomeprazole and pantoprazole, respectively (i.e. an absolute difference of 13.8%). This corresponded to 1.1 weeks less with GERD per patient by using esomeprazole. In the base case analysis, the mean estimated long-term cost per patient was slightly lower for the treatment strategy using esomeprazole. In the base case analysis, the mean estimated number of weeks with symptoms of gastro-esophageal reflux disease (GERD) per patient by using pantoprazole, respectively (i.e. an absolute difference of 13.8%).

This corresponded to 1.1 weeks less with GERD per patient by using pantoprazole. In the base case analysis, the mean estimated long-term cost per patient was slightly lower for the treatment strategy using pantoprazole. In the base case analysis, the mean estimated number of weeks with symptoms of gastro-esophageal reflux disease (GERD) per patient by using pantoprazole, respectively (i.e. an absolute difference of 13.8%).

Furthermore, the estimated productivity loss due to work absence and reduced productivity while at work was slightly lower with esomeprazole compared to pantoprazole. CONCLUSIONS: The esomeprazole treatment strategy is cost-effective for patients with treatment success, since esomeprazole provides better effectiveness and savings in work productivity costs at similar or lower direct medical costs.
column® treatment of moderate severe UC and CD patients is associated with cost offsets for surgery, hospitalizations, outpatient care and drugs and an increase of QALYs. The cost-effectiveness ratios remain within the acceptable range for treatments to be recommended for use in Sweden.

**PGI9**

**COST-EFFECTIVENESS OF ESOMEPRAZOLE VERSUS GENERIC OMEPRAZOLE IN THE ACUTE TREATMENT OF REFLUX ESOPHAGITIS IN SWEDEN**

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**OBJECTIVES:** To assess cost-effectiveness of esomeprazole 40mg (SEK 14.68 / tablet: EUR 1 = SEK 9.27, June 15, 2005) once daily (od) versus omeprazole 20mg od at the lowest available generic drug price (SEK 4.32 / tablet) in the acute treatment of reflux esophagitis (RE) in Sweden. **METHODS:** A decision analysis model was used considering pooled effectiveness data from comparative clinical studies and patient management assumptions based on expert opinions. Results were analysed using an 8-week time horizon and reported separately including work productivity costs or direct medical costs (drugs, physician contacts, investigations) only. Utility values associated with having healed RE (0.84) or unhealed RE (0.69) were derived from a study using the rating scale method in patients with gastro-esophageal reflux disease (GERD). Estimates of GERD-related work productivity loss (absence from work and reduced productivity while at work) were derived from observed differences in productivity before and after treatment in another study. A probabilistic sensitivity analysis (PSA) on direct medical costs was used to assess robustness of results, along with additional analyses extending the time horizon beyond 8 weeks. An acceptable threshold of SEK 500,000 per quality-adjusted life year (QALY) gained was used in the PSA. **RESULTS:** When including direct medical costs only, the analysis resulted in mean additional costs of around SEK 200,000 per QALY gained by using the more effective acid inhibitory treatment strategy (esomeprazole). The PSA on the probability of esomeprazole treatment being below a SEK 500,000 per QALY gained threshold supported robustness of a conclusion that esomeprazole treatment is cost-effective. When work productivity costs were included, results indicated that the esomeprazole strategy is cost-neutral. Extending the time horizon resulted in further cost-effectiveness advantages for esomeprazole. **CONCLUSION:** Esomeprazole 40mg od is cost-effective compared with generic omeprazole 20mg od in the acute treatment of reflux esophagitis in Sweden.

**PGI10**

**COST EFFECTIVENESS OF PROTON PUMP INHIBITOR TRIPLE THERAPY REGIMENS FOR HELICOBACTER PYLORI ERADICATION IN THE PRIMARY CARE SETTING IN IRELAND**

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**OBJECTIVES:** To determine the relative cost effectiveness of proton pump inhibitor (PPI) based triple therapy regimens for the eradication of Helicobacter pylori (H. pylori) in the primary care setting in Ireland. **METHODS:** Using decision tree analysis the expected cost for each H. pylori eradication strategy was determined from the cost of each treatment option multiplied by the probability of that option occurring. Only direct costs relating to the primary care setting such as GP consultation and medication costs, extracted from the Monthly Index of Medical Specialties 2003, were included. Probabilities were obtained using the GMS prescribing database where all patients who received amoxycillin, clarithromycin and a PPI in the ERHA region in 2002 were followed for one year. A broad range of clinical and cost inputs was investigated by sensitivity analysis. **RESULTS:** The main outcome measure was the cost per asymptomatic patient for each therapeutic strategy. Depending on the regimen adopted, 40.8% to 46.1% of patients did not require any further medication in the year following H. pylori eradication treatment. The strategy of rabeprazole, amoxycillin and clarithromycin was the most cost effective option with a cost of €466 per asymptomatic patient. Two way sensitivity analysis indicated that the cost of rabeprazole triple therapy and the duration of rabeprazole maintenance therapy would each have to increase by 30% before this strategy ceased to be the most cost effective option. **CONCLUSION:** This study indicates that the triple therapy regimen of rabeprazole, amoxycillin and clarithromycin is the most cost effective of the therapeutic strategies examined for the treatment of H. pylori infection in the community setting in Ireland.

**IBD: INDIRECT COSTS OF ILLNESS AND QUALITY OF LIFE IN GERMANY**

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**OBJECTIVE:** To determine the differences in indirect costs and quality of life between persons affected by Crohn’s Disease (CD) and those affected by Ulcerative Colitis (UC) as part of a cost of IBD study in Germany. **METHODS:** Members of the German Inflammatory Bowel Disease (IBD) Association (DCCV) were recruited by post to prospectively document their IBD-associated costs (sick leave, disability pensions, and medical resource use) in a cost diary over 4 weeks. General demographic information and IBD history were also reported. Health-Related Quality of Life (hrQoL) was determined using the EuroQol EQ-5D. Indirect costs were calculated according to national sources using the human capital approach. **RESULTS:** Cost diaries were returned by 483 persons (CD: 241; UC: 242) whose mean age was 42 years and average disease duration 13 years. Productivity losses were reported by CD (14%) and UC (15%) subjects and average sick leave was similar (CD: 1.2 days; UC: 1.5 days). However, more CD (19%) than UC (7%) patients received a disability pension. The mean 4-week indirect costs for CD were €266 (95% CI: 100, 433) higher than for UC (p < 0.002). The mean hrQoL of CD subjects according to EuroQol VAS scores was 5 points lower (95% CI: -8.3, -1.7) than for UC subjects (p < 0.004). **CONCLUSIONS:** In Germany, indirect costs of CD are significantly higher than those of UC and hrQoL of CD patients is significantly lower than of UC patients. For CD, factors decreasing occupational disability would decrease costs and since hrQoL is also determined by the ability to work productively, may improve hrQoL. Factors affecting indirect costs, which account for a large part of the costs of IBD, can have a large impact on the overall costs. Furthermore, these findings indicate that determinants of costs must be searched for and evaluated separately for each disease.
Rationale: Acute-on-chronic liver failure (ACLF) is a life-threatening acute deterioration of a chronic liver disease with severe jaundice and hepatic encephalopathy. There are no cost-of-illness studies of the treatment of ACLF available. OBJECTIVES: To determine the average cost of the treatment of ACLF and testing of important clinical variables for their predictive value for the treatment costs. Methodology: Based on the sample of all ACLF-patients treated in a large German university hospital from 1999 to 2001 detailed cost of the initial hospital stay and a three year follow-up period were determined. Data on resource use were collected from hospitals patient files and internal statistics as well as by standardized interviews and questionnaires to patients and their treating GPs. Costs were calculated from a German health care system perspective and standardized to EUR of 2002. Additionally to age, sex, aetiology and severity of liver failure another 15 relevant clinical variables were tested in single and multiple regression analyses. RESULTS: A total of 69 patients with ACLF could be identified. Mean costs per patient were €9799 for the following 3 years. Biggest influence had treatment with artificial liver support systems. Other significant variables in the model were renal dialysis and aetiology of the disease. All other variables including sex, age, severity of ACLF and several laboratory parameters did not have a relevant influence on the costs. CONCLUSION: A straight and relatively simple method to identify the main cost drivers for ACLF-treatment is presented. The results are absolutely plausible from a clinical point of view and stable to variation of the model structure. The results underline the necessity to differentiate the reimbursement systems for hepatorenal syndrome or additional renal failure, artificial liver support and the aetiology of ACLF.

PGI13
THE IMPACT OF GASTROESOPHAGEAL REFLUX DISEASE ON WORK PRODUCTIVITY: A SYSTEMATIC REVIEW
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OBJECTIVES: Gastroesophageal reflux disease (GERD) is a chronic, potentially debilitating condition characterized by frequent and persistent heartburn and acid regurgitation. The objective of this study was to evaluate the effects of GERD on work productivity, defined as productivity loss due to absenteeism and reduced effectiveness while working (presenteeism).
METHODS: Studies quantifying health-related work productivity loss in individuals with GERD were identified using systematic literature searches. Work productivity loss due to absenteeism was expressed as number of hours lost, and as the percentage of the total employed time. Presenteeism was expressed as number of hours lost, and as the percentage reduced effectiveness while at work. Overall productivity losses (absenteeism plus presenteeism) were valued in US dollars using the human capital method. RESULTS: Six publications covering five studies conducted in the USA, Canada and Sweden were eligible for inclusion. Reported work productivity losses among individuals with GERD ranged from 6% to 40%, and were primarily due to presenteeism (6%–40%) rather than absenteeism (<1%–6%). Work productivity impairment correlated with symptom severity, and was greatest in patients experiencing sleep disturbance due to GERD symptoms and lowest in GERD patients taking prescription medication. Acid-suppressive therapy improved productivity at work, especially in individuals with GERD-associated sleep disturbances. The mean overall productivity losses per employee with GERD were estimated at $51–$396 per week, assuming a 40-hour working week and average US wages. CONCLUSION: GERD has a substantial economic impact, primarily by impairing employee productivity while at work. The burden of lost productivity may be reduced by acid-suppressive therapy, especially in employees with nighttime symptoms of GERD.

PGI14
WORK ABSENTEEISM IN IRRITABLE BOWEL SYNDROME (IBS): MEASURING DAYS VS HOURS MISSED
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OBJECTIVES: To compare the accuracy of two absenteeism measures (days missed and hours missed) for inclusion in economic evaluations of IBS. METHODS: 135 IBS patients recruited from five US gastroenterology practices completed the Work Productivity and Activity Impairment questionnaire for IBS (WPAI:IBS), which assesses absenteeism with hours missed, and also completed questions about days and partial days missed. Days and partial days were considered to be the equivalent of 8 hours and 4 hours, respectively. RESULTS: 125 patients were employed, had complete data, and were included in the analysis. A total of 6.4% of patients reported missing days from work due to IBS in the prior 7 days, with an overall absenteeism rate of 1.8%; 28.0% of patients reported missing hours, with an overall absenteeism rate of 4.3%. Among those reporting hours missed, 42.9% missed less than 3 hours, 34.3% missed 3 to 5 hours, and 22.9% missed 8 to 30 hours. When days missed was used to measure absenteeism, 77.2% of patients missing hours and 60.7% of time missed due to IBS were not counted; when hours missed was reported, all patients reporting days missed were counted. Combining partial days missed with days missed increased the correspondence between those reporting days and hours missed, but considerably overstated absenteeism because partial-day absences were often less than 4 hours. Previous validation of the WPAI:IBS hours missed measure of absenteeism relative to measures of disease severity, verbatim responses and retrospective diaries, corroborates the inaccuracy of the days missed measure. CONCLUSIONS: Hours missed from work, not days missed, is a more accurate measure for capturing the partial-day absences characteristic of IBS patients. Other chronic disorders like IBS may exhibit a similar pattern of widespread absences of short duration, and that absenteeism may go undetected when days missed is the measure of absenteeism.

PGI15
MEDICAL RESOURCE USE AND DIRECT MEDICAL COST OF CHRONIC HEPATITIS C VIRUS INFECTION (HCVI) IN BRAZIL
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OBJECTIVES: In Brazil it is estimated that there are more than 3 million patients chronically infected with HCV, making this disease a major public health problem. HCVI leads to chronic liver disease states such as cirrhosis and the need for transplantation. There is little published data on the cost of HCVI in Brazil. The aim of this study is to investigate medical resource use and direct treatment costs for each state of HCV infection from the perspective of the private medicine payers in Brazil. METHODS: Three Delphi panels were performed, one with hepatologists, one with intensivists and another with oncologists in order to delineate practice patterns and to obtain resource utilization for routine treatment and monitoring, adverse event management and other clinical parameters representative.
of community physicians management of HCV infection. Responses were obtained from six hepatologists, six intensivists and six oncologists from various centers in Brazil with experience of treating HCVI. RESULTS: The expected annual costs per each disease stage, not treated with antiviral medication, per patient were: R$1,069 for mild chronic hepatitis, R$1,277.00 for moderate chronic hepatitis, R$1,522.00 for compensated cirrhosis, R$15,932.00 for ascites, R$31,352.00 for refractory ascites, R$21,427.00 for variceal hemorrhage, R$106,922.00 for hepatic encephalopathy, R$20,884.00 for hepatocellular carcinoma, R$136,900.00 for liver transplantation, R$10,540.00 liver transplantation after the first year and R$789.00 for remission. CONCLUSIONS: These cost data can be used to model disease burden in Brazil. The costs increase dramatically in the more advanced disease health states. Probably, slowing the progression to these disease states may be cost saving. One USD = 2.57 Brazilian Reais at the moment of the study.

GASTROESOPHAGEAL REFLUX DISEASE (GERD)—PREVALENCE, MANAGEMENT AND COST IN INTERNATIONAL COMPARISON

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OBJECTIVES: GERD is one of the most common gastrointestinal disorders. Knowledge on epidemiologic data, treatment guidelines and patterns and economic details is limited.

METHODS: Extensive desktop research was conducted for North America, Western and Eastern Europe and Australia using MEDLINE, EMBASE and Cochrane databases (1995–2004), telephone interviews, Internet searches (2000–2004). For structured search all MESH terms applying to GERD, epidemiologic data, treatment patterns, costs and related issues (22 in total) were used.

RESULTS: Extensive review of obtained literature revealed 162 articles and other sources of information (websites, telephone contacts) for further evaluation. Prevalence of weekly GERD symptoms ranges from 4% (Canada) to 20% (USA). Population-based prevalence data are lacking for Austria, Germany and Eastern European countries. General recommendations for management of GERD consist of symptom-oriented measures with lifestyle changes and administration of antacids, Proton-Pump-Inhibitors (PPI) or H2-Receptor-Antagonists. Specific guidelines with recommendations on drug treatment exist in all countries except most of Eastern Europe. Treatment patterns widely follow guidelines with variations in drug dosage and administration period. Peer-reviewed literature revealed 20 cost-of-illness studies (16 USA, 1 Canada, 3 Western Europe, 0 Eastern Europe and Australia). In North America total direct cost (TDC) ranged from €860–€8000/ea (Canada €7000/ea), Western European cost-of-illness studies exist only for Sweden (TDC €930/ea) and Italy (TDC €300/ea). From third party payers’ perspective main cost drivers are medication (about 40%) and outpatient care (about 60%). CONCLUSIONS: Although prevalence of GERD is high, only few studies focus on its economic burden, most of them conducted in the USA. Treatment guidelines show comparatively uniform features in all investigated countries, especially concerning the recommendation of PPI usage. Treatment patterns show wide usage of PPI, except in Eastern Europe where treatment patterns apparently resemble those in Western Europe, probably with limitations due to the countries’ health care systems’ possibilities.

ARTIFICIAL LIVER SUPPORT SYSTEMS—A MEDICAL AND HEALTH ECONOMIC HTA-REPORT

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Artificial liver support systems (ALS) are a new therapeutic approach for patients with acute liver failure (ALF) or acute-on-chronic liver failure (ACLF). Using this technology patients should have a better chance for regaining their own liver function or for successful bridging to transplantation. Treatment costs in Germany are €10–15,000 per patient.

OBJECTIVES: To determine and summarize the scientific evidence on medical efficacy and economic effectiveness of the use of ALS in patients with ALF or ACLF.

METHODS: In an extensive systematic literature search in all relevant medical and economic data bases all published studies on ALS were identified and systematically described. All results concerning the treatment of ALF or ACLF were extracted and if possible synthesized to final recommendations.

RESULTS: Three different artificial liver support systems could be identified. For Biologic-DT® neither of the identified studies reported medical or economic benefits. For Prometheus® no randomized controlled studies reporting medical or economic effects are available. For MARS (Molecular adsorbing recirculating system) for patients with ACLF a significant improvement of clinical parameter and 30d-survival could be demonstrated. First health economic studies with short time horizon report costs per QALY of €60,000 and conclude that prolonging the time horizon would improve cost-effectiveness. All studies show methodological limitations.

CONCLUSION: The present scientific evidence according to published trials on ALS does not show any medical or economic benefit of the liver support systems Biologic-DT® and Prometheus®. The limited evidence for the benefit of the system MARS gives hints that ACLF patients might clinically benefit and that cost-effectiveness is acceptable. Future randomized controlled studies with large sample size and health economic models to estimate long term benefits are necessary to confirm this results.

META-ANALYSIS OF MULTIPLE TREATMENT COMPARISONS REPORTED AT MULTIPLE FOLLOW-UP TIMES

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OBJECTIVES: The evidence base for cost-effectiveness analyses (CEA) often consists of a series of randomised controlled trials making pair-wise comparisons between several alternative treatments (A vs. B, A vs. C, B vs. D, etc.). Furthermore, each trial may report results at one or more, different, follow-up times. In order to obtain unbiased estimates of treatment efficacy, and to produce an appropriate uncertainty analysis in the context of a CEA, any synthesis of the evidence must ensure that the uncertainty structure arising from the pattern of randomisation is correctly captured and propagated.

METHODS: We studied a set of 41 randomised trials looking at the healing rates of six treatments for gastro-oesophageal reflux disease (GORD). Each trial reported the healing rate at one or more (average 1.8) follow-up times at 4, 6, 8, or 12 weeks. There are a possible 15 pair-wise comparisons between 6 treatments, but, overall, the dataset provides direct information on only 9 of these, 5 at 4 weeks, 4 at 6, 8 and 6 at 12. We developed a series of hierarchical models that “borrow strength” across the incomplete network of treatment comparisons and also across time points.

RESULTS: We propose an approach that distinguishes between the model
for the trial baseline, and the model for the relative treatment effects which the trials were designed to estimate. Methods for selecting models on the basis of goodness of fit are suggested. CONCLUSIONS: The models are implemented in the Bayesian Markov chain Monte Carlo WinBUGS package, so that parameter estimation and decision modeling can be integrated into a single process.

PGI19
GASTROESOPHAGEAL REFLUX DISEASE (GERD) COST OF CARE: ROLE OF NAIVE AND RELAPSED SYMPTOMS IN GENERAL PRACTICE
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OBJECTIVES: To assess the cost per symptom occurrence of GERD management in primary care of naive and relapsed patients in Campania, a region of southern Italy. METHODS: Prospective cost of GERD management has been calculated in patients who consulted 259 general practitioners (GPs). Direct costs to the National Health Service (tariffs 2005) including drugs, physicians' visits and diagnostic tests were calculated and expressed in Euro. Mann-Whitney test was used where indicated. To investigate the association between cost and its potential determinants (age, sex, disease severity and clinical approach—therapeutic/ empirical or diagnostic) bootstrap analysis was used. Data are expressed as mean ± SEM. Societal perspective was adopted. RESULTS: We studied 1343 patients with GERD, 456 naive (48% males; mean and age range: 49.4y, 18–89) and 887 relaper (51%; 55.2, 18–98). Overlapped dyspeptic symptoms were found in 75.2% and 73.1% of naive and relaper patients respectively. Therapeutic approach was preferred by GPs in both groups (naive 55.9%; relaper 72.8%). The cost of GERD management was significantly different between naive and relaper groups (€90.4 ± 4.04 vs. 122.1 ± 4.15; p < 0.0001). This difference was partially attributable to prescribed drugs (€47.6 ± 2.85 vs. €83.4 ± 3.47; p < 0.0001). Proton pump inhibitors were the most prescribed drugs by GPs (naive 62.5%; relaper 67.5%). Age, male sex, disease severity and diagnostic approach were significantly (p < 0.05) associated with cost increase in both groups. CONCLUSIONS: In primary care second or following approach of GERD patient is more costly respect to that of naive. Disease severity and diagnostic approach increase the cost of GERD management independently to time approach.

PGI20
ECONOMIC VALUATION MODELING FOR ASSESSING BIOTECHNOLOGY/PHARMACEUTICAL DEVELOPMENTAL OPPORTUNITIES
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OBJECTIVES: Reimbursement authorities are faced with decision-making for numerous launches of biotechnology/pharmaceutical technologies with uncertain “value-for-money”. Concurrently, biotechnology/pharmaceutical companies are assessing their developmental pipeline. An economic modeling application, based on cost-effective methodology, is illustrated which helps the manufacturer analyze and predict cost-effective patient populations, market access value, and pricing for future product opportunities by considering payers’ willingness-to-pay thresholds (WTPT). METHODS: A deterministic Markov Excel® model was developed comparing chronic liver disease populations treated with a new product, Drug X, to established standard care. The US, Italy, UK, and German health care system perspectives were evaluated; methods followed respective country economic guidelines. Literature review provided disease transitions, utilities, resource utilization and direct cost estimates. Physicians validated disease progression rates, treatment patterns and resource utilization. Quality-adjusted life expectancy, total lifetime costs and incremental cost-utility ratios between strategies were estimated. A unified analysis assessed the weighted incremental cost-utility outcomes and trade-offs for sub-population scenarios. Crystal Ball® software predicted drug price ranges for various scenarios at fixed payer’s WTPT. Probabilistic stochastic Monte Carlo sensitivity analysis was conducted for all input parameters. RESULTS: The model estimated that the most cost-effective sub-populations included the F3 and F4 Metavir patients, compared to the broadest population. At a payer’s WTPT of $50,000/QALY, the incremental drug efficacy required in F3 and F4 to be cost-effective over 20 years was predicted at 14% and 43.5%, for annual price ranges of US$1500 and US$4000, respectively. Sensitivity analysis determined the critical drivers: incremental drug efficacy/safety rates, price, patient sub-population and utility values. CONCLUSION: Economic valuation modeling has been influential in providing guidance on payer market access dynamics; predicting cost-effective positioning and treatment populations; and projecting pricing for new product opportunities. Increasingly, manufacturers recognize that this approach may reduce product development risk by establishing more realistic estimates of market potential, pricing and societal need.

BURDEN OF ILLNESS OF IBS PATIENTS IN THE NETHERLANDS
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OBJECTIVES: Irritable bowel syndrome (IBS) is a prevalent functional gastrointestinal dysmotility disorder. This study aimed to estimate the burden of illness of a Dutch population of community dwelling patients suffering from IBS. METHODS: Patients identified at community pharmacies, using mebeverine as a proxy for IBS, were administered a questionnaire regarding 1) the Rome II criteria for IBS, 2) predominant type of stool during complaints, 3) severity of symptoms (abdominal pain and discomfort), 4) generic and disease-specific quality of life, 5) current health status (utilities), and 6) loss of productivity. RESULTS: A total of 375 users of mebeverine were identified of which 169 patients met the Rome II criteria for IBS, and were included in the study. More than half (58%) of the IBS patients reported severe abdominal pain and complaints. Generic and disease-specific quality of life outcomes showed impairment on all dimensions. The current health status perceived by IBS patients was 62% (95%CI: 60–66) of full health. Transformed to population utilities, health status was 0.67 (95%CI: 0.65–0.68). The loss in productivity of IBS patients was 1.8 days (95%CI: 1.1–2.5) per month. CONCLUSIONS: This study confirmed that the burden of illness of IBS in The Netherlands is substantial. IBS patients treated with mebeverine experienced low quality of life and suffered from severe pain. Based on these results, more attention for the diagnosis and treatment of IBS seems to be justified.
BURDEN OF ILLNESS IS HIGHEST IN PATIENTS WITH SEVERE PAIN SYMPTOMS
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BACKGROUND: Irritable bowel syndrome (IBS) is a prevalent functional gastrointestinal disorder. Previous studies have shown that the burden of illness of IBS is high. It has been suggested that the quality of life and medical costs of IBS patients are associated with the severity of pain. This study aimed to quantify the burden of illness of IBS in relation to the severity of IBS symptoms.

METHODS: Patients identified at community pharmacies as mebeverine users were administered a questionnaire regarding 1) the Rome II criteria for IBS, 2) predominant type of stool during symptomatic episodes, 3) severity of symptoms (abdominal pain and discomfort), 4) generic (SF-36) and disease-specific quality of life (IBS-QOL), 5) current health status (utilities, EQ-5D and SF6D), and 6) loss of productivity. Associations between severity of symptoms and burden of illness (including SF-36, IBS-QOL, EQ-5D, SF6D, direct medical cost and loss of productivity) were assessed.

RESULTS: For 168 patients, who met the Rome II criteria for IBS, information on severity of symptoms was available. The majority of patients (98, 58%) were categorized as having severe symptoms of IBS. 47 (28%) patients were suffering from moderate symptoms and 23 (14%) patients had mild symptoms or were asymptomatic. All components of SF-36 scored lower as the symptom severity increased. The IBS-QOL score was lower (71.4, 95% CI: 67.5–75.3) for patients with severe symptoms than for patients with moderate IBS and mild/asymptomatic IBS (81.8, 95% CI: 78.6–85.0 vs. 81.3, 95% CI: 75.5–87.1). The EQ-5D score was also lower (0.81, CI95%: 0.75–0.85) for patients with severe symptoms compared to the two other groups (0.80 and 0.85).

CONCLUSIONS: This study clearly indicates that the burden of illness of patients with IBS increases with increasing severity of symptoms.

ESOMEPRAZOLE TREATMENT IN PATIENTS WITH UNINVESTIGATED NON-GERD DYSPEPSIA LEADS TO SIGNIFICANT IMPROVEMENTS IN PRODUCTIVITY WHILE AT WORK AND IN DAILY ACTIVITIES—RESULTS FROM A RANDOMISED, PLACEBO-CONTROLLED CLINICAL STUDY
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OBJECTIVES: To assess the effect of acid suppression treatment on patient-reported productivity in uninvestigated non-GERD dyspepsia.

METHODS: A clinical study aimed to investigate whether response to a 1-week acid suppression trial with esomeprazole is predictive of the response to four to eight weeks of esomeprazole therapy was performed in patients with uninvestigated non-GERD dyspepsia (patients with predominant symptoms of pain or burning in the center of the upper abdomen, and who had not been previously investigated by endoscopy). Disease-specific absence from work, reduced productivity while at work, and reduced productivity while carrying out regular daily activities were obtained by using the Work Productivity and Activity Impairment (WPAI) questionnaire. Patients were randomised to double-blind treatment with esomeprazole 40mg qd or bid for 7 days, followed by either esomeprazole 40mg qd or placebo for a further 7 weeks. Symptoms were recorded in a daily diary.

RESULTS: Before start of treatment (n = 453), employed patients (n = 349) reported an average of 2.0 hours absence from work and 19.8% reduced work productivity (=6 hours equivalent; percent reduced productivity × hours actually worked) during the past week, as well as 26.8% reduced productivity in daily activities (all patients).

In patients who were identified as responders to the 1-week test treatment with esomeprazole, productivity improvements were all statistically significant (except for hours absent from work) for esomeprazole versus placebo after both 4 and 8 weeks of treatment, corresponding to a gain of 2.0 to 3.4 work hours and 5.1 to 5.8 percent-units in daily activities per patient and week (p < 0.05).

Further analyses of the relationship between treatment response and productivity change supported the validity of these results.

CONCLUSION: Effective acid suppression treatment with esomeprazole in patients with uninvestigated non-GERD dyspepsia leads to significant improvements in productivity while at work and in daily activities.

HEMATOLOGICAL DISORDERS

PHM1

COST-EFFECTIVENESS OF REGULAR CONTINUOUS PROPHYLACTIC TREATMENT IN ADULT PATIENTS WITH SEVERE HAEMOPHILIA A
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OBJECTIVES: Regular prophylactic replacement therapy has been proved to be effective in reducing the bleeding rate and incidence and/or severity of haemophilic arthropathy in children with severe haemophilia. No study is so far available that evaluates efficacy of prophylaxis in adolescents and adults with haemophilia A. This study is aimed to provide cost effectiveness evaluation of prophylaxis in adult with haemophilia A.

METHODS: A prospective, open study was designed. Patients with haemophilia A aged 18 years or more, with frequent bleeding episodes, switching from on-demand treatment to prophylaxis, have been enrolled. All patients were treated with a recombinant B-domain-deleted factor VIII concentrates for all the 6-month study period. Bleeding event rate and FVIII concentrate consumption (that represent 99% of total costs) have been evaluated over on-demand treatment time period (ODT), 6 months before enrolment, and the prophylaxis time period (PT), 6 months after enrolment. Medical costs have been quantified adopting the perspective of the third party payer, i.e. National Health Service (NHS).

RESULTS: Ten patients with a median age of 34.0 years (23–58 years) were enrolled. Patients reported a mean of 3.6 during ODT (median = 2.0, 1.5–15) vs. 0.51 events/patient/month during PT (median = 0.16, 0–1.7), Clotting factor mean consumption was 22,010 during ODT (median = 17,750IU, 4500–50,000) and 28,817IU/patient/month during PT (median = 28,333IU, 21,333–38,333). Mean cost of concentrates in ODT was 10,911 (median = 69607, 2193–23,500) while during PT was 19,883 €/patient/month (median = 19,550, 14,720–26,450). The mean cost to treat one bleeding in ODT was 3031. The incremental cost-effectiveness ratio, i.e. the cost for bleed avoided, was €2803.

CONCLUSIONS: These findings
showed that prophylaxis in adult patients with haemophilia is effective in reducing the bleeding rate. Despite the higher cost of prophylactic treatment compared to on-demand treatment prophylaxis showed to have a good cost-effectiveness ratio.

THE COST OF CARE OF HEMOPHILIC PATIENTS WITHOUT INHIBITORS: THE COCHE STUDY
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Mihailo

COSTS OF HAEMOPHILIA ASSISTANCE IN ROMANIA
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OBJECTIVES: Economic factors are very important in limiting therapy options for haemophilia, but inadequate treatment lead to costly consequences having a negative impact on patients’ social integration AIM OF THE STUDY: to evaluate direct medical costs (therapy and hospitalization) of bleedings, secondary prophylaxis and surgical interventions; direct non-medical costs (home-hospital travel costs) and indirect costs (morbidity costs, loss of income of family members, average number of days off at school/work). METHOD: A total of 224 haemophiliacs registered and treated in Haemophilia Centre Timisoara and in Clinical Centre for Evaluation and rehabilitation “Christian Serban” Buzias, followed-up during a seven-year period. 84.38% of the patients had haemophilia A and 15.62%-haemophilia B. Data was obtained from medical charts and from questionnaires administered to patients. Because in a developing country an economic analysis is difficult to ascertain, unitary costs were expressed in €, at average exchange rate communicated by the National Romanian Bank for the last year of the study period. RESULTS: Therapy costs represented 54.56% of direct medical costs in haemophilia A patients without inhibitors, 67.13% in haemophilia B and 87.63% in patients with high-titer inhibitors. Pseudotumour consumed the highest financial resources in haemophilia A patients and complicated haematoma was the most costly complication in haemophilia B patients. Direct non-medical costs represented important percents of mean patient and family income. Mean monthly morbidity cost was €108.28 and loss of income of family members who forfeid employment in order to offer home care for haemophilia patients was €81.88/month. Average number of days off at school/work was 46.64/year, varying according to haemophilia severity. CONCLUSIONS: Inadequate resource allocation for haemophilia treatment lead to costly complications, affecting social integration and leading to important loss of income, which is responsible for a poor treatment compliance, all these factors having a strong interactions.

UK COST COMPARISON OF BUCY2 CONDITIONING IN ALLOGENEIC HSCT: ORAL VERSUS IV BUSULFAN (BUSILVEX®)
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Allogeneic HSCT is a complex-intensive procedure. Oral busulfan (Bu) as part of BuCy2 is a commonly used conditioning regimen but is associated with high plasma variability. IV Bu has more predictable PK parameters allowing better targeting of plasma exposure and reducing hepatic veno-occlusive disease (HVOD) occurrence, related to blood over-exposure. OBJECTIVES: To estimate costs of IV versus Oral Bu-based BuCy2 conditioning in the UK NHS system. METHODS: A simulation based on the strong correlation established between Bu blood over-exposure and the occurrence of HVOD (Kashyap A, BB&MT 2002) included costs of drugs and local HVOD management. RESULTS: The cost of a full course of oral Bu (1mg/kg × 16) and IV Bu (0.8mg/kg × 16) is £116.5 and £3220 respectively. Patients receiving oral Bu have a greater risk of developing HVOD (20% vs. 5%, p = 0.03, Kashyap 2002). In Southampton the cost of managing HVOD was estimated to be £11,050 per case (based on additional in-patient stay, drug treatment and medical management), generating an extra cost per patient of £2210 (£11,050 × 0.2) and £5520 (£11,050 × 0.05) respectively. Therefore the total estimated cost using oral Bu compared to IV Bu in BuCy2 is £23320 and £37720 respectively. From an initial cost ratio of 1/2.76 in favor of oral Bu (drug costs only) the ratio dropped to 1/1.6 when the cost of HVOD management was included in the simulation. CONCLUSIONS: The additional cost of £1446 with IV Bu is relatively modest in the context of high plasma variability and reducing hepatic veno-occlusive disease (HVOD) occurrence, related to blood over-exposure.
ASSOCIATION OF HEALTH-RELATED QUALITY OF LIFE IN PATIENTS WITH HAEMOPHILIA A SWITCHED TO PROPHYLACTIC REPLACEMENT TREATMENT

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OBJECTIVES: Regular prophylactic replacement therapy has been shown to provide a better quality of life in children with haemophilia A compared to those treated when bleeding occurs (on-demand treatment). No data is available in adults. The aim of this study is the evaluation and comparison of health-related quality of life (HRQoL) in patients who switched from on-demand therapy to prophylaxis. METHODS: A prospective, open study design was chosen. Patients receiving on-demand treatment aged 18 years or more and affected by severe haemophilia A were enrolled at two Italian haemophila care centres at the moment of their switching to prophylaxis therapy.

Information related to the on-demand treatment time period (ODT), six months before enrolment, and to the prophylaxis time period (PT), six months after enrolment, has been obtained at baseline and at the end of the follow-up period. Two generic HRQoL questionnaires, EuroQol (EQ-5D) and Short Form 36 (SF-36) have been used, higher score corresponding to better quality of life. RESULTS: Ten patients returned HRQoL questionnaire: the median age was 31.9 years (ranging from 23 to 58 years). At the end of the follow-up period, SF-36 showed a statistically significant improvement in patients quality of life in some domains (“Physical Functioning” and “Bodily Pain”, p < 0.05) and in the Physical Component Summary (mean score after ODT 43.9 vs. 48.3 after PT, p < 0.05). Results obtained with EuroQol-5D were comparable to those showed by SF-36, with significantly different Visual Analogue Scale scores after ODT vs. PT (67.9 and 72.9 respectively, p < 0.03). CONCLUSIONS: Prophylaxis therapy in adult patients with severe haemophilia showed to provide a significant improvement in HRQoL and it should therefore be considered in a cost utility evaluation.
THE POTENTIAL IMPACT OF CHELATION THERAPY (CT) ON THE QUALITY OF LIFE (QoL) OF PATIENTS WITH IRON OVERLOAD (IO)

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OBJECTIVES: Repeated blood transfusions can result in IO and lead to life-threatening complications in patients with sickle cell disease (SCD), thalassemia (TLA) or myelodysplastic syndrome (MDS). The most common IO CT, Desferal (DFO), requires infusions of 8–12 hours, 5–7 days per week, potentially limiting QoL and inhibiting adherence. METHODS: A literature review (339 abstracts; 130 articles), analysis of four IO patient transcripts (one MDS, one SCDA, two TLA) and interviews with three IO experts were conducted to assess the potential impact of CT on patients’ lives. RESULTS: Results suggested the significant negative impact of CT with DFO on patient QoL, particularly social life, self-image, intimate relationships, emotional well-being, pain and sleep, though very few published studies (15) measured this impact with validated QoL instruments. No IO or CT-specific QoL instruments were found. Published articles and patient/clinician input suggested a need for easier, efficacious and safe oral IO treatments, given the impact of current CT on QoL inhibits adherence. CONCLUSION: Limited empirical studies assessed the impact of CT or IO on QoL, though all reviewed articles stated that CT's QoL impact is significant and would improve with oral therapy. However, the impacted QoL domains may differ by age, condition, and how long CT has been used. It is recommended to continue both the qualitative and the quantitative study of QoL in chelated patients in patients with MDS, SCD, and TLA using validated instruments in order to further our understanding of the issues and improve patient’s quality of life.

HOW PATIENTS WITH HAEMOPHILIA ARE SATISFIED WITH THEIR TREATMENT

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OBJECTIVES: Treatment of patients with haemophilia, a congenital bleeding disorder, treated with repeated infusions of clotting factor concentrates, requires a substantial amount of economical and human resources and therefore it is mandatory to investigate treatment satisfaction of haemophilic patients. Purpose of this study was to evaluate patients’ experience of different treatment regimens and to validate the newly developed haemophilia-specific treatment satisfaction scale for adults (Hemo-SatA) in the COCHE Study (Cost of Care of Hemophilia Study). METHODS: 233 adult haemophilia patients without inhibitors from 23 Italian Haemophilia Centers were enrolled in the naturalistic, multicenter, longitudinal COCHE Study. Treatment satisfaction was assessed with the Hemo-SatA, which consists of 34 items pertaining to 6 domains (ease & convenience, efficacy, burden, specialist, centre, general). RESULTS: Mean age of patients was 37 years. Around one-third of the patients received prophylactic treatment (n = 75) and most of them were treated with recombinant products (58.8%). In general patients were satisfied with their treatment. Patients were mostly unsatisfied in the dimensions “ease & convenience” and “efficacy” and 42% worried about the risk of inhibitors associated with their medication and 14% were unsatisfied with the number of infusions that are needed to stop a bleeding. Significant differences in treatment satisfaction (Hemo-SatA) were found for socio-demographic data concerning marital status and age groups (“burden”); separated persons were more unsatisfied with their treatment (“specialist”, “general satisfaction”, “Total Hemo-Sat”). Significant differences were found as well for clinical data concerning ‘treatment type’, ‘type of haemophilia’ and ‘target joints’; patients with more than 1 target joint were more unsatisfied (“efficacy”). Psychometric characteristics of the pilot testing of the Hemo-SatA could be confirmed in the COCHE Study. CONCLUSIONS: Results could confirm that treatment satisfaction is an important outcome criterion in the treatment of patients with chronic diseases. Hemo-SatA proved to be a valid and reliable instrument assessing.

NEUROLOGICAL DISORDERS

EXTERNAL VALIDATION OF THE PROBABILISTIC MARKOV MODEL ESTIMATING THE COST-EFFECTIVENESS OF MEMANTINE VERSUS STANDARD CARE IN ALZHEIMER DISEASE FROM A UK PERSPECTIVE

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A Markov model was developed to estimate the cost effectiveness of memantine compared with no pharmacological treatment in British AD patients with MMSE £14 over a 2-year period. It simulated a patient’s progression through series of health stages combining different level of severity, dependency and setting of care. Transition probabilities for the model were computed on the basis of the data from the LASER-AD cohort (London and the Southeast Region Alzheimer’s Disease) over six months, and were then extrapolated using the Markov assumption to simulate the long-term course of disease. Since then the LASER-AD has been extended and now 18 months data follow up are available. OBJECTIVE: To validate the model externally by comparing the results extrapolated in the model with those observed in the LASER-AD cohort at 18 months. METHOD: A Markov cohort analysis was conducted on the model in order to compute the percentages of patients in the different health stages at all cycles using the distribution at baseline of the LASER-AD. The analysis was conducted on the “standard care” treatment strategy only, and was stopped at the third cycle (18 months). Percentages from the model were compared with those obtained from the LASER-AD study after having observed 95 patients with a baseline MMSE £14. RESULTS: Based on model analyses, after 18 months 84.5% of patients are severe, 87.8% are dependent and 71.5% are institutionalized (versus respectively 83.8%, 90.3% and 73.3% in the LASER-AD). The difference between the two estimates is greatest for mortality (respectively 40.6% versus 31.6%). CONCLUSION: It is rare to have the opportunity to validate a pharmacoeconomic model externally. These analyses show very similar estimates of the disease course between the memantine UK pharmacoeconomic model and the ‘real’ long-term data from the LASER-AD cohort. This strengthens the modeling approach used.

COST-EFFECTIVENESS OF ADDING MEMANTINE TREATMENT TO PATIENTS RECEIVING STABILISED DOSES OF DONEPEZIL IN THE UK

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OBJECTIVES: Assess the cost-effectiveness in a UK setting of providing memantine treatment to moderate to severe
Alzheimer's disease (AD) in patients receiving stable donepezil treatment compared with not providing memantine. METHODS: Data from a U.S. multicenter randomized clinical trial that compared memantine versus placebo in moderate to severe AD patients on stable doses of donepezil was used to evaluate the cost-effectiveness of providing memantine to donepezil. Using methodology developed by Kurz et al., patients were classified at each visit as dependent or non-dependent according to their ADCS-ADL19 scores. Mean weekly costs were estimated from the National Health Service and Personal Social Services perspectives for patients with MMSE £14 that participated in a UK epidemiological study—the LASER-AD study. QALYs per dependency level and added to obtain total outcomes over the 24-week study period. RESULTS: Over the evaluation period, memantine added to patients stabilized on donepezil was associated with an additional 0.0112 QALYs, an additional 1.77 weeks of independence and a £771 cost reduction compared with donepezil alone. The cost reduction is not statistically significant but suggests that clinical advantages offset some of the cost of adding memantine. CONCLUSION: This analysis suggests that memantine treatment provided to patients receiving stable donepezil treatment is cost-effective compared with not adding memantine. As costs and QALYs were assessed retrospectively, further prospective studies are required to support this finding.

PNL3
RETROSPECTIVE COMPARATIVE ANALYSIS OF ANTIDEMENTIA MEDICATION PERSISTENCE PATTERNS AT 3 YEARS IN SPANISH ALZHEIMER DISEASE PATIENTS TREATED WITH DONEPEZIL, RIVASTIGMINE, GALANTAMINE AND MEMANTINE

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OBJECTIVE: To determine the persistence of treatment with donepezil (DON), rivastigmine (RIV), galantamine (GAL) and memantine (MEM) in patients with Alzheimer Dementia (AD) in a Spanish population setting. METHODS: Retrospective AD cohort study performed in nine Primary Care Health Centers from four different Autonomous Communities (Andalucia, Cantabria, Cataluña & Valencia) in Spain. Descriptive standard analyses were performed. ANOVA and Chi-square tests were used to show the differences among mean duration therapy and treatment adherence after 52 weeks. A Kaplan-Meier survival analysis was applied to assess overall pattern persistence after three-year of follow up, and the log rank test was used for testing significance. RESULTS: A total of 299 patients (44.8% female), mean age 77.88 years (SD: 6.32), were included; 101 DON (34%), 103 RIV (35%), 51 GAL (17%) and 42 MEM (14%). Mean treatment duration was slightly longer and significant for DON patients 83.3 weeks (95% CI: 72.7–93.9) than for the other drugs: RIV [66.8 (60.8–73.7)], GAL [65.8 (55.3–76.3)], MEM [60.9 (48.8–73.1)], p = 0.049. Treatment adherence after 52 weeks was numerically higher with DON (63%) than with the other medications: RIV [55%], GAL [55%], and MEM [52%], p = 0.525. Overall persistence of treatment was significantly higher with DON [median time; 70.3 weeks (95% CI: 49.8–90.7)] than for the others drugs: RIV [56.7 weeks (36.1–76.2)], GAL [56.7 weeks (41.1–72.3)] and MEM [52.1 weeks (35.2–69.1)]. Log Rank = 10.16, p = 0.017. CONCLUSION: This retrospective study including Spanish AD patients showed numerically differences on treatment adherence after one year of therapy among the four antidementia medications commercially available. The global treatment persistence during the three-year follow up was significantly higher in patients treated with donepezil compared to those who received rivastigmine, galantamine or memantine.

PNL4
THE SOCIAL AND ECONOMIC BURDEN OF PAEDIATRIC EPILEPSY IN IRELAND: A PROSPECTIVE STUDY

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OBJECTIVE: To estimate the overall burden of pediatric epilepsy on the family and Irish health care system and to establish whether there is a relationship between epilepsy profile and this burden. METHOD: The sample was drawn from a population of children with epilepsy attending a tertiary pediatric neurology clinic in Dublin. Data was collected prospectively on health care resource use and time lost from school and work. Diary cards were completed at three monthly intervals. RESULTS: Complete data was available on 127 children aged 15 months to 16.7 years (median 8.8), 54% were male and 52% were female and 52% lived in a rural setting. A total of 61% had cryptogenic or symptomatic epilepsy, 63% had partial seizures and 53% had frequent seizures (>10 seizures/month). The annual cost of epilepsy was significantly higher for those with cryptogenic/symptomatic epilepsy (£9248) and frequent seizures (£9145) relative to idiopathic epilepsy (£6200) and no/infrequent seizures (£3951) (P < 0.0001). Children with frequent seizures had a higher risk of being hospitalised (P = 0.03) and lost more days at school (P < 0.0005). 50% of families contacted the pediatric liaison nurse, and 12% made more than 5 contacts. Five percent of children attended their GP while 37% of families had independently sought complementary medicine. CONCLUSIONS: The economic and social burden of pediatric epilepsy is substantial and relates to the epilepsy syndrome and frequency of seizures. In this prospective study a large dependence on epilepsy liaison nurse support was found, an area that requires extra resources. A large number of families also sought advice from non medical sources.

PNL5
A PROSPECTIVE STUDY ON THE IMPACT OF A CHILD’S EPILEPSY ON THEIR QUALITY OF LIFE AND THEIR FAMILY

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OBJECTIVES: The aim of this prospective study was to determine the relationship between seizure type, seizure frequency and epilepsy syndrome on the quality of life of both the child and family over a one year period. METHOD: The sample was drawn from a population of children with epilepsy attending a tertiary Paediatric Neurology service in Dublin. Data was collected on seizure type and frequency, epilepsy syndrome, phys-
cal and cognitive ability, behaviour, co-morbidities, demographic and socio-economic variables. The attending parent completed the Child Health Questionnaire 50-item version (CHQ-50) for children ≥5 years at baseline and 12 months. The Impact of Paediatric Epilepsy Scale (IPES) was used to measure burden on families. RESULTS: 132 children were enrolled and data was available on 127. The median age was 8.8 years and 54% were male. 63% had partial seizures and 61% of all children had cryptogenic or symptomatic epilepsy. 53% of children had frequent seizures (>10/month). 93 children ≥5 years were included in the QOL analysis. Children with frequent seizures scored significantly worse than those with no/infrequent seizures on 10/14 and 11/14 of the CHQ-50 subscales tested and both IPES scores at baseline and 12 months respectively. Children with cryptogenic/symptomatic epilepsy scored significantly worse than those with idiopathic epilepsy. No such differences were found between seizure types and there were no differences between findings at baseline and 12 months. CONCLUSIONS: The burden of epilepsy on children and their families is substantial. Seizure frequency and epilepsy syndrome rather than seizure type determines the impact.

THE EPIDEMIOLOGY AND MANAGEMENT OF MIGRAINE IN THE UK

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OBJECTIVE: To describe the incidence, prevalence and management of migraine in the UK. METHODS: The study considered patients >18 years with a record of migraine (diagnosed migraine) or headache with a prescription for a triptan, ergot alkaloid, prophylactic or a combined anti-emetic and analgesic treatment (undiagnosed migraine), registered between 1994–2003 on the General Practice Research Database (GPRD) covering 4.6% of the UK population. Incidence and prevalence were estimated from the GPRD population, prescribing and management trends were examined. RESULTS: A total of 108,652 migraine patients, average age 45 years, were identified; 76% were female. The incidence of migraine was 11/1000 person-years for females and 3/1000 person-years for males. The female: male ratio was on average 3:1. Prevalence over the 10-year period was 6.9%, at the low end of rates reported in the literature. Annual prevalence increased over time from 2.4% in 1995 to 4.5% in 2003. Among females peak prevalence is seen in the 31–59 age group, for males this is 18–29. The percentage of patients with undiagnosed migraine was stable at around 12% over the period. The average annual number of migraine-related GP consultations is 3 (95% CI 2–6). In diagnosed migraine, triptans, anti-emetics and prophylactics are prescribed almost equally at 34%, 31% and 33% respectively. In undiagnosed migraine prophylactics (48%) are most prescribed. Younger patients (<30) receive less triptans (19%) but more anti-emetics (49%) than other age-groups. Ergots are rarely prescribed. Triptan prescriptions increased from 19% in 1994 to 42% in 2003, excluding analgesics. CONCLUSION: Not all patients will consult a GP for migraine explaining the low prevalence and incidence rates. A substantial number of migraine patients are not diagnosed. A peak prevalence in the productive age, high annual consultation rates and high triptan prescription rates suggest that migraine represents a sizeable economic burden to the UK.

IS THE TREATMENT OF ACUTE MIGRAINE WITH TRIPHTANS EFFICIENT FROM A SOCIETAL PERSPECTIVE?

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OBJECTIVE: To carry out a one-year cost benefit analysis from the Year-2005 societal perspective of the acute migraine attacks treatment in Spain. METHODS: A cost-benefits analysis was performed. Model data were obtained from the Spanish cohort of a multinational survey assessing impact of migraine on disability, absenteeism and health care resource utilization. Benefits (days of disability and health resources use avoided) were computed indirectly by imputation of the effectiveness (anti-migraine complete response) obtained from a published efficacy meta-analysis of available triptans in Spain. Human capital method was used for imputation indirect costs and benefits. Results are expressed as net benefits. Sensibility analysis was performed. RESULTS: The number of annual migraine attacks was 57.7 (95% confidence interval: 44.5–77.2), the paid and unpaid annual lost-workday-equivalents (LWDE) were 34.9 (22.8–68.3) and 37.5 (27.0–54.1), respectively. The annual cost of untreated migraine was €4077.70 (3145.1–5451.0). Migraine treatment reduced the number of LWDEs per year between 7.5 (5.2–12.7) with zolmitriptan-2.5, to 14.7 (10.1–24.8) with eletriptan-40 and rizatriptan-10. Compared with no-treatment, the average annual net benefits obtained were: eletriptan-40; €269.50 (207.9–360.3), rizatriptan-10; €226.20 (174.5–302.4), sumatriptan-50; €185.80 (143.3–248.4); naratriptan-2.5; €126.40 (97.5–169.0), and almotriptan-12.5; €80.60 (64.4–112.2). Zolmitriptan-2.5, zolmitriptan-5, and sumatriptan-100 showed no net benefits. Results were robust to the sensitivity analyses throughout different scenarios (number of migraine attacks, salary, cost of migraine attack), except when minimal official salary was used in the model. CONCLUSIONS: Compared with existing triptans, eletriptan-40 showed the higher monetary net benefit over the untreated migraine attack alternative, yielding more savings to the Society.

COST-EFFECTIVENESS OF BETAHISTINE VS CINNARIZINE FOR VERTIGO

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OBJECTIVE: To perform cost-effectiveness analysis of betahistine vs. cinnarizine for vertigo in Russia. METHODS: A total of 240 patients with vertigo were randomized for betahistine 16 mg 3 times a day (group B) or cinnarizine 25 mg 3 times a day (group C) for 3 months. 11 parameters of health status and functional abilities (such as dizziness, nausea, ability to use public transport and others) were measured before the study and by the end of each month using 5-score scale. Absence of severe and moderate functional disabilities (3 scores and more) for all 11 parameters by the end of treatment was the criteria of effectiveness. Direct medical costs were taken into account from the health care system point of view. RESULTS: A total of 215 patients finished the study. There was significant positive dynamics in both groups but in group B positive changes occurred earlier and were more expressed. 86% (95% CI 79.5–92.5%) of patients in B group and 39% (95% CI 29.6–48.4%) in group C had no severe and moderate functional disabilities by the end of study. Median direct cost was 9117.2 rubles ($328 USD) in group B and 6425.6 rubles ($229) in group C. Betahistine was significantly more effective and more costly. Incremental CER was 5854.47 extra
rubles ($209) per extra patient without moderate and severe disability after 3 months of treatment. CONCLUSION: Betahistine is an appropriate alternative to cinnarizine for patients with vertigo.

PNL9

COST-EFFECTIVENESS OF ALTERNATIVE POLIO IMMUNIZATION POLICIES IN SOUTH AFRICA
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OBJECTIVE: To assess the cost-effectiveness of switching from oral polio vaccine (OPV) to inactivated poliovirus vaccine (IPV), or to cease polio vaccination in routine immunization services in South Africa. METHODS: The incremental cost-effectiveness of three different polio vaccination alternatives was compared to the current schedule of six doses of OPV: (1) IPV at 2, 4, and 6 months; (2) IPV at 6, 10, 14 weeks and 18 months and (3) cessation of polio vaccination. The costs of introducing IPV in a separate vial as well as in different combination vaccines were estimated. Assumptions about IPV vaccine prices were based on indications from vaccine manufacturers. Treatment costs of polio and the costs of lost productivity were included. The health impact of OPV cessation was measured in terms of Vaccine Associated Paralytic Paralysis [VAPP] cases and Disability Adjusted Life Years [DALY’s] averted. One-way sensitivity analysis was performed on the most uncertain variables. RESULTS: The use of OPV in routine immunization services is projected to result in 2.96 VAPP cases in the 2005 cohort. A switch to IPV will hinderance for its implementation.

PNL10

THE COSTS OF INFORMAL CARE IN NEUROLOGICAL DISORDERS IN SPAIN
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OBJECTIVE: In addition to the costs of treatment and prevention, diseases generate other types of costs that are not always addressed. The purpose of the present work is to identify measure and evaluate the costs of informal care for neurological diseases in Spain. METHODS: The data collected in the Survey on Disabilities, Impairments, and State of Health (EDDES, for its initials in Spanish) of the National Institute of Statistics (INE) was used to estimate these costs. The EDDES is a national survey that covers all individuals residing in primary family housing. A total of 79,000 households were selected and information regarding 290,000 people was collected. We estimate that 423,188 people (1.03% of Spanish population in 2001) suffer an incapacity caused by a neurological disease: stroke, sclerosis, dementia (including Alzheimer) and Parkinson. Our estimation includes only those costs that have to do with informal care; that is, those caregivers that are not paid for their work. We estimated the opportunity cost of the time of caregivers, distinguishing if the caregiver has given up his job or has reduced the total supply of hours of work. RESULTS: The informal costs estimated range between 2402 and 2926 millions of euros (at year 2002 prices), depending on how comorbidity is handled. The estimated costs of informal care of each neurological disease were: stroke (823 to 1007); dementia (1021 to 1246); Parkinson disease (329 to 401); and multiple sclerosis (229 to 272). The estimated informal costs represent a %6.3 to %7.7 per cent of the total health care costs of the Spanish National Health System. We also estimated the informal costs per patient and disease. CONCLUSIONS: The cost of informal care in main neurological disorders is substantial, and if financed it could devote a considerable budget from the overall Spanish Health Care System expenditure.

PNL11

A REVIEW OF THE ECONOMIC EVIDENCE FOR BOTULINUM TOXINS IN SPASTICITY ASSOCIATED WITH STROKE AND CEREBRAL PALSY
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OBJECTIVES: To identify and summarise the economic evidence for botulinum toxins in post-stroke spasticity and spasticity associated with cerebral palsy. METHODS: Cost-effectiveness and cost-analyses studies of interventions for treatment of postictal and cerebral-palsy-related spasticity, in which at least one arm consists of a botulinum toxin, were considered for inclusion in the review. Medline, Embase, NHSEED and the proprietary Allergan Botulinum Database were searched up until February 16, 2004 for relevant studies. Additionally, conference proceedings of seven clinical and pharmacoeconomic organisations were hand searched for the period of 2001 to 2004. RESULTS: One cost-effectiveness (Wallesch 1997), two cost-consequence (Houltram 2001, Loaiza 2000) and two cost studies (Balkrishnan 2002, Radensky 2001) met the criteria for inclusion in the review. Wallesch presented the incremental cost per unit improvement in Ashworth scale, Loaiza presented quality adjusted life years and Houltram presented Modified Ashworth Scale together with several other functional measures. The cost analyses found that overall treatment costs were lower in treatment plans that included botulinum toxin A (Btx-a). Although Btx-a increased drug costs by between $750 and $1000 annually, overall treatment costs were lower due to the reduced hospitalisation and nursing facility admissions associated with Btx-a treatment. Btx-a treatment was also associated with fewer co-administered treatments, and resulted in lower treatment costs than treatment plans that did not include Btx-a. CONCLUSION: The addition of botulinum toxin to a treatment regimen appears to be cost neutral. There is a need for cost-effectiveness analyses using outcome measures with greater external validity than those identified in the studies included in the review. A cost-utility analysis based on clearly derived utilities is required.

PNL12

A RETROSPECTIVE STUDY OF DRUG TREATMENT PATTERNS AMONGST UK PRIMARY CARE PATIENTS WITH RESTLESS LEGS SYNDROME (RLS) BETWEEN 1ST APRIL 2004 AND 31ST MARCH 2005
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OBJECTIVE: Restless legs syndrome (RLS) is a neurological disorder characterised by unpleasant sensations in the legs and an irresistible urge to move the legs to relieve the discomfort. This study aims to describe the drug treatment patterns amongst UK RLS patients during a 12-month period; in this period pharmacological therapy was based on “off-label” use of medication.

METHODS: A data base capturing nationally representative prescribing for patients presenting in general practice (DIN-LINK) was used to describe treatments received by patients with a diagnosis of RLS presenting to a GP in the 12 months up to 31st March 2005 (n = 556). This data base covers a population of about 800,000 patients and about 400 GPs. RESULTS: Annually, the number of patients with RLS for which they were receiving drug treatment was estimated to be up to 46 per 100,000 catchment population (up to 66% of the 70 per 100,000 patients with RLS who annually make contact with a GP). Drug treatments included the following (the percentages of patients receiving the different types of drug treatments are shown in brackets): antidepressants (20% of whom 71% received amitriptyline), anticonvulsants (18% of whom 76% received clonazepam), quinine (13%), non-narcotic analgesia (13%), dopamine agonists (5%), hypnotics (6%), tranquillisers (4%) NSAIDs (3%) and L-dopa (4%). CONCLUSIONS: The substantial percentage of patients receiving some form of analgesia or treatment for insomnia may be a reflection of the limited success of existing patterns of treatment in controlling symptoms (presumably, clonazepam in line with UK guidelines, was used mostly for insomnia). A large proportion of RLS patients were given amitriptyline which can worsen RLS and quinine, a treatment effective only with reduced events and improved outcomes.

RESULTS: The data collected in this registry are representative of the medical community with generalizability to a broader patient population. ISPR results may illuminate methods to improve therapy and guide development, provide insight into the etiology of events through evaluation beyond what is possible with passive surveillance, and generate best practices associated with reduced events and improved outcomes.

PNL14

USE OF THE SELF-ADMINISTERED NEUROPATHY TOTAL SYMPTOM SCORE—6 (NTSS-6 SA) IN AN INTERNATIONAL STUDY

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OBJECTIVES: To measure frequency and intensity of diabetic peripheral neuropathy (DPN) symptoms a 6 item scale was developed in US English for health care professionals (HCP); the Neuropathy Total Symptom Score—6 (NTSS-6). Prior to use in an international study a self-administered (SA) version was developed and translated into 9 languages. METHODS: The development of the SA version involved the establishment of patient instructions and the comprehension test on 5 US patients with DPN and 2 diabetologists. The following translation process was conducted by a specialist in each target country: (1) two forward translations; (2) back translation; (3) review by a clinician; (4) comprehension test on 5 subjects with DPN and (5) international harmonisation. Where translations of the HCP version existed, an SA version was developed and the accuracy of the translations checked. RESULTS: The first challenge was maintaining conceptual equivalence between the HCP and SA versions. The development of the SA version required patients’ understanding the meaning of the explored symptoms and their level of severity without clarification by HCPs. The second challenge was finding conceptually equivalent and culturally relevant expressions of the different types of pain. In some instances literal equivalents for the original symptom existed, but according to patients did not correspond to the original concept. In other cases the original did not have a literal equivalent and had to be paraphrased. CONCLUSIONS: The 9 languages of the NTSS-6 SA were established according to a rigorous development and translation process to ensure conceptual equivalence and cultural relevance across languages and ultimately the international comparison and pooling of data. Issues encountered during this process support the advantage of integrating international feedback on concepts and wording before finalizing a scale.

PNL13

IMPLANTABLE SYSTEMS PERFORMANCE REGISTRY (ISPR) A MEDICAL DEVICE AND PATIENT REGISTRY

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OBJECTIVES: ISPR is a prospective, post-market, surveillance registry designed to monitor implantable neurological devices. For each patient enrolled demographics, implant and practice techniques, and patient reported outcomes are collected and analyzed to elucidate the etiology of device complications. The goal is to expand registry centers, based on pre-defined criteria, and generate data representative of the medical community and its patients. This registry is a foundation and electronic platform for outcome registry projects. METHODS: Single and multi-physician centers follow standard clinical practice and a common registry protocol. Center activation includes software and protocol training and IRB approval at each center. Information registered with the U.S Food and Drug and Administration (FDA) mandated Device Registration System (DRS) pre-populates the registry avoiding redundant data submission, while centers provide additional information through electronic data capture. Active surveillance occurs at 6-month intervals with data reporting required for device or patient events. These event data are electronically communicated to fulfill FDA-mandated event reporting regulations, thus creating efficiencies for the sponsor and physician. The potential of selection bias in ISPR is minimized through 100% eligibility of all implanted devices at each center. The approach for ISPR center expansion is based on geographic, specialty, and practice distribution to achieve a representative sampling of real world experience, effectiveness and safety. A multidisciplinary advisory board oversees reporting with the goal of peer reviewed scientific presentation and publication. RESULTS: Annual aggregate and center specific reports are generated including descriptive statistics and survival curves. CONCLUSIONS: The data collected in this registry are representative of the medical community with generalizability to a broader patient population. ISPR results may illuminate methods to improve therapy and guide development, provide insight into the etiology of events through evaluation beyond what is possible with passive surveillance, and generate best practices associated with reduced events and improved outcomes.

PNL15

PREFERENCE FOR RECONSTRUCTIVE INTERVENTIONS OF THE UPPER EXTREMITIES IN TETRAPLEGIA: THE IMPACT OF TREATMENT CHARACTERISTICS

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Different surgical procedures are described to improve hand function in tetraplegia either with or without implantation of an 8-channel electrical stimulator. Clinical experience shows that patients are not always willing to accept these devices despite their severe functional limitations. This can be explained because the offered treatment is too demanding. For future clinical applications and for further technical developments it is necessary to obtain more insight into the factors that determine willingness to accept assistive technology. OBJECTIVES: To determine the
effect of treatment characteristics of upper extremity interventions on the decision of tetraplegic subjects to accept treatment.

**METHOD: A discrete choice experiment (DCE) was performed, where treatment characteristics were obtained to establish different treatment scenarios. Seven different treatment characteristics were obtained from a panel of international experts. Tetraplegics were offered 20 sets of two different treatment scenarios and asked to select the best scenario.**

**RESULTS: A total of 47 tetraplegic subjects with C5–6 lesions, motor group M1–4 were selected. Relative importance of treatment characteristics were: intervention type (surgery or surgery with FES implant) 13%, number of operations 15%, in patient rehabilitation period 22%, ambulant rehabilitation period 9%, complication rate 15%, improvement of elbow function 10%, improvement of hand function 15%. Effects of various changes of treatment protocols were determined. An inpatient rehabilitation period of maximum 4 weeks increases preference for treatment with 32%. One instead of two operative procedures increases the preference with 25%.**

**CONCLUSION: In-patient rehabilitation period appears to have the greatest impact on the decision by patients to have surgery or not. Implantation of a neural implant is not the main reason for not accepting this type of treatment.**

**Abstracts**

**PNL16**

**THE ECONOMIC BURDEN OF PARKINSONISM IN ITALY**

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**OBJECTIVES: The primary objective is to evaluate health, non-health cost and utilities differences between Parkinson patients with diagnosis performed through SPECT (Single Proton Emission Computed Tomography) and patients diagnosed traditionally.**

**METHODS: This economic analysis is part of the prospective, multicentre, observational study DIAPASON (Diagnosis of Parkinson’s Disease: Economics and Outcomes Impact), which involved 17 neurology centers. The present poster presents the preliminary economic results. Inclusion criteria: all subjects with suspect parkinsonism, “de novo” patients or in dopaminergic therapy for 3 months at the most. Exclusion criteria: subject with dementia senile, subjects treated with antidopaminergic drugs, subjects with iatrogenic forms of disease already known or clear vascular lesions of substantia nigra or caudato or putamen. The prospective used in the study were: national health system (NHS) and society. Data were collected using an electronic case report form. Utilities were calculated using the EuroQol (EQ-5D) questionnaire.**

**RESULTS: In November 2004, 147 patients (50 NO SPECT, 97 SPECT) had already performed the second visit. For both first and second visit the total cost for patients with diagnosis performed through SPECT was higher than that obtained for patients diagnosed traditionally: the mean health cost supported by NHS per patient was €2,577.79 (€1,562.63 for NO SPECT patients and €3,024.00 for SPECT ones), and mean non health cost obtained per patient was €3,553.56 (€3923.44 for SPECT patients, €2712.08 for NO SPECT patients). For subjects diagnosed traditionally the cost per QALYs gained was €36,225.2 compared to €15,291.6 for SPECT patients group.**

**CONCLUSION: The introduction of new technologies, as SPECT, and the use of new radiolabelled drugs concur to improve early diagnosis of Parkinson’s disease and related diseases. Diagnosis using SPECT has health and non health cost higher than traditional diagnosis, but a cost-utility analysis demonstrate its cost saving role in comparison with traditional diagnosis.**

**PNL17**

**A COST-UTILITY MODEL COMPARING AZILECT® (RASAGILINE) WITH STANDARD CARE AND ENTACAPONE IN THE TREATMENT OF PARKINSONIAN PATIENTS WITH MOTOR FLUCTUATIONS UNDER LEVODOPA IN FINLAND**

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**OBJECTIVE: Assess the cost-utility of rasagiline, entacapone and standard care (levodopa) in Parkinson’s disease (PD) patients with motor fluctuations in Finland.**

**METHODS: A 2-year probabilistic Markov model with 3 health states: ≤25% off-time/day, >25% off-time/day and ‘dead’ was used. Model inputs included transition probabilities from randomised clinical trials, utilities from a preference measurement study and costs and resources from a Finnish cost-of-illness study. Effectiveness measures were Quality Adjusted Life Years (QALYs) and number of months spent with ≤25% off-time/day. The primary analysis was performed from the societal perspective. Extensive sensitivity and subgroup analyses on severe patients were performed. A parity price was assumed for rasagiline and entacapone based on WHO-DDD.**

**RESULTS: Over 2 years, rasagiline appeared to show both greater effectiveness and cost reductions compared with standard care (0.38 additional QALYs, over 55% additional time spent with ≤25% off-time/day and €900 savings (95% CI: [$-€3400; €1090]) per treated patient. Rasagiline and entacapone yielded similar effectiveness and costs. A trend in favour of rasagiline was observed in the severe patient subgroup (approximately €660 total cost savings/patient). Sensitivity analyses confirmed robustness of the results vs. standard care. Results vs. entacapone were sensitive to changes in transition probabilities and drug prices.**

**CONCLUSION: This economic model supports the use of rasagiline as a cost-effective treatment compared with levodopa alone and combined with entacapone in PD patients with motor fluctuations in Finland. Further improvements of the model should be applied to different settings to confirm these results.**

**PNL18**

**COST-EFFECTIVENESS OF CONTINUOUS DUODENAL DELIVERY OF LEVODOPA (DUODOPA®) IN PATIENTS WITH SEVERE PARKINSON’S DISEASE**

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**OBJECTIVE: To explore costs and health benefits of replacing conventional oral therapy with intraduodenal infusion of carbidopa/levodopa (Duodopa®) for severe Parkinson’s disease (PD).**

**METHODS: In the DIREQT trial 24 patients aged 50–79 years with Hoehn & Yahr stage 2.5–4.0 (at best) were randomised to receive either three weeks of conventional oral therapy followed by three weeks of Duodopa, or vice versa. Later, patients could choose to switch permanently to Duodopa. Health Related Quality of Life (HRQOL) was recorded with the 15D instrument at entry into the trial, during the trial, and then at 8 follow-ups during the subsequent 6 months. Use of health care was registered before, during and after the trial. Two-year costs and health consequences of Duodopa and conventional therapy were estimated in a decision analytic model. Costs were based on market prices and customary charges in Sweden.**

**RESULTS: The mean quality-of-life scores were 0.77 for Duodopa and 0.72 for conventional therapy with considerable variation in scores for individual patients over time. The expected two year cost was $93,600 for Duodopa and $28,700 for conventional oral therapy. The expected number of Quality
META-ANALYSIS OF CASE SERIES TO PROVIDE INPUTS FOR A DISCRETE EVENT SIMULATION OF DEEP BRAIN STIMULATION FOR THE TREATMENT OF PARKINSON’S DISEASE

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**OBJECTIVE:** To estimate for use in economic modeling, the time-dependent effects of deep brain stimulation (DBS) in patients with Parkinson’s Disease (PD) using meta-analysis of case series.

**METHODS:** A discrete event simulation of the course of advanced PD was created. It requires time-dependent functions of the effects of DBS. To obtain these, we searched the PUBMED, OVID and the Science Citation Index databases between 1980 and 2004 for papers reporting longitudinal experience with DBS. Data were extracted by three expert reviewers. The effect of DBS was measured at various time-points relative to baseline, while on and off medication. Time-dependent growth curves were developed by fitting the estimates as functions of time under fixed and random-effects models.

**RESULTS:** Comparisons to baseline in the 85 studies retained showed that while off medication, activating the stimulator improved ADL rapidly (by 50.0% at 3 months) but then improvement declined slowly following a quadratic polynomial. The effect was much weaker and decline linearly while on medication but levodopa dose declined steadily, from a reduction of 590.52 (439.9-741.2) mg at 3 months to 633.8 (497.4-770.2) mg after 1 year. Motor skills improved by 47.2% and then more slowly following a fractional polynomial curve.

**CONCLUSION:** These growth curves will be used to estimate the course of individual patients in simulation providing much more accurate reflection of the actual effects than traditional point estimates or transition probabilities. Given that studies can be either too small or too limited in scope to provide sound estimates of the effect of treatment, the results of meta-analytic curve fitting can be used as precise inputs to build an economic model.

THE COST OF MULTIPLE SCLEROSIS (MS) IN EUROPE

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**OBJECTIVES:** During the last decade, the introduction of new disease-modifying drugs (DMDs) for MS gave rise to a number of studies on the economic burden of the disease and the cost-effectiveness of different treatment options. Since these surveys were conducted before DMDs were established as part of standard treatment regimens, there is a need for up-to-date cost-of-illness studies that can be used for the economic evaluation of new treatments. Therefore, European Health Economics has conducted a European-wide, cross-sectional bottom-up survey on the costs of MS, involving at least nine countries.

**METHODS:** The study used a standardised mailed questionnaire providing data on demographics, direct medical and non-medical costs, informal care needs, productivity losses, relapses, utility and fatigue. RESULTS: The results were analysed by country, both for the whole sample and by level of disease severity measured with the Expanded Disability Status Scale (EDSS). Patients were recruited by MS clinics and MS societies, and the response rate ranged between 35% and 72%. Overall, the study includes over 10,000 patients. The samples per country are thus sufficiently large to analyse the change in costs and utility for all levels of disease severity. For example, in Sweden, the total annual cost per MS patient was estimated at €53,380, with costs increasing sevenfold for patients with severe disease compared to patients with no or very mild disability, from €16,338 to €116,502. DMDs were used by 43% of patients and accounted for 11% of total costs. In addition, analysis of variations across countries illustrates the impact of different health care and economic systems on patient management, total costs and distribution of resources. For example, services represented 29% of total costs in Sweden, due to a unique extensive home service available to severe patients.

**CONCLUSIONS:** This alternative to institutionalisation reduces nursing home costs and informal care needs.
THE SYMPTOMATIC, FUNCTIONAL AND QUALITY OF LIFE IMPACT OF MULTIPLE SCLEROSIS. REPORT ON A QUALITATIVE INVESTIGATION OF THE PATIENTS’ PERSPECTIVE

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OBJECTIVES: To determine patients’ views on the impact of multiple sclerosis (MS) in terms of symptoms experienced, impact on day-to-day functioning and overall quality of life (QoL). METHODS: In-depth, unstructured qualitative interviews were conducted with MS patients recruited via the MS Society in the UK. Thematic analysis was conducted on interview transcripts to identify key impact areas. Interpretive phenomenological analysis (IPA) was conducted to explore and interpret participants’ perceptions of impact; specifically, the meaning and importance patients ascribed to areas of impact. RESULTS: Interviews were conducted with 35 individuals (15 males / 20 females). Patients were aged 31–75 (mean 50; SD 13.2) years with MS duration of 2–58 (mean 17.7; SD 14.2) years. Eleven (31.4%) had relapsing-remitting MS, 10 (28.6%) had secondary-progressive, two (5.7%) primary-progressive, two (5.7%) benign MS and one (2.9%) progressive-relapsing. MS-type was unknown by nine (25.7%) individuals. Key areas of symptomatic impact reported were fatigue, pain, incontinence and mood fluctuation. Impact on memory and broader cognitive problems were less commonly reported. Key areas of functional impact related to physical incapacity (difficulties in walking, difficulty using stairs), problems conducting/completing activities of daily living, personal care, impact on social functioning, sexual functioning and work life. IPA analysis revealed that the most profound effects of symptomatic and functional problems were experienced in relation to impact on quality of intimate and social relationships, self-esteem, loss of identity, personal development/fulfillment and fear of the future. CONCLUSION: The interviews provided a rich source of information about the nature of the impact of MS and the concerns of affected individuals. These data will be used to generate content for new MS-specific patient reported outcome scales of symptoms, functioning and quality of life (QoL) suitable for use in clinical trials.

OSTEOPOROSIS

SYSTEMATIC REVIEW OF IBANDRONATE FOR POSTMENOPAUSAL OSTEOPOROSIS

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OBJECTIVE: To conduct a systematic review of the effect of ibandronate on bone mineral density (BMD) and fractures in postmenopausal women (PMW). METHODS: We followed the Cochrane collaboration methodology to identify randomized placebo-controlled trials comparing PMW receiving ibandronate to those not receiving ibandronate. Trials were included in our review if they had study duration of ONE year or longer and reported BMD or fracture incidence as outcomes. A priori hypotheses dealing with mode and frequency of administration, dosage, study duration and severity of osteoporosis were developed to help explain heterogeneity of treatment effects. Heterogeneity testing was conducted using regression models. All analyses were performed using Comprehensive Meta-Analysis, version 2.2, software. RESULTS: Nine trials met eligibility criteria. The trials included a total of 8784 women; 6111 received ibandronate and 2673 placebo. Study results were reported at one, two and three years for five, two and two studies, respectively. Ibandronate dose and frequency varied across studies and all trials had > one treatment arm. In all studies, ibandronate was found to increase BMD in the spine and hip compared to placebo; the average increase in spine BMD was about 4% and hip BMD about 2.75%. The BMD increase varied significantly by severity of osteoporosis, mode and frequency of administration, dosage, and study duration. Only two studies reported data on fractures. In one study (Chesnut et al, JBMR 2004), ibandronate reduced the risk of vertebral fractures but not non-vertebral fractures compared to placebo after three years of treatment. In the other study (Recker et al, Bone 2004), risk reduction was observed for neither vertebral nor non-vertebral fractures. CONCLUSIONS: Ibandronate appears to increase BMD and reduces the incidence of vertebral fractures but not non-vertebral fractures. Additional data are required to better assess the impact of ibandronate on BMD and fractures in postmenopausal osteoporosis.

CLINICAL EFFICACY AND SAFETY OF BALLOON KYPHOPLASTY FOR THE TREATMENT OF VERTEBRAL COMPRESSION FRACTURES: A SYSTEMATIC REVIEW OF THE LITERATURE

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OBJECTIVES: Balloon kyphoplasty and vertebroplasty are increasingly used in non-surgical management of patients with vertebral compression fractures (VCF). To date there has been no published systematic review that has compared the two procedures. METHODS: Number of electronic databases (MEDLINE, EMBASE and Cochrane Library) were searched through to March 1, 2004. Citation searching of included studies and no language restrictions were applied. All controlled and non-controlled study designs were included. Two reviewers carried out study selection. RESULTS: Total of 4 comparative observational studies (3 versus conventional medical management [CMM] & 1 versus vertebroplasty) and 13 case series for balloon kyphoplasty and 2 comparative observational studies (1 study versus kyphoplasty and one study versus CMM) and 57 case series for vertebroplasty were identified. Across studies, majority (>80%) of VCF patients were osteoporotic, had experienced pain for an average of five to seven months and were refractory to CMM. Compared to CMM alone, statistically significant gains in pain relief and functional improvement were observed following both balloon kyphoplasty and vertebroplasty. Although the magnitude of pain relief appears to be similar for both procedures, there is consistent evidence of substantive enhancement in quality of life following balloon kyphoplasty, evidence that is more limited for vertebroplasty. A total of 8% and 40% of operated vertebrae experienced cement leakages following balloon kyphoplasty and vertebroplasty, respectively. Unlike balloon kyphoplasty, a number of vertebroplasty cement leakages are symptomatic (5% of patients) and a number of serious adverse events have also been reported (e.g. neurologic injury and pulmonary embolism). CONCLUSION: This review demonstrates there is level III evidence to support the use of balloon kyphoplasty and vertebroplasty in the management of osteoporotic VCFs. Compared to vertebroplasty; balloon kyphoplasty appears to have a superior safety profile. The results from
randomised controlled trials are required to inform these conclusions.

**POS3**

**RISK FOR OSTEOPOROTIC FRACTURES IS REDUCED IN PERSISTENT BISPHOSPHONATE USERS**

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**OBJECTIVE:** This study aimed to investigate the effect of persistent bisphosphonate usage on the risk for hospitalization due to osteoporotic fractures. **METHODS:** The PHARMO database, which includes linked drug-dispensing records and hospital discharge records of more than one million subjects in defined areas in The Netherlands, was used to identify new female users of alendronate, etidronate or risdonate >50 years in the period January 1996–January 2003. Persistence with bisphosphonate treatment was determined using the method of Catalán. Within the cohort a matched case control study was performed. Cases were selected on the basis of a first hospitalization for an osteoporotic fracture (index date). Controls were matched 10:1 to cases on month of inclusion in the cohort and were assigned a random index date. The association with risk for fractures was assessed for bisphosphonate use at the index date and for persistent bisphosphonate use before the index date. **RESULTS:** The study cohort included 8,845 new female bisphosphonate users; 334 women (3.8%) were hospitalized for a fracture after inclusion in the cohort. A total of 3,280 controls were matched to the 334 cases. Bisphosphonate use at the index date significantly reduced the risk for osteoporotic fractures (RR 0.78; 95%CI 0.61–0.99, adjusted for age, previous fractures and co-medication). At least one year of persistent bisphosphonate usage reduced the risk for osteoporotic fractures even more substantially (adjusted RR 0.70; 95%CI 0.50–0.99). **CONCLUSIONS:** These results emphasize the importance of persistent bisphosphonate usage to obtain the maximal protective effect. Previous studies have demonstrated that persistence with bisphosphonates is higher with less frequent dosing regimens but is still suboptimal. This study has demonstrated that improving persistence results in reduced hospitalization for osteoporotic fractures.

**POS4**

**COST-EFFECTIVENESS OF PREVENTION OF GLUCOCORTICOID-INDUCED OSTEOPOROSIS WITH ALENDRONATE OR ALFACalcIDOL: THE STOP-STUDY: A RANDOMIZED PLACEBO-CONTROLLED TRIAL**

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**OBJECTIVE:** Glucocorticoids are associated with increased fracture risk. The balance between costs and effects of alendronate on glucocorticoid-induced osteoporosis (GIOP) was compared to alfacalcidol and no preventive treatment. **METHODS:** Cost-effectiveness analysis with a Markov model to compare alendronate and alfacalcidol to placebo based on 5 years of treatment. Lumbar spine bone mineral densities (BMD) of a double blind randomized controlled trial in patients starting oral GCs in a daily dosage of 7.5 mg prednisone equivalent or higher were used. Also pooled estimates of the relative risk (RR) of vertebral fractures from literature were used to estimate fracture incidence. A discounted iCER threshold of €30.000 per quality-adjusted life-year (QALY) gained was assumed. **RESULTS:** Mean age was 60 years. With BMD the iCER in women treated with alendronate was €94.261 per QALY gained an €144.000 in the alfacalcidol group. With the pooled RRs in women the iCER were €58 and €63.115 respectively. Sensitivity analyses applying pooled RRs to all types of fractures resulted in €29.389 and €26.457 for women. For men neither treatment reached the threshold. With BMD as predictor €30.000 was reached at €201 annual costs for alendronate in women and at €78 in men. For alfacalcidol the threshold prices were €103 in women and €40 in men. For alfacalcidol the prices were €218 in women and €72 in men. Sensitivity analysis showed that with treatment duration of 1 year both treatments became cost-effective, presuming persistent beneficial effect on bone after discontinuation of the drugs. **CONCLUSIONS:** Overall, alendronate and alfacalcidol do not appear cost-effective in prevention of GIOP in patients with a mean age of 60 years.
IMPACT OF BISPHOSPHONATES ON OSTEOPOROTIC FRACTURES, PATIENT QUALITY OF LIFE AND TREATMENT COSTS: THE CASE OF GERMANY

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OBJECTIVE: Post-menopausal osteoporosis has significant health care costs and impacts quality of life. The objective of this analysis was to assess the cost-effectiveness of risedronate compared to calcium + vitamin D, etidronate, alendronate, and ibandronate in high-risk osteoporotic patients in Germany.

METHODS: A validated model (Tosteson, 2001) was used to estimate the impact of therapy on hip and vertebral fractures, costs, and quality adjusted life years (QALYs). The analysis included women 70 years with a BMD T-Score of <-2.5 and a history of vertebral fracture, treated over 3 years. The model further simulated downstream costs and QALYs for a 10-year period. Country-specific data included general population mortality, hip and hospitalized vertebral fracture rates, fracture costs, and daily drug prices (risedronate €1.50; etidronate €1.17; alendronate €1.50; ibandronate €1.38). Ibandronate price based on U.S. pricing relative to risedronate, as German pricing not available. Hip and vertebral fracture reductions (risedronate 60%, 49%; etidronate 34%, 37%; alendronate 51%, 47%; ibandronate 0% [No efficacy demonstrated], 52% [Using 62% for efficacy does not change results]) were based on published clinical trials.

RESULTS: In a cohort of 1000 postmenopausal women with 3 years of treatment the model predicted the following costs, total hip and hospitalized vertebral fractures and QALYs: risedronate (€82.22M, 139, 5451); alendronate (€8.41M, 142, 5447); etidronate (€8.42M, 149, 5441); ibandronate (€5.33M, 159, 5429); calcium + vitamin D (€7.91M, 164, 5427). All bisphosphonates were dominated by risedronate, which was less costly and had better outcomes. Risedronate had a cost per fracture averted of €12,389 and a cost per QALY gained of €13,253, compared to calcium + vitamin D. CONCLUSIONS: The analysis favors the adoption of risedronate therapy for the treatment of postmenopausal osteoporosis compared to other bisphosphonates.

EVALUATION OF DISTRIBUTION OF HIP REPLACEMENT IN HUNGARY ACCORDING TO GEOGRAPHICAL REGIONS AND AGE GROUPS

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OBJECTIVES: The aim of the study is to show the utilization of hip-prosthesis implantations in Hungary according to age groups and geographical regions. METHODS: In this retrospective study the data derive from the financial database of the National Health Insurance Fund of Hungary and the database of the Hungarian Central Statistical Office. For the analysis we used the International Classification of Diseases (ICD) tenth revision and the surgical codes of the Hungarian Homogeneous Disease Groups related to prosthesis implantations. The study includes all the hip implantations that occur for the first time in the year of 2002 as a one side primary prosthesis, regardless of the status of the opposite hip (such as the coxarthrosis, primary treatment of hip fractures or their prosthesis after changing the methods, other problems). The study does not include the implantation of hip prosthesis on the opposite side within one year, and the prosthesis implanted earlier but having been replaced because of any reasons. RESULTS: The total number of patients fulfilled the criteria mentioned above were 8019. The average number of patients with hip prosthesis (either hemi or total) per 10,000 populations was 7.90. According to age-groups: age 10–19: 0.03 case, age 20–29: 0.18 case, age 30–39: 1.01 case, age 40–49: 4.89 cases, age 50–59: 10.46 cases, age 60–69: 23.51 cases, age 70–79: 32.72 cases, aged over 80: 25.21 cases. The number of patients having prosthesis according to the geographical regions per 10,000 population: Central-Hungary: 8.72, Central-Transdanubia: 7.87, Western-Transdanubia: 8.35, Southern-Transdanubia: 8.86, Southern-Greatplane: 8.7, Northern-Hungary: 6.89, Northern-Greatplane: 5.69. CONCLUSION: We realized significant regional differences in the utilization of hip implantations. Further studies are needed to explore the causes and factors influencing the regional differences.

CONTENT VALIDATION OF OSTEOPOROSIS TREATMENT PREFERENCE QUESTIONNAIRE

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Numerous studies have directly assessed patient preferences for different treatments, but have provided little evidence supporting the validity of their preference questionnaires. OBJECTIVE: The objective of this study was to perform a qualitative analysis of patients’ perspectives of an Osteoporosis Treatment Preference Questionnaire (OTPQ) comparing preferences for once-monthly versus once-weekly administration of bisphosphonate therapy for osteoporosis. METHODS: The OTPQ contains one question directly eliciting dosing schedule preference, two questions with multiple items assessing possible reasons for the stated preferences, and a convenience question. Because the OTPQ comprises no multi-item scales and thus psychometric evaluation analyses would be limited, a cognitive debriefing study was conducted as the primary method of assessing validity. This study involved semi-structured one-on-one telephone interviews with a convenience sample of women currently receiving bisphosphonate therapy for postmenopausal osteoporosis. They completed the OTPQ at the beginning of the phone call and subsequently were interviewed about the mental process involved in responding to the questions, their interpretation of the items, and how responses were selected. RESULTS: Twenty women completed the interviews. The participants were primarily white (85%), had a mean age of 63.7 years, and most were taking weekly alendronate (85%). In general, participants believed that the OTPQ was easy to understand and appropriate for assessing patient preferences for once-monthly versus once-weekly osteoporosis treatment. One item was not interpreted in a consistent manner among 9 of the first 15 participants. As a result, this item was revised and tested with the remaining five participants. These additional interviews affirmed that the revision clarified the intended use of the item. No additional modifications to the questionnaire were required based on the findings. CONCLUSIONS: This cognitive debriefing study provided a strong foundation for the content validity of the OTPQ. Such studies should be a critical component in the development of preference questionnaires.
EXTENDING THE BURDEN OF DISEASE PROTOCOL: DERIVING DISABILITY WEIGHTS FOR RISK FACTOR DISEASES—THE CASE FOR OSTEOPOROSIS

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OBJECTIVES: To compare a newly developed method to derive disability weights for risk factor diseases, in particular osteoporosis, with the standard QALY approach (SQA). A risk factor disease is an asymptomatic condition with a risk of a symptomatic event. SQA estimates burden of risk by multiplying the probability of an event by the burden of that event, ignoring the impact of risk awareness. In osteoporosis, fracture-risk awareness and associated mortality may affect the burden.

METHODS: Disability weights were derived by a panel of the general public in The Netherlands (n = 142) as part of a larger valuation study. All health states were presented to participants on a standardized, preformatted sheet (‘vignette’) containing disease specific information and a generic description (EQ-5D). All vignettes were valued by TTO. Vignettes for osteoporosis showed an asymptomatic state with varying fracture-risks (1, 2, 5, or 10%), which were valued directly. To derive osteoporotic weights by SQA osteoporotic fracture vignettes were included. SQA weights were obtained indirectly; calculated as hip fracture weight multiplied by fracture risks. In total, 14 vignettes were valued, of which three included a mortality risk.

RESULTS: Taking fracture-risk awareness into account, mean TTO disability weights for osteoporosis ranged from 0.035 (1%) to 0.151 (10%). Calculated SQA weights are 0.001 (1%) to 0.011 (10%), a factor 9 to 34 lower. CONCLUSIONS: The burden of disease in risk factor diseases (osteoporosis) can be quantified via disability weights using direct methods. Ignoring fracture-risk awareness and associated mortality leads to gross underestimation of the burden of osteoporosis. The inclusion of burden of risk would significantly improve the clinical practice. It would better explain the sizeable resources spent on osteoporosis.}

POS9

AN INTERNATIONAL COMPARISON OF THE IMPACT OF DOSING FREQUENCY ON COMPLIANCE AND PERSISTENCE WITH BISPHOSPHONATE THERAPY AMONG POST-MENOPAUSAL WOMEN IN THE US, UK AND GERMANY

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OBJECTIVES: To compare a newly developed method to derive disability weights for risk factor diseases, in particular osteoporosis, with the standard QALY approach (SQA). A risk factor disease is an asymptomatic condition with a risk of a symptomatic event. SQA estimates burden of risk by multiplying the probability of an event by the burden of that event, ignoring the impact of risk awareness. In osteoporosis, fracture-risk awareness and associated mortality may affect the burden.

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POS10

ADDRESSING THE BURDEN OF DISEASE PROTOCOL: USING SPSS FOR WINDOWS—THE CASE FOR OSTEOPOROSIS

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OBJECTIVES: To compare a newly developed method to derive disability weights for risk factor diseases, in particular osteoporosis, with the standard QALY approach (SQA). A risk factor disease is an asymptomatic condition with a risk of a symptomatic event. SQA estimates burden of risk by multiplying the probability of an event by the burden of that event, ignoring the impact of risk awareness. In osteoporosis, fracture-risk awareness and associated mortality may affect the burden.

METHODS: Disability weights were derived by a panel of the general public in The Netherlands (n = 142) as part of a larger valuation study. All health states were presented to participants on a standardized, preformatted sheet (‘vignette’) containing disease specific information and a generic description (EQ-5D). All vignettes were valued by TTO. Vignettes for osteoporosis showed an asymptomatic state with varying fracture-risks (1, 2, 5, or 10%), which were valued directly. To derive osteoporotic weights by SQA osteoporotic fracture vignettes were included. SQA weights were obtained indirectly; calculated as hip fracture weight multiplied by fracture risks. In total, 14 vignettes were valued, of which three included a mortality risk.

RESULTS: Taking fracture-risk awareness into account, mean TTO disability weights for osteoporosis ranged from 0.035 (1%) to 0.151 (10%). Calculated SQA weights are 0.001 (1%) to 0.011 (10%), a factor 9 to 34 lower. CONCLUSIONS: The burden of disease in risk factor diseases (osteoporosis) can be quantified via disability weights using direct methods. Ignoring fracture-risk awareness and associated mortality leads to gross underestimation of the burden of osteoporosis. The inclusion of burden of risk would significantly improve the clinical practice. It would better explain the sizeable resources spent on osteoporosis.}

POS11

PERSISTENCE OF DRUG TREATMENT WITH ALENDRONATE AND RISEDRONATE IN PRIMARY CARE PATIENTS

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OBJECTIVES: To evaluate persistence of weekly drug treatment with alendronate and risedronate over 12 months in primary care patients using the DIN-LINK observational database.

METHODS: The DIN-LINK longitudinal patient database sourced from medical records in UK was used to identify and follow-up a cohort of patients with prescriptions for once weekly administration of alendronate or risedronate. Follow-up period was 12 month. The proportion of patients remaining on drug treatment was calculated with the Kaplan-Meier product-limit method. The log-rank test was used to evaluate the statistical significance of observed differences between treatment groups.

RESULTS: In the database 2132 patients on weekly administration of alendronate and 356 patients on weekly administration of risedronate were identified. After 12 month 60.6% (95% CI 58%–63%) of patients are remaining on alendronate and 69.7% (CI 65%–74%) of patients are remaining on risedronate. The persistence with alendronate is different to risedronate (p = 0.0015). The compliance rate expressed as medication possession ratio (MPR) was 75.5% and 83.3% for alendronate and risedronate, respectively.

CONCLUSIONS: Results demonstrate a higher compliance and persistence with weekly bisphosphonate than reported previously from analyses in US claims databases. In fact, the study reveals that patients taking once-a-week risedronate show a high compliance rate (MPR > 80%). It has previously been demonstrated that improving compliance in actual practice may significantly decrease osteoporosis related fracture risk. We conclude, that an once-a-week dosing regimen with risedronate provides favourable compliance and persistence to effectively prevent fractures.
HEALTH-RELATED QUALITY OF LIFE IN POSTMENOPAUSAL WOMEN WITH OSTEOPOROSIS AND AN INADEQUATE RESPONSE TO ANTI-OSTEOPOROSIS MEDICATION: BASELINE RESULTS OF THE FRENCH COHORT FROM THE OBSERVATIONAL STUDY OF SEVERE OSTEOPOROSIS (OSSO)

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OBJECTIVES: To evaluate changes in health-related quality of life (HRQoL). METHODS: The OSSO study is a 12-month, European, prospective, observational study of postmenopausal women with osteoporosis and an inadequate response to anti-osteoporosis therapy, defined as: 1) presence of a new fragility fracture despite prescription of any approved anti-osteoporosis therapy for at least 12 months before the fracture, and/or 2) discontinuation of any approved anti-osteoporosis therapy due to compliance problems and/or side effects. RESULTS: A total of 418 women enrolled in France were included in the baseline analysis; 196 (46.9%) had a new fragility fracture and 222 (53.1%) had compliance problems/side effects, a less severe patient group based upon baseline patients’ characteristics. HRQoL was assessed using the osteoporosis disease-specific QUALLEFFO questionnaire. At baseline, the mean (SD) total QUALLEFFO score for the OSSO French population (n = 418) was 42.7 (18.8), and the mean (SD) scores for the five domains were: pain 46.2 (27.4), physical function 33.0 (23.0), social function 56.9 (25.9), general health 62.7 (20.7) and mental function 42.4 (19.2). The mean total QUALLEFFO score was significantly higher in the fracture cohort than in the compliance/side effect cohort (47 vs. 38.8, P < 0.001). Similarly, the scores for each of the five domains were significantly higher in the fracture cohort. In the subgroup of index patients who sustained a vertebral fracture a few months before enrolment in the study, the mean (SD) total QUALLEFFO score was higher and respectively 55.4 (17) in those with a lumbar vertebral fracture, 53.1 (15.8) with a thoracic vertebral fracture, 49.4 (15) with a lumbar and thoracic vertebral fracture. CONCLUSIONS: There is a clear impairment of quality of life at baseline in the French postmenopausal women with osteoporosis taking part in the OSSO study, more pronounced in the fracture group. The vertebral fracture worsens the quality of life.

UNDERSTANDING AND ASSESSING TibIA FRACTURE ON QUALITY OF LIFE; CONCEPTUAL MODEL AND NEW DISEASE SPECIFIC HRQoL MEASURE

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OBJECTIVE: Tibia fractures are the most common long bone fracture and are associated with significant morbidity ranging from infection and amputation to employment problems. Additionally, general health problems such as stiffness and ongoing pain are not uncommon. The purpose of this qualitative study was to examine QoL issues for tibia fracture, develop a conceptual model of the QoL impact of fractures and generate a preliminary version of the Fracture-QoL Measure. METHODS: Data were collected from the literature, orthopedic experts (N = 6) and patients, individually or in focus groups (N = 42), in 4 countries (US, Canada, UK, Germany) by interviews following a semi-structured interview guide. Transcripts were analyzed for common themes and the conceptual model and item generation was based on these themes. Items underwent cognitive debriefing. RESULTS: Tibia fractures have a significant negative impact across multiple aspects of QoL most notably health, relationships and productivity. Contrary to physician beliefs, these impairments are still evident several years post injury for most patients. The short-term impacts occur in the first 4–6 weeks post injury and include sleep disturbances and work loss. For patients who do not heal properly or develop infections, the severity of the impact on QoL midterm (6 weeks–3 months) is greater and impacts self image and feelings of helplessness. These patients are at greater risk for long-term consequences which include divorce and continued mental and physical health issues. The full conceptual model of the short, mid and long term QoL impacts, potential determinants and modifiers of the relationships along with the Fracture-QoL Measure will be presented. CONCLUSIONS: Improving the ability of orthopedic experts to recognize the significant QoL impacts will facilitate patient access to necessary support services and appropriate treatments. Discussion of these impacts with patients will help them to be better prepared for a realistic recovery.

ELICITING AND QUANTIFYING PATIENT PREFERENCES FOR DOSING FREQUENCY

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OBJECTIVE: To develop a rating scale to elicit and quantify patient preferences for different dosing frequencies with bisphosphonate therapy in osteoporosis. METHODS: Expert interviews generated information for developing descriptions of an osteoporosis health state along with four different treatment scenarios for bisphosphonates: daily, weekly, monthly, and monthly plus a support programme. A rating scale questionnaire was used to elicit relative values for the health state and each scenario on a 0–100 scale. Face and content validity, acceptability and comprehension were tested with experts (n = 3) and osteoporosis patients (n = 22). Telephonic administration of the rating scale was assessed in a pilot study of 50 bisphosphonate users. Construct validity was assessed in 491 women with or at risk of osteoporosis who were: naïve to (n = 212), currently taking (n = 225) or lapsed (n = 54) bisphosphonate users. RESULTS: The questionnaire demonstrated good face and content validity, was acceptable to experts and patients, and suitable for telephone administration taking 5–10 minutes to complete. Construct validity was demonstrated by: (i) Lower valuation for health state compared with treatment scenarios (median values: health state = 20, daily = 40, weekly = 70, monthly = 80, monthly with support programme = 85); (ii) Non-osteoporotic women gave lower valuations for health state than women with osteoporosis (median value = 10, one-way ANOVA, F = 4.80, p = 0.009); (iii) Lapsed weekly users gave lower valuations to weekly scenario (median value = 50) than naïve or current users, one-way ANOVA, F = 17.68, p < 0.0001; (iv) 94% of lapsed and 85% of current users who felt they had to take bisphosphonates too often, preferred monthly treatment; (v) Monthly dosing with support programme was the most highly valued scenario by all patient groups (median value = 85). CONCLUSIONS: The preference questionnaire is a valid and acceptable method for quantifying patient preference for dosing frequency with bisphosphonate therapy. Overall, bisphosphonate treatment scenarios with lower dosing frequencies were valued more highly.
PAIN

COGNITIVE FUNCTION IMPAIRMENT IN PATIENTS WITH NEUROPATHIC PAIN

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OBJECTIVE: To analyze the prevalence of cognitive function impairment (CI) in patients with neuropathic pain (NeP).

METHODS: Cross-sectional analysis of a sample of patients with NeP enrolled in a naturalistic, multicenter study evaluating the effectiveness of gabapentin in NeP. A total of 1519 patients (58.8% women) aged >18 years [mean age (SD) = 56.0 (13.7) years], with NeP or mixed (neuropathic and nociceptive) pain (MP) for 1.1 (2.8) years, were enrolled in the study. Pain was assessed with the McGill sort-form questionnaire, and cognitive function with the Mini Mental State Examination (MMSE) - [a score <24 was considered as cognitive impairment (CI)]. Multivariate logistic regression models were used to estimate CI prevalence. RESULTS: CI was substantially higher in patients with NeP than that reported in the general Spanish population, and significantly higher than in MP patients: 6.1% (4.0%–8.8%) with NeP than that reported in the general Spanish population, and significantly higher than in MP patients: 6.1% (4.0%–8.8%) versus 1.6% (0.7%–3.1%), p < 0.001 [adjusted OR = 4.36 (1.92–9.92)]. Prevalence significantly increased with age up to 28.3% (16.8%–42.4%) in NeP, and to 20.0% (7.7%–38.6%) in MP for the age groups >75 years, p < 0.001. Patients with peripheral diabetic neuropathy and central post-stroke pain had significantly higher prevalence than other groups. CI was significantly associated to pain severity in NeP patients. CONCLUSIONS: Despite the limitations observed, this evaluation showed that after adjusting by confounders the prevalence of cognitive impairment was substantially higher in patients with NeP as compared to MP and the reference general population. Age, diabetic neuropathy, and central post-stroke pain were factors found significantly associated to cognitive impairment.

THE COST-EFFECTIVENESS OF STRONG, CONTROLLED-RELEASE OPIOIDS FOR THE TREATMENT OF CHRONIC NON-MALIGNANT PAIN: A PROBABILISTIC DECISION-MODEL

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OBJECTIVE: To evaluate the cost-effectiveness of available treatments for patients requiring a strong, controlled-release opioid for chronic non-malignant pain. Since patients with chronic pain typically move between treatment options over time, according to analgesic response and tolerability, this evaluation focuses on the cost-effectiveness of therapeutic sequences.

METHODS: A decision-model was constructed to estimate the cost-effectiveness of different sequences of controlled-release (CR) opioids including oxycodone CR, morphine CR, transdermal fentanyl and supportive care. Clinical trials involving these therapies in chronic pain were systematically identified in the literature and reported pain scores were mapped across to utilities. Bayesian meta-analyses were used to compare utilities and adverse events between therapies. These estimates were then incorporated within a decision model along with health care cost estimates, derived using UK prescription data and a survey of UK GPs. Probabilistic methods were used to address parameter uncertainty. RESULTS: From a total of 57 published trials, 20 met criteria for inclusion in the meta-analysis. Mean quality-adjusted life years (QALYs) relative to supportive care were 0.083 for transdermal fentanyl, 0.100 for morphine CR and 0.101 for oxycodone CR. Mean annual health care costs were estimated at £270 for morphine CR, £854 for transdermal fentanyl and £640 for oxycodone CR. The incremental cost-effectiveness ratio for all therapies, relative to supportive care, was less than £10,000 per QALY gained (morphine £1800, oxycodone £635, fentanyl £956). Suggesting that, if decision-makers are willing to pay up to £10,000 per QALY, all three treatments are cost-effective in a therapeutic sequence. The most cost-effective sequence is morphine CR, oxycodone CR, transdermal fentanyl and supportive care.

BURDEN OF ILLNESS OF PATIENTS WITH NEUROPATHIC PAIN IN PRIMARY CARE IN THE UK

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OBJECTIVE: Neuropathic pain (NeP) results in physical and psychological burdens for patients, and increased health care costs. This research compared primary and secondary care resource utilisation by patients, with and without NeP, in the UK.

METHODS: A large primary care database (DIN-LINK) covering 100 practices (400 GPs) with over 800,000 currently registered patients representative of the UK population was used. A cohort of patients who presented to a GP with NeP at any time during the previous three years was identified. The comparator control cohort included patients with no history of NeP matched by age, sex and GP practice. Patient demographics and resource utilisation data (prescribed medications, number and length of prescriptions, GP consultations, hospital admissions, sick notes) were reported in total, and for NeP-related encounters. The follow-up period for each patient was reported to facilitate comparison. RESULTS: The database identified 31,801 patients with NeP. There were similar numbers of matched control subjects with the same number of follow-up days. The NeP cohort received 92% more prescriptions in total during follow-up than those in the matched cohort, and 18% of prescriptions were NeP related. The NeP cohort had 77% more GP consultations, (21% were NeP related). Patients with NeP received 122% more outpatient referrals, (33% were NeP related). Hospital admissions were up 107% for NeP patients, (25% were NeP related). Patients with NeP received 186% more sick notes (52% were NeP related) than those without the condition. CONCLUSION: NeP patients were prescribed more medications and consumed more primary and secondary care resources than the matched patient cohort. The fact that additional resource use was not entirely related to NeP suggests that differences were not attributable solely to this condition, but may be due to co-morbidities associated with NeP.

DIFFERENTIAL COSTS OF NEUROPHATIC PAIN (NEP) MEDICAL MANAGEMENT ACCORDING TO ETIOLOGY: RESULTS OF THE REC STUDY

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OBJECTIVE: NeP is managed by a variety of clinicians and might be caused by broad aetiologies. The economic impact of medical management is poorly known. The aim of this research was to estimate the cost of medical management of NeP in Pain
Units (PU) in Spain, and to determine possible differences according to aetiology. METHODS: Consecutive NeP patients were recruited in this cross-sectional & retrospective study between April and December 2004 in PUs. Demographic data, NeP type and cause, origin of the derivation, and health resources consumption (drugs, non-pharmacological therapies, medical visits, hospitalizations, diagnostics tests) were collected from existing medical records and patient interview. Costs of resources at their 2004 values were applied to calculate total cost from the National Health System perspective. Descriptive statistics and ANCOVA models were used. RESULTS: Five-hundred-four NeP patients of broad aetiology (44% radiculopathy, 21% neuralgias, 11% neuropathies, 7% entrapment syndromes, 5% CRPS, 4% central pain), 57.8 + 0.7 years (Mean ± SE), 37.6% women, and 29.6 + 2.2 months of evolution, were enrolled in the study. Unadjusted monthly average cost was 422 + 636. Adjusted monthly cost was significantly higher than average for neuropathies (580 + 90, p = 0.011), because of the higher number of hospitalization days (0.6 + 0.1, p = 0.021) and pharmacologic costs (162 + 177, p = 0.001). Radiculopathies showed lower adjusted costs than the average; €287 + 466, p = 0.026, because of the lower cost of hospitalization; €79 + 38, p = 0.027. CONCLUSIONS: NeP causes a considerable utilization of health resources with a substantial cost for the National Health Service. Neuropathies showed the higher cost per month per patient, whereas that of the radiculopathies was significantly lower than the average.

A MODEL-BASED COST-UTILITY ANALYSIS OF LYRICA™(PREGABALIN) VERSUS CURRENT PHARMACEUTICAL MANAGEMENT OF PERIPHERAL NEUROPATHIC PAIN

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OBJECTIVES: To assess the cost per QALY of pregabalin in the management of peripheral neuropathic pain. METHODS: We compared pregabalin on top of “usual care” with “usual care” alone. In this study usual care was defined as a mix of drug therapies, excluding anti-epileptics, because the latter represented only 9% of current use, and clinical evidence of pregabalin was demonstrated versus usual care without anti-epileptics. A Markov model was developed to simulate the evolution of a patient cohort over 1-year, and applied cycles of four weeks. During each cycle, patients remained in one out of four possible states: severe, moderate or mild pain, and therapy withdrawal. Both health care-payers and societal perspectives were considered. Clinical data were obtained from a trial comparing usual care plus placebo to usual care plus pregabalin, at either 150, 300, or 300/600 mg/day (the latter depending on clinical response). Resulting effects on pain were transformed into transition-probabilities between different pain levels. Cost and SF36 utility data of pain levels were obtained from a 1-month observational study in 88 patients. RESULTS: Usual care resulted in a yearly cost of €6200 compared to €6089 for an all dose pregabalin-mix, meaning a cost saving of 111 € per patient. Utility increase was 0.01 for the pregabalin-mix (QALY 0.510 usual care; 0.520 pregabalin-mix). From a societal perspective, usual care resulted in a cost of €14,350 versus €13,984 with pregabalin mix, representing a cost saving of €367. MonteCarlo analysis showed cost savings were not significant. However, the utility gain, albeit small, was statistically significant. CONCLUSIONS: A net cost saving with pregabalin was explained by a longer stay of patients in less-costly mild/moderate states, but was not significant, hence pregabalin is cost-neutral when compared to current care. On the other hand, utilities showed a significant difference, perhaps explained by their small variance.

A UK PHARMACOECONOMIC MODEL OF PARENTERAL PARECOXIB VERSUS OPIOID ANALGESIA FOLLOWING MAJOR SURGERY

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OBJECTIVES: To estimate the clinical and economic consequences of parecoxib sodium versus a parenteral opioid post-surgical pain management strategy in hospital inpatients undergoing selected major surgeries. METHODS: We developed a UK model of postsurgical pain management to assess comparative clinical and economic outcomes in persons receiving parecoxib or opioids as a parenteral analgesic regimen. Model parameters were derived from international clinical trial data, a large US hospital billing database, and published literature. The model tracks patient cohorts defined by age and gender over the 3-day period following major abdominal, orthopedic, or gynecologic surgery. The parecoxib regimen included adjunctive use of opioids. The model estimates occurrences of opioid-related symptoms (“clinically meaningful events” or CMEs), time spent in a postanesthesia care unit (PACU) or special care unit (SCU), various pain intensity metrics, and direct medical costs. Model outcomes include differences by treatment regimen (parecoxib versus comparator) in CMEs, PACU/SCU time, pain intensity scores, direct medical costs, and incremental cost-effectiveness ratios. RESULTS: Base-case estimated hospitalization costs in the 3 days following surgery were £27 per patient lower among parecoxib- versus opioid-treated patients. Patients receiving parecoxib spent 11 minutes less time, on average, in PACUs and SCUs than opioid-treated patients. Total CMEs were approximately 26% lower among parecoxib- versus opioid-treated patients. Pain intensity scores were uniformly lower (by a range of 26% to 29%) for parecoxib-treated patients versus opioids. Based on model estimates of total cost and values for each of the model outcomes, incremental cost-effectiveness analysis suggests that parecoxib therapy is more effective and less costly than opioid therapy. CONCLUSIONS: Results from this model suggest that the opioid-sparing properties of parecoxib translate into better clinical outcomes, reduced health care resource utilization, and lower costs versus an opioid-only pain management strategy.

COST-EFFECTIVENESS ANALYSIS OF THE COMBINATION TRAMADOL PLUS PARACETAMOL VERSUS CODEINE PLUS PARACETAMOL FOR POSTOPERATIVE PAIN THERAPY IN THE NETHERLANDS

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OBJECTIVES: In moderate postoperative pain a weak opioid in combination with a non-opioid analgesic is recommended. Corresponding fixed combinations with paracetamol include the weak opioid tramadol or codeine. The objective of this study was to determine the cost-effectiveness of the tramadol/paracetamol combination (Zaldiar®) in comparison to a codeine/paracetamol combination (with a ratio of 1:10; codeine:paracetamol) for postoperative pain after arthroscopic procedures or abdominal
surgery in the Dutch health care setting. The hypothesis was that higher drug costs for the tramadol/paracetamol combination were offset by a reduction of costs associated with the treatment of side-effects. METHODS: Decision analysis was used to model the health economic outcomes. A cost-minimization approach was appropriate since the efficacy of the two treatments proved to be the same in the dosages used. Probabilities, resource utilisation data, and unit costs were obtained from published literature, Delphi panel and official price and tariff lists (Dutch costing manual). The perspective taken was that of the health insurance.

RESULTS: The study showed that six days’ postoperative treatment with the tramadol/paracetamol combination is cost saving compared with codeine plus paracetamol and has fewer side-effects (costs for tramadol/paracetamol: €42.46; codeine/paracetamol: €43.56). Sensitivity analyses confirmed the robustness of the model, with the tramadol/paracetamol combination being similarly expensive or becoming the dominant strategy in 28 off 34 scenarios calculated. CONCLUSION: The results show that postoperative pain therapy with the tramadol/paracetamol combination is equally or less expensive and has fewer side effects compared with a codeine/paracetamol combination, resulting in favourable clinical and economic benefits.

THE MOS-SHORT-FORM-12 (SF-12) AS A MEASURE OF HEALTH-RELATED QUALITY OF LIFE IN NEUROPATHIC PAIN (NEP) PATIENTS: RELIABILITY, CONCURRENT AND DISCRIMINANT VALIDITY

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OBJECTIVE: NeP pain is a devastating disorder that is likely to affect the patient’s quality of life. Generic tools are used to measure impact of pain on health-related quality of life (HRQoL) such as SF-12. The goal of this analysis was to assess the reliability, concurrent and discriminant validity of SF-12 in NeP or Mixed Pain (MP) patients. METHODS: Horizontal psychometric properties were tested in a sample of 1519, with pain for 1.1 ± 2.8 years [mean ± SD]; 56.0 ± 13.7 years old (61.2% female) years enrolled in an observational, prospective and multicenter study in NeP or MP patients of broad etiologies. Participants completed a pain questionnaire (SF-MPQ), anxiety and depression scales (Covi and Raskin), a disability inventory (SDS) and the MOS-sleep questionnaire. RESULTS: Most patients scored above 40 mm on the SF-MPQ. Near 92% of patients completed the questionnaire. Test-retest reliability for both summary components showed intraclass correlation coefficients ranging from 0.743 to 0.898 (p < 0.0001 in all cases). SF-12 scores were able to distinguish between NeP and MP patients (adjusted mean difference: 1.95 ± 0.37; p < 0.0001), and levels of pain severity (adjusted F = 4.91, p = 0.008), and disability (adjusted F = 7.15, p < 0.0001). SF-12 MCS showed its validity to differentiate between patients with and without depression (adjusted mean difference: 5.05 ± 0.74; p < 0.0001). MCS & PCS showed concurrent correlations with anxiety (Covi; −0.21 to −0.43), depression (Raskin; −0.25 to −0.52), sleep disorders (MOS-sleep; −0.16 to −0.35) and disability (ShDS; −0.02 to −0.27). CONCLUSIONS: These results demonstrated the SF-12 validity and reliability as a measure of HRQoL in NeP patients.

HEALTH STATUS AS MEASURED BY PATIENT UTILITY DETERMINATION AMONG PATIENTS WITH PAIN: RESULTS FROM A CROSS-SECTIONAL SURVEY


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OBJECTIVE: Pain is associated with an important comorbidity, related with sleep problems and mood disorders. This study was aimed to describe the health status of patients according to pain severity and symptom descriptors among patients with neuropathic (NeP) or nociceptive pain (NoP). METHODS: We surveyed 133 patients with pain (85 NeP and 50 NoP) of broad origin attending three Pain Units. Patients completed the Short-Form McGill Pain Questionnaire (SF-MPQ). Health status (utility) was determined by means of the Health Utility Index Mark 3 (HUI 3, Spanish version). Present Pain Intensity item (PPI) of SF-MPQ was used to classified pain severity as mild, discomforting, distressing, horrible and excruciating, and the 15 items of questionnaire to describe descriptors of pain. A descriptor was considered absent in case of a score of 0, and present if scoring ranged from 1 to 4. Analysis of covariance models and multivariate regression were used. RESULTS: Mean (+ sem) age was 62.6 ± 1.3 years (range: 22–88) and 58% were female. Eighty-seven percent were prescribed pain medications. Most reported mild (22%), discomforting (36%) or distressing (24%) pain, with 11% scoring the pain as horrible and 6% excruciating. Male and NoP patients were associated with poorer adjusted HUI 3 scores: 0.41 ± 0.04 (F = 4.22, p = 0.042) and 0.37 ± 0.04 (F = 9.75, p = 0.0022), respectively. Adjusted HUI 3 scores were statistically associated with poorer PPI scoring: 0.66 ± 0.05, 0.53 ± 0.04, 0.30 ± 0.05, 0.20 ± 0.09 and 0.39 ± 0.15, respectively (F = 8.33; p < 0.001). Tiring-exhausting and punishing-cruel (affective symptoms) were both associated with lower HUI 3 scores: β-coefficients: −0.149 (p = 0.010) and −0.171 (p = 0.005), respectively. Health status was not associated with sensory symptoms descriptors. CONCLUSIONS: Present pain intensity and presence of affective symptoms were both associated with a poorer health status; the more severe the pain the more impaired the health status, and was independent of age. Male and Nociceptive Pain patients showed worst health status.

PSYCHOMETRIC PROPERTIES OF THE MOS-SLEEP SCALE IN NEUROPATHIC PAIN (NEP) SYNDROMES

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OBJECTIVE: This work assessed the psychometric properties of the MOS-sleep scale in NeP syndromes. METHODS: Psychometric properties were tested in NeP patients enrolled in a naturalistic, prospective, multicenter study exploring the effectiveness of gabapentin for 3 months. Participants completed scales for pain (SF-McGill Pain Questionnaire), anxiety (Covi), depression (Raskin), disability (Sheehan), and HRQoL (SF-12). Feasibility, reliability, validity and sensitivity to change were measured within this study. RESULTS: Six-hundred-three patients [58.4 ± 14.4 years (65.1% female), mean ± , with pain for 1.2 ± 3.3 years were included. Pain intensity in a VAS scored]SD 0–100 was 70.9 ± 19.4 and in an ordinal item 0–5 was 2.8 ± 1.1. The 10.9% of patients suffered neuropathies,
9.6% trigeminal neuralgia, 12.8% CRPS, 14.8% post-herpetic neuralgia, 19.1% entrapment neuropathies, 3.6% post-stroke pain, 2.7% phantom limb, and 26.5% others. MOS-sleep was acceptable (items with missing data <10% and floor and ceiling effects <50% per item and <15% per domain) and reliable (Cronbach’s α between 0.64 and 0.87, and test-retest intraclass correlation coefficients between 0.79 and 0.91, p < 0.001 for all cases). After adjusting by covariates, MOS-sleep was able to distinguish between sex, present pain severity, level of disability and presence of anxiety or depression: sleep-problems index scores higher in female and patients with horrible/excruciating pain, anxiety, depression and extreme disability (p < 0.05, all cases). Concurrent validity with other scales was moderate; Spearman’s ρ coefficients between –0.21 and 0.57 (p < 0.01, all cases). MOS-sleep was sensitive to change after treatment with gabapentin; after adjusting, responders (baseline pain reduction >50%) showed a reduction in sleep-problems index of ~25.6 + 14.3 pts versus ~12.1 ± 14.5 pts in non responders (F = 80.5, p < 0.0001). Scoring reduction in summary index and sleep sub-scales correlated significantly with pain improvement (Pearson r-coefficients between 0.428 and 0.116, p < 0.001 for all cases).

CONCLUSIONS: MOS-sleep showed good psychometric properties and was sensitive to changes in patients with Neuropathic pain.

SKIN

USING THE GENERAL PRACTICE RESEARCH DATABASE TO ESTIMATE THE INCIDENCE, PREVALENCE AND MANAGEMENT OF HYPERHYDROSIS IN THE UK

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OBJECTIVES: No epidemiological data are available for hyperhidrosis (excessive sweating) in the UK, although a 2.9% prevalence rate recently was reported in a census-type study in the USA. A retrospective cohort study was designed to estimate age and sex-specific incidence and prevalence in patients presenting to UK general practitioners over 1994–2003. Longitudinal trends including seasonality were examined and patient management was analysed in terms of prescription, referral and test rates.

METHODS: The UK General Practice Research Database (GPRD) includes computerised medical records for 3 million active patients (~5% of UK population) from over 350 practices. GPRD coding dictionaries were reviewed to compile a list of hyperhidrosis-related medical codes (HMC) and prescription codes (HPC). Many HMCs and HPCs are not used exclusively for hyperhidrosis, so three cohort definitions were tested to explore their specificity and sensitivity. Prevalence was estimated by assuming that the condition is chronic with no resolution.

RESULTS: In 2003 the estimated incidence of hyperhidrosis was 0.21% (n = 4267) for patients with an HMC, and 0.08% (n = 1398) for patients with an HMC and an HPC. Incidence doubled over 1994 to 2003; was 1.5 times higher in females than males; and was 1.4 times higher in summer (Apr–Sept) than winter (Oct–Mar). Prevalence was estimated at 1.62% (32,406) in 2003. There were 2831 referrals associated with HMCs over 1994–2003, of which 986 were to pathology, 541 to general medical and only 425 to dermatology. Prescriptions for antiperspirants were written for 6324 patients, but only 713 received more than 5 prescriptions in total over 1994–2003.

CONCLUSIONS: The GPRD is a useful tool to investigate the epidemiology and treatment of hyperhidrosis in the UK. Potential misclassification of cases was explored using different cohort definitions. Referral rates by general practitioners were low and relatively few patients persisted with antiperspirants.

PSN2

COST-EFFECTIVENESS ANALYSIS: ALDARA™ (IMIQIMOD) CREAM, 5% IN THE TREATMENT OF SUPERFICIAL BASAL CELL CARCINOMA IN NORWAY

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OBJECTIVES: The aim of this study was to assess the cost-effectiveness of imiquimod cream 5%, in the treatment of superficial basal cell carcinomas (sBCC) compared to usual care in Norway.

METHODS: The cost-effectiveness analysis was performed using a decision model, comparing imiquimod, a topical immune response modifier, with usual care in a Norwegian practice setting. Estimates of initial clearance and recurrence in sBCC are from randomized clinical trials of imiquimod and from literature reviews supplemented by assessments from structured interviews with clinical dermatologists. RESULTS: Dermatologists reported the distribution of treatment options for sBCC in Norway as surgery (30%), cryosurgery (40%) and photodynamic therapy (30%). A weighted composite outcome of these three alternatives (usual care) was used as basis for the comparison. Adverse events and their consequences in terms of treatment costs were considered in the model. The model estimates of initial clearance with imiquimod compared to usual care in sBCC was 94% vs. 88%. The analysis found imiquimod to be slightly more expensive per patient (NOK133 per year). The incremental cost-effectiveness ratio (ICER) for imiquimod compared to usual care was NOK1973 per recurrence avoided based on a 1-year time perspective. For individual therapy options, imiquimod dominated PDT, was more expensive but with better outcomes than cryosurgery, yet was dominated by excision surgery. CONCLUSION: The total cost of treatment with imiquimod was marginally higher than the weighted average for usual care, but the treatment with imiquimod substantially reduced recurrence of sBCC. Similar to most other measures of effect, there are no general accepted levels for the societies’ willingness to pay for avoided recurrences of sBCC; even so, based on this analysis it is reasonable to conclude that imiquimod provides a cost-effective treatment option for sBCC in Norway.

PSN3

ECONOMIC EVALUATION OF PIMECROLIMUS, A NEW TREATMENT OF CHILDREN WITH ATOPIC DERMATITIS IN HUNGARY

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OBJECTIVE: To assess the costs, consequences and cost-effectiveness of Elidel (pimecrolimus cream 1%) in treatment of children with atopic dermatitis in Hungary.

METHODS: A Markov model for atopic dermatitis developed by the Erasmus University (Rotterdam, The Netherlands) was adapted to the Hungarian health care settings. The model based on a double-blind, multicenter, randomized, parallel-group study. Patients were randomised (2:1) to receive pimecrolimus treatment paradigm (i.e. emollients, pimecrolimus, medium potency topical corticosteroids) or standard of care (emollients, vehicle, medium potency topical corticosteroids). The study was conducted in children and adolescents (2 to 18 years of age). Hungarian cost vectors were calculated by linking severity of disease as defined by Investigator’s Global Assessment (IGA) to average resource use. Resource use was multiplied by drug costs and unit costs as published in official databases.

RESULTS: Pimecrolimus treatment has an
incremental cost of HUF 143,897 over standard care. This additional cost of care resulted in an incremental 0.05 QALY gain over the 6 months period. The incremental cost effectiveness ratio was 2,863,913 HUF/QALY for the pimecrolimus therapy. CONCLUSIONS: Pimecrolimus is more cost-effective than many other health care interventions currently reimbursed by the Hungarian National Health Fund.

COST-EFFECTIVENESS MODEL OF ALDARA®™ (IMIQUIMOD) CREAM, 5% IN SUPERFICIAL BASAL CELL CARCINOMA IN THE NETHERLANDS

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OBJECTIVES: To evaluate short-term and long-term cost-effectiveness of imiquimod versus surgery in the treatment of superficial basal cell carcinoma in The Netherlands. METHODS: A decision analytic model adopting a societal perspective was developed and compared cost and outcomes of imiquimod vs. surgery. The short-term (18 weeks) effectiveness outcome was histological clearance, with sustained clearance the outcome at 3 years. Direct costs included costs of excision and Moh’s surgery, drugs, adverse events, follow-up and transportation. Indirect costs comprise working hours lost due to dermatologist and surgery visits. Data were derived from clinical trials (Imiquimod histological clearance and recurrence rates), Delphi panel (resource utilisation) and published literature (surgery response and recurrence rates). Cost data were taken from official costing guide and tariff lists. Two scenarios were used for calculating surgery costs: 1) micro-costing (using average time and supplies obtained from the Delphi panel), and 2) a Dutch study on the costs of surgery. Long-term costs were discounted 4%. RESULTS: Compared with surgery, short-term savings with imiquimod were €79 and €97 per patient for scenarios 1 and 2 respectively [total costs: €585 vs. €663 and €590 vs. €687]. Histological clearance of 82% for imiquimod and 91% for surgery made imiquimod a cost-effective treatment option. Long-term costs with imiquimod were an extra €115,455,660 and €121,044,840. Treatment with imiquimod showed a 25% reduction in postherpetic neuralgia (PHN). Based on the IMS prescription index, the 2004 incidence of herpes zoster in Germany was 348,000 cases, with 15.7% consecutive cases of PHN under brivudine and 21% PHN cases under aciclovir. Cost data were obtained from public price lists. One therapy cycle with brivudine or aciclovir costs €95.67 and €32.83 respectively; analgesics for PHN cost an average €1500 annually. The study was conducted considering direct costs only. A sensitivity analysis accounted for varying costs for treating PHN and age-dependent PHN incidences. RESULTS: A total of 54,775 PHN cases under brivudine and 73,080 cases under aciclovir were calculated, producing total annual treatment costs of €115,455,660 and €121,044,840. Treatment with brivudine showed a 25% reduction in postherpetic neuralgia (PHN). Based on the IMS prescription index, the 2004 incidence of herpes zoster in Germany was 348,000 cases, with 15.7% consecutive cases of PHN under brivudine and 21% PHN cases under aciclovir. Cost data were obtained from public price lists. One therapy cycle with brivudine or aciclovir costs €95.67 and €32.83 respectively; analgesics for PHN cost an average €1500 annually. The study was conducted considering direct costs only. A sensitivity analysis accounted for varying costs for treating PHN and age-dependent PHN incidences. RESULTS: A total of 54,775 PHN cases under brivudine and 73,080 cases under aciclovir were calculated, producing total annual treatment costs of €115,455,660 and €121,044,840. Treatment with brivudine saved costs of €305.34 per PHN case avoided. The sensitivity analysis considered that 60% of herpes zoster patients are 60 years or older (IMS Disease Analyzer 2002), resulting in different numbers of PHN cases depending on age and antiviral therapy. ICERs of brivudine ranged for the older age group between €694.66 (PHN therapy cost: €500) and –€1805.34 (PHN therapy cost: €3000). Corresponding values for the younger age group were €1827.66 and –€672.34. Both antiviral therapies produced equal annual total therapy costs if PHN therapy amounted to €1200. CONCLUSIONS: Although three times more expensive, brivudine proved cost effective over aciclovir, producing savings if PHN therapy costs were equal to or higher than €1200. Since effective analgesic therapy would cost an average €3000 annually, brivudine may be recommended as first-choice treatment because of its cost-saving potential and convenient once-daily dosage.

COST-EFFECTIVENESS OF BRIVUDINE COMPARED TO ACICLOVIR FOR THE TREATMENT OF HERPES ZOSTER IN GERMANY

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OBJECTIVES: To examine the cost-effectiveness (CE) of brivudine over aciclovir in the treatment of herpes zoster in Germany. METHODS: This CE analysis used effectiveness data from a double-blind RCT comparing brivudine (125 mg p.o. once daily) with aciclovir (800 mg p.o. five times daily). Treatment with brivudine showed a 25% reduction in postherpetic neuralgia (PHN). Based on the IMS prescription index, the 2004 incidence of herpes zoster in Germany was 348,000 cases, with 15.7% consecutive cases of PHN under brivudine and 21% PHN cases under aciclovir. Cost data were obtained from public price lists. One therapy cycle with brivudine or aciclovir costs €95.67 and €32.83 respectively; analgesics for PHN cost an average €1500 annually. The study was conducted considering direct costs only. A sensitivity analysis accounted for varying costs for treating PHN and age-dependent PHN incidences. RESULTS: A total of 54,775 PHN cases under brivudine and 73,080 cases under aciclovir were calculated, producing total annual treatment costs of €115,455,660 and €121,044,840. Treatment with brivudine saved costs of €305.34 per PHN case avoided. The sensitivity analysis considered that 60% of herpes zoster patients are 60 years or older (IMS Disease Analyzer 2002), resulting in different numbers of PHN cases depending on age and antiviral therapy. ICERs of brivudine ranged for the older age group between €694.66 (PHN therapy cost: €500) and –€1805.34 (PHN therapy cost: €3000). Corresponding values for the younger age group were €1827.66 and –€672.34. Both antiviral therapies produced equal annual total therapy costs if PHN therapy amounted to €1200. CONCLUSIONS: Although three times more expensive, brivudine proved cost effective over aciclovir, producing savings if PHN therapy costs were equal to or higher than €1200. Since effective analgesic therapy would cost an average €3000 annually, brivudine may be recommended as first-choice treatment because of its cost-saving potential and convenient once-daily dosage.

EPIDEMIOLOGY AND MANAGEMENT OF EXTERNAL GENITAL WARTS (EGW) IN FRANCE

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OBJECTIVES: To estimate the annual number and frequency of medical consultations for EGW in dermatology, gynecology, proctology and in Sexually Transmitted Disease Clinics (STDC) in France. METHODS: This is an observational study with patients recruited prospectively from representative physicians samples. Data related to the management of EGW was retrieved for all patients suffering from EGW and willing to take part in the study, during one 2-week period in June 2004. RESULTS: The patients (n = 308) were recruited by the physician sample that included 198 gynecologists, 102 dermatologists, 50 proctologists and 122 physicians working in 51 STDCs. The annual number of consultations for EGW is estimated at 423,751 (36% for dermatologists, 53% for gynecologists, 6% for proctologists, 5% in STDC). The annual number of visits for a new episode of EGW amounted to 160,247, representing 38% of the consultations. The annual frequency of consultation is 1.1 to 1.4% for dermatologists and gynecologists and 4.4% to 5.1% for proctologists. Almost half of the patients (43%) were seeking care because of an EGW recurrence. EGW are treated using pharmacological treatments and in-office procedures (electrocoagulation, cryotherapy, surgery, laser). Imiquimod treatment is used as first-line therapy is 40% of patients with a first episode of EGW and in 38% of patients presenting for an EGW recurrence. CONCLUSION: Gynecologists are the most consulted specialists for EGW and proctologists have the highest annual frequency of consultation. Various treatments are used to manage EGW patients.

EXAMINATION OF ADHERENCE TO PHARMACOTHERAPY TREATMENT GUIDELINES IN PATIENTS WITH PSORIASIS IN THE UNITED STATES
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OBJECTIVE: The American Academy of Dermatology guidelines provide a standard for appropriate pharmacological therapy in psoriasis treatment. This survey study examined if patients with severe psoriasis were on appropriate medications.
METHODS: A survey for this study was conducted by the National Psoriasis Foundation between November and December 2004. A total of 400 interviews (telephone n = 188 and online n = 212) were held with psoriasis and psoriatic arthritis respondents. The respondents were asked questions regarding their psoriasis. Some of these pertained to the type of medication participants were currently using. Respondents chosen from a random sample were screened for a mix of gender and age. Severity was categorized according to self-reported body surface area involvement. Descriptive data were generated to determine demographic characteristics of study population and prescription patterns. RESULTS: Approximately 55% of the population had severe psoriasis. Almost 50% of the population was on topical therapy while 32% of the study sample was using systemic medications for their psoriasis. About 19% of the study population indicated that they were currently not on any treatment medications, and other patterns of use did not significantly differ by age or gender. CONCLUSIONS: Overall, patients had approximately two targeted prescriptions fills over a one-year index period. Rates of prescription fills did not differ by class of medication, patient age, or gender. Assumptions that females or older patients are more compliant with their topical prescription acne regimens were not supported by our findings.

THE RISE OF THE GENERIC DRUG MARKET: IMPLICATIONS FOR THE TREATMENT OF SKIN DISEASES
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OBJECTIVE: In spite of a significant growth in comparatively inexpensive generic medications, the bioavailability concerns associated with dermatological drugs make the generic substitution practices controversial for skin conditions. The objective of this study was to analyze the trends in branded and generic drugs used in dermatological conditions from 1990–2003. It also analyzed the overall trend in branded and generic drugs in the United States. METHODS: A number of summary databases including the National Ambulatory Medical Care Survey (NAMCS), NDC Health Corporation’s Pharmaceutical Audit Suite (PHAST) database, and the Food and Drug Administration resources from 1990–2003 were analyzed to obtain and compare information on the manufacturing, production, patents and prescription of branded and generic drugs. These data were examined to appropriate pharmacotherapy to avoid further worsening of health status of the patients involved.
examine which drugs had generic equivalents available for each year. The Pharmaceutical Red Book was referred for drug pricing and product information. RESULTS: Generic drugs accounted for almost half of total prescription drugs dispensed in 2003 as compared to 19% in 1983. In 1990, two of the ten drugs prescribed in outpatient clinics were generics, which rose to six in 2003. Out of ten top-selling drugs, six drugs will lose their patents in next five years. In 1990, none of the top ten dermatological drugs were generics. With few drugs losing their patents since 1990 (e.g. Retin-A®), two out of top ten dermatological drugs were generics in 2003. CONCLUSIONS: This study finds an increasing trend in the availability of generic medications. However, concerns regarding the bioavailability of generic equivalents used in dermatological conditions may limit their use. However, increased pressure from managed care organizations to prescribe inexpensive generics, overall growth in generic drug market, and anticipated drug patent expirations may influence prescribing patterns of these medications.

**PSN11**

**PREDICTORS OF HEALTH CARE OUTCOMES AND COSTS RELATED TO MEDICATION USE IN PATIENTS WITH ACNE IN THE UNITED STATES**

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OBJECTIVE: To investigate the relationship between health status, costs linked with the treatment of acne in the United States and aspects related to medication use. METHODS: The United States Medical Expenditure Panel Survey (MEPS) database was analyzed for a cohort of people with acne. Patients for this study were identified using the ICD-9 (International Classification of Diseases, 9th revision) code “706” for acne vulgaris and similar conditions (The MEPS dataset uses only the first three digits of the ICD-9 codes to identify disease states). Records of medical events were obtained using this ICD-9 code for acne and the receipt of medication for acne. This cross sectional study obtained costs, demographics, health care service utilization and clinical patient variables from the MEPS database. The subjects were divided into categories depending on type of medications used, mainly, oral antibiotics, oral retinoids, oral contraceptives, topical antibiotics, topical retinoids and oral contraceptives. The EuroQOL (EQ-5D) scores available in MEPS for subjects 18 years and older were used for obtaining health status information for these patients. Indices for medication adherence and comorbidities were also calculated using the data from the MEPS. Multivariate weighted analysis was performed on data for approximately 5 million patients (weighted sample size). RESULTS: Nearly 70% of the patients used some type of medication for acne. Acne-related medication accounted for approximately 36% of the total acne related health care costs, with an average of 2 annual acne prescription refills. Increased number of refills of acne specific drugs was associated with an improvement in health status (p < 0.05). Increased office based visits were the only predictors of higher acne related health care costs (p < 0.01). CONCLUSIONS: Adherence to acne medications is an important component of better health status. Pharmacological treatment of acne does not significantly add to acne-related health care costs.

**PSN12**

**NAIL PSORIASIS: ELABORATION OF A SCALE FOR FUNCTIONAL DISCOMFORT**

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OBJECTIVES: To validate a scale for functional discomfort due to nail psoriasis. The questionnaire will have to be adapted both in the case of toe or finger nail psoriasis. The measured criterion will be unidimensional and related to the bother caused by nail psoriasis in daily life. METHODS: The scale was developed according to the international recommendations on quality of life. In October 2004, a questionnaire was sent to 4000 members, selected by drawing lots, among the French patients support group (APLCP). The first step of the process has led to the selection of 10 items related to functional discomfort induced by nail psoriasis. RESULTS: In total, 795 questionnaires concerning individuals affected by nail psoriasis were analysed. Validation analyses included the 10 selected items. Questionnaire’s contents were coherent with the a-Cronbach coefficient equaling 0.88. The unidimensional feature of the questionnaire was verified: the analysis in principal components revealed that 49% of the total variance was explained by one component. The DLQI specific to dermatological pathologies was also given and enabled a comparison with the scale. Pearson’s correlation coefficient between both scales was 0.48. The severity of the affection assessed through the DLQI evolved in the same way as the evaluation for the “Nail Psoriasis” scale. A test-retest performed on a sample of 15 individuals showed that the scale could be reproduced with an intra-class correlation coefficient of 0.82 between 2 administrations. CONCLUSION: The “Nail Psoriasis” scale is simple to use and easy to give to the patient. The qualitative features which must be found in a quality of life scale have been checked: comprehensibility, reliability and validity. The scale will have to be used during clinical trials in order to demonstrate its ability in measuring change in condition (before and after treatment).

**PSN13**

**REFINEMENT AND REDUCTION OF THE IMPACT OF PSORIASIS QUESTIONNAIRE: CLASSICAL TEST THEORY VS RASCH ANALYSIS**

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Quality of life instruments are increasingly important in assessing disease severity. However, some of these measurements have been developed on a more or less ad hoc basis. Although not well standardised, psychometric analyses can be used to re-test, refine and shorten existing quality of life instruments more strictly. OBJECTIVES: To psychometrically test and refine the Impact of Psoriasis Questionnaire (IPSO) and to compare the results of two different statistical approaches. METHODS: Among 792 psoriasis patients who were included in the PUVA Follow Up Study, we used Classical Test Theory (CTT) and Rasch analysis to test and optimise the IPSO. Thereafter, two shortened versions of the IPSO derived from these models were compared. RESULTS: CTT analyses of the original IPSO demonstrated suboptimal item performance for 6 of 16 items and inappropriate subscaling. In contrast to the original 4 subscales, factor analysis of the CTT version yielded 3 subscales (mental functioning, mental wellbeing and stigmatisation). The Rasch approach, which included ordering of thresholds, differential item functioning and item fit, resulted in an unidimensional 11-
item questionnaire. Although the two new versions of the IPSO shared only 6 items, both reflected the original IPSO well. However, several arguments such as lower correlation coefficients, higher Chronbach’s alpha’s, ordered thresholds, unidimensionality and less differences among subgroups of patients suggested that the Rasch version of the IPSO may be the preferred instrument to use. CONCLUSION: The IPSO can be improved and shortened and the Rasch reduced version of this instrument is likely to assess the psychosocial impact of moderate to severe psoriasis on patients’ lives best because it is a short, reliable and unidimensional measurement.

PSN14
CHANGES IN FUNCTIONAL ABILITY AS MEASURED BY DLQI IS CONSISTENT WITH CLINICAL RESPONSE IN MODERATE TO SEVERE PLAQUE PSORIASIS PATIENTS TREATED WITH ADALIMUMAB
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OBJECTIVES: Because of physical limitations associated with psoriasis, dermatologic-related functional ability can be an important endpoint to assess effectiveness of treatment. This study was performed to assess the correlation between clinical efficacy and improvement in functional ability in moderate to severe plaque psoriasis patients treated with adalimumab for 12 weeks. METHODS: In a randomized, double-blind, placebo-controlled, multi-center clinical trial for the treatment of moderate to severe plaque psoriasis with adalimumab, the correlation between clinical efficacy and change in dermatology-specific functional limitations was evaluated. Clinical efficacy was assessed using the Psoriasis Area and Severity Index (PASI) and the Physician’s Global Assessment (PGA) of Disease Severity. The Dermatology Life Quality Index (DLQI) was used to measure dermatologic-specific functional limitations. Mean changes in DLQI scores were evaluated for patient responses between baseline and 12 weeks. RESULTS: The DLQI was shown to have good reliability, and to demonstrate responsiveness to change with the subjects’ PASI and PGA scores from baseline to week 12. The correlation between DLQI and PASI response was 0.69 (p < 0.0001), and between DLQI and PGA response was 0.71 (p < 0.0001). Mean change in DLQI was +12.17 points in patients who achieved significant clinical benefit (>PASI 75 response) vs. +1.77 points in nonresponders (less than PASI 50 response). CONCLUSIONS: DLQI was demonstrated to be highly responsive to clinical changes in patients with moderate to severe plaque psoriasis. The level of agreement suggests that adalimumab may be highly effective in improving both the physical disease manifestations and functional ability of patients with severe to moderate plaque psoriasis.

PSN15
QUALITY OF LIFE IMPROVEMENT AS MEASURED BY EQ-5D IS CONSISTENT WITH CLINICAL RESPONSE IN MODERATE TO SEVERE PLAQUE PSORIASIS PATIENTS TREATED WITH ADALIMUMAB
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OBJECTIVES: Because moderate to severe psoriasis can negatively impact patients’ daily living, quality of life can be an important parameter to assess in determining effectiveness of treatment. This study was performed to assess the correlation between clinical efficacy and quality-of-life improvement in moderate to severe plaque psoriasis patients treated with adalimumab for 12 weeks. METHODS: In a randomized, double-blind, placebo-controlled, multi-center clinical trial for the treatment of moderate to severe plaque psoriasis with adalimumab, the correlation between clinical efficacy and quality of life was evaluated. Clinical efficacy was assessed using the Psoriasis Area and Severity Index (PASI) and the Physician Global Assessment (PGA) of disease severity. Euro-QOL 5D (EQ-5D) visual analogue scale was used to assess general quality of life. Mean changes in EQ-5D scores were evaluated for patient responses between baseline and 12 weeks. RESULTS: EQ-5D demonstrated responsiveness to changes in clinical efficacy. The correlation between EQ-5D and PASI response was 0.57 (p < 0.001), and between EQ-5D and PGA response was 0.44 (p < 0.001). Mean change in EQ-5D was 15.69 points in patients who had achieved significant clinical benefit (>PASI 75 response) vs. 1.92 points in non-responders (<PASI 50 response). CONCLUSION: EQ-5D was demonstrated to be responsive to clinical changes in patients with moderate to severe plaque psoriasis. The level of agreement suggests that adalimumab may be highly effective in improving both the physical disease manifestations and quality of life of patients with moderate to severe plaque psoriasis.

PSN16
NAIL PSORIASIS: IMPACT ON QUALITY OF LIFE
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OBJECTIVES: The aim was to evaluate the consequences of psoriasis on quality of life and pay particular attention to those with nail psoriasis. METHODS: In October 2004, a questionnaire was sent to 4000 members, selected by drawing lots, among the French patients support group (APLCV). The first part concerned the social and demographic characteristics of the patients, psoriasis localization and psoriasis age. The second part was dedicated to patients with nail psoriasis. The last part was the Dermatology Life Quality Index (DLQI) which was filled in by all patients. RESULTS: A total of 1309 questionnaires were returned with 57.3% of women and 42.7% of men. Mean age was 51.8 years (SD = 16.2). Psoriasis affected the nails for 60.8% of subjects (16.4% for the hands only, 9.4% for the feet only and 35% for both the hands and feet). The DLQI score was available for 1111 individuals with an average score of 8.3 (SD = 6.5). It was significantly related to gender with a score of 7.6 (SD = 6.2) for men and 9 (SD = 6.8) for women (p = 0.033). It was also significantly related to age, the younger the individuals, the more quality of life was affected: 9.4 (SD = 6.6) for the group “39 years old and under”, 9.2 (SD = 6.7) for the group “40–54 years”, 7.8 (SD = 6.6) for the group “55–64 years” and 6.7 (SD = 5.6) for the group “65 years old and above” (p < 0.0001). Quality of life was also linked to the localization of the psoriasis. CONCLUSIONS: Quality of life assessed through the DLQI shows an important impairment in the study population with a mean score of 8.3. In comparison with other studies using the DLQI, a score of 8.9 was found for severe psoriasis, 12.5 for atopic dermatitis and 4.3 for acne.

PSN17
VALIDATION OF THE ITALIAN VERSION OF THE INFANTS’ DERMATITIS QUALITY OF LIFE & FAMILY DERMATITIS INDEXES
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OBJECTIVE: To assess feasibility, convergent validity and reliability of the Italian version of the Infants’ Dermatitis Quality Of Life Index (IDQOL) and the Family Dermatitis Index (FDI).

METHODS: Parents of 21 children with atopic dermatitis were enrolled at the Policlinico Hospital in Modena and interviewed on two separate occasions (6/7 days between the interviews). Feasibility was tested by computing the number of missing answers; convergent validity was tested by testing correlation between the scores; reliability was tested in terms of internal consistency and test-retest reproducibility. RESULTS: All the interviewed persons answered to every question. The median severity score was 1.00 (0–3), with no significant differences between the two interviews and good level of agreement (weighted kappa = 0.604). The IDQOL median score was 9.00 (from 7 to 17, in the first, to 16 in the second interview), with no significant differences between the two interviews; Cronbach’s alpha >0.7. Intraclass Correlation Coefficient (ICC) between the first and second assessment =0.95; presence of biases excluded (Bland & Altman method); the coefficient of agreement for each IDQOL item ranged from 0.632 (‘mealtimes’) to 1.000 (‘play’, “family activities”). The median DFI score was 5 (from 0 to 19, in the first, to 18, in the second interview), with no significant differences between the two interviews, Cronbach’s alpha >0.9, ICC between the first and second assessment =0.99, the presence of biases excluded; coefficients of agreement computed for each item ranged from 0.638 (‘feeding’) to 0.908 (‘expenditure’). The convergent validity between these instruments was satisfactory, with high and statistically significant correlation coefficients. CONCLUSIONS: The Italian version of IDQOL and DFI is feasible, valid and reliable. These instruments can be used to evaluate QOL of young patients with atopic dermatitis and their families and can be used to assist decisions on treatment and health-care resource allocation.

ATOPIC DERMATITIS: IMPACT ON SEXUALITY

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OBJECTIVES: Assess the impact of atopic dermatitis on the patient’s sexuality. METHODS: Atopic patients consulting spontaneously their dermatologist were given two questionnaires: the first one was completed by the patient himself/herself and the second, by the patient’s partner, if this was the case. Patients were asked to fill in a questionnaire on sexuality and two questionnaires on quality of life: a generic questionnaire (SF-12) and a specific one for skin pathologies (DLQI). Partners were asked to complete the same questionnaire on sexuality as well as the SF-12 questionnaire. The dermatologist was asked to assess AD severity using the SCORAD index. RESULTS: Sex ratio for our population (n = 266) was 34.2% of men versus 65.8% of women. Mean age of our population was 33.4 years old (SD:12). The average number of years with atopic dermatitis was 18 years (SD:13.8). Severity of AD was determined by the dermatologist using the SCORAD index. According to this classification, 1.6% of our population presented a mild form of atopic dermatitis, 44.1% a moderate form and 54.3% a severe form. Only 10.5% of interviewed subjects said that their atopic condition had never affected their physical appearance. They were also 18.3% to speak about their partner’s fear of catching the disease. For 57.5% of the subjects, atopic dermatitis resulted in, at least some of the time, a decrease in sexual desire. Aspect of AD (dryness, redness) was affecting their sexuality at least from time to time for 55.4% of them. Regarding treatment, 46.8% declared an impact of the latter on their sexuality. CONCLUSIONS: Results of this study underline the sizable impact of atopic dermatitis on sexuality. Over one patient in two reported a decrease in sexual desire. AD should hence be more considered as a public health problem so as to provide patients with better global management.

QUALITY OF LIFE OF PAEDIATRIC PATIENTS WITH ATOPIC ECZEMA AND THEIR FAMILIES

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OBJECTIVE: Evaluation of Health-Related Quality-of-Life (HRQoL) of atopic eczema (AE) in pediatric patients and their families. METHODS: We conducted a naturalistic, multicenter Cost-Of-Illness study. Data on AE patients with flare-ups was collected: socio-demographic, clinical, economic, HRQoL and preferences towards pharmacological treatment. The following results pertain to the children’s and their families’ HRQoL. CAREGIVERS’ HRQoL was evaluated with the EuroQol; disease-specific questionnaires were used to evaluate families’ wellbeing (Dermatitis Family Impact, DFI) and patients’ HRQoL: Infant’s Dermatitis Quality Of Life Index (IDQOL) for patients aged 2–4 years, Children’s Dermatology Life Quality Index (CDLQI) for patients aged 5–16 years (in every scales, 0 corresponds to good and 30 to bad quality of life). Descriptive analyses and tests on possible associations between children’s and families HRQoL were conducted. RESULTS: A total of 83 children with their caregivers (97.5% parents) were enrolled; 47% patients were aged 2–4 years, 20.5% were 5–7 years old, 32.5% were 8–16 years old. At the enrollment the median IDQOL was 8 (0–21), the median CDLQI was 4 (0–21). The median DFI was 8 (0–21). No more than 5% of caregivers reported problems with the EuroQol domains “mobility”, “self-care”, “usual activities”, 35.4% reported problems with “pain/discomfort”, 28.4% problems with “anxiety/depression”. DFI score was significantly correlated with IDQOL and CDLQI (p < 0.0001) and all these scores were moderately related to the caregivers’ perception of “anxiety or depression” (p < 0.10). Patients and families’ wellbeing was worse in the group of patients aged 2–4 years old (p < 0.05), while it was similar among patients aged 5–16 years. CONCLUSION: This study allowed us to evaluate the HRQoL impairment attributable to AE and the repercussions on families’ wellbeing. Good levels of validity and reliability of the Italian version of the disease-specific questionnaires used in this study was confirmed.
tively. Feasibility was tested by computing the number of missing answers; content validity was tested by computing the frequency of questions considered as “not relevant” by the patients; reliability was tested in terms of internal consistency and test-retest reproducibility. RESULTS: No missing answers were present in both the first and the second interview. The frequency of “not relevant” questions was 5.4% on first and 7.7% on second interview. The Cronbach’s alpha coefficient for internal consistency was 0.787 on the first and 0.828 on the second interview. Regarding reproducibility, the intraclass correlation coefficients for the total score was 0.983 (p < 0.0001), and the method by Bland & Altman excluded the presence of biases for this score. The weighted kappa coefficient of agreement calculated for each question ranged from 0.644 (“social & leisure”) to 0.984 (“sport”). CONCLUSION: The Italian version of the DLQI questionnaire is feasible, valid and reliable. This instrument can be used to evaluate Health Related Quality of Life in adult people affected by skin conditions and can be used to assist decisions on treatment and on health care resource allocation.

IMPACT OF CORTICOSTEROID-SPARING EFFECT OF AN EMOLLIENT MILK ON FAMILY’S QUALITY OF LIFE OF INFANTS AFFECTED BY ATOPIC DERMATITIS

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OBJECTIVES: The aim of this open label, multicentric study was to evaluate the corticosteroid-sparing effect of an emollient milk containing Oat Rhealba® extracts on quality of life of family in a group of infants aged less than 1-year old with Atopic Dermatitis (AD). METHODS: Children with mild to moderate AD (SCORAD index ≥20 and ≤70) were randomised in two parallel groups: a group with the emollient milk applied twice daily, and a group receiving no emollient. The use of topical corticoids (class II & III non-fluorinated desonide corticoids) was allowed in the event of inflammatory flare-ups in both groups. The primary end point was measurement of the total amount of topical steroids used (grammes) at six weeks. The secondary end points were, clinical rating changes (SCORAD index), and Quality of Life (QoL) using DFI scale. The DFI scale (Dermatitis Family Impact questionnaire) was completed by the parents and aimed at measuring the impact of dermatosis on the quality of life of children affected and their family. RESULTS: DFI total score and all its dimensions were comparable upon inclusion between treated and non treated groups (total score: 5.30 (5.23) versus 6.42 (5.32) respectively). Improvement was noted for both groups. A significant improvement was only noted in the treated group for the items about sleep (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?) and about consequences (In the past seven days, has the child's eczema had any effect on the sleep of other family members?) and about consequences (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?). Improvement was noted for the items about sleep (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?) and about consequences (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?). Improvement was noted for the items about sleep (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?) and about consequences (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?). Improvement was noted for the items about sleep (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?) and about consequences (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?). Improvement was noted for the items about sleep (In the past seven days, has the child’s eczema had any effect on the sleep of other family members?). CONCLUSION: According to the SF-12 scale, the higher the sensitivity, the more affected is quality of life. Nevertheless, the HAD-Depression scale, which measures depressive symptomatology, did not bring to the fore any relation with skin sensitivity.

SENSITIVE SKIN: IMPACT ON QUALITY OF LIFE

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OBJECTIVES: To assess among the French adult population, the impact of sensitive skin on quality of life using two validated questionnaires, the SF-12 and HAD-Depression scale.
ATOPIC DERMATITIS: A CONJOINT ANALYSIS PILOT STUDY
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OBJECTIVES: Atopic dermatitis (AD) is a chronic disease frequent in childhood. The treatment is based on regular moisturizing of the skin, information to the parents on the chronic course with recurrent flares, topical anti-infectious therapy for superinfections and colonization of the skin by staphylococcus aureus, and topical steroids. The immuno-modulatory macrolides (tacrolimus and pimecrolimus) represent a new alternative to topical steroids. To establish the importance of different characteristics of treatment we would apply a conjoint analysis exercise. Conjoint analysis is a technique to elicit preferences toward atopic dermatitis treatment and can help planning optimal health care and guiding therapeutic decisions. The aim of this pilot study is to establishing which characteristics patients and caregivers consider important in atopic dermatitis treatment to design conjoint analysis scenarios. METHODS: A focus group identified eight treatment characteristics: Long term adverse events, short term local adverse events, time to response, length of response after treatment, distribution mode, pharmaceutical dosage form, route of administration, frequency of applications. Caregiver (all parents) gave their opinion rating each characteristic from 0 (not important) to 100 (very important), moreover they could suggest other characteristics.

RESULTS: Twenty parents of children with mild or severe atopic dermatitis were enrolled. The most important characteristic considered was: “length of response after suspension treatment” (mean = 90), followed by “long term adverse events” (mean = 85), “short term local adverse events” (mean = 82), “distribution mode” (mean = 75), “time to response” (mean = 67). None suggested other characteristics. In order to evaluate willingness to pay we will add “out of pocket” costs. CONCLUSIONS: This pilot study allowed us to identify aspects considered important by parents for their children treatment. These results will help us to design a Conjoint Analysis aimed at evaluating utilities and monetary value of these aspects.

ADULTS WITH ATOPIC DERMATITIS: QUALITY OF LIFE IMPACT
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OBJECTIVES: The aim of this study was to evaluate the impact of atopic dermatitis (AD) on adults’ quality of life in France. METHODS: Atopic patients coming spontaneously to their dermatologist using the SCORAD index: 1.6% present a mild form, 44.1% a moderate form and 54.3% a severe form. Mean DLQI total score was 8.8 (sd 5.5) with no significant difference between men, 8.6 (sd 5.3), and women, 8.8 (sd 5.6). According to the SCORAD index, mean DLQI scores were 6.8 (sd 4.4) for group gathering “mild” and “moderate” and 10.2 (sd 5.6) for “severe” group. Although Physical dimension (PCS-12) of SF-12 was not impaired (mean score 50.7, sd 7.3), the Mental dimension (MCS-12) was very low (mean score 39.5, sd 10.6). According to the SCORAD, MCS-12 scores were respectively 42.8 (sd 9.8) and 36.5 (sd 10.1) for “mild or moderate” group and “severe” group (p < 0.0001). CONCLUSIONS: The quality of life of patients suffering from Atopic Dermatitis was impaired. DLQI mean score was 8.8. This study especially highlights the impact of AD on patient’s mental health (MCS-12 mean score =39.5), demonstrating the importance of psychological interventions in addition to dermatological management.

STROKE

PREDICTORS OF STROKE RISK ASSOCIATED WITH ATRIAL FIBRILLATION: RESULTS FROM A LARGE COMMERCIALLY INSURED US POPULATION
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OBJECTIVES: Atrial fibrillation (AF) remains a major health problem affecting 2.2 million adults in the U.S. with an estimated cost burden of $3 billion annually. AF is also a major and preventable cause of transient ischemic attack (TIA) and stroke. The purpose of this research was to identify demographic, clinical, and treatment factors associated with cerebrovascular morbidity in AF and related medical costs. METHODS: Continuously benefit-eligible patients with a “new” diagnosis of AF (ICD-9-CM 427.3x) identified from a large administrative claims database (N = 43 million) were identified between 1 Jan 2000–31 Dec 2001 with a variable follow-up period of ≤6 months. Patients were stratified into cohorts based on initial treatment: no-treatment (n = 40,489), warfarin (n = 6846) and other anticoagulants (n = 868). Clinical and demographic factors were assessed using Cox proportional hazards regression. Medical costs were examined using a generalized linear model with a gamma distribution and log-link function to approximate the non-normal distribution related to health care expenditures for both AF and non-AF costs. RESULTS: Prior stroke was associated with a 100 fold greater risk of subsequent stroke (HR = 113.39, 95% CI = 103.22, 124.56) compared to no such history (baseline risk = 4.7% over ~20 months of follow-up). Increased risks also were observed with advanced age, prior TIA, left ventricular dysfunction, high stroke risk (multiple co-morbidities) and hypertension. Lower stroke risk was observed with patients who received antithrombotic medication (HR = 0.68, 95% CI = 0.54, 0.85) as well as those receiving cardioversion or ablation. Mean (±SE) AF-related and unrelated costs were $10,355 (±$129) and $7,661 (±$126) respectively. CONCLUSIONS: These data are consistent with the clinical and demographic predictors of stroke/TIA. Use of antithrombotic medication appears to confer an independent protective effect on stroke risk. However, the costs associated with AF remain high; more aggressive AF management is necessary improve clinical outcomes and reduce medical costs.

COST-EFFECTIVENESS OF LOSARTAN IN PATIENTS WITH HYPERTENSION AND LVH: AN ECONOMIC EVALUATION FOR THE NETHERLANDS BASED ON THE LIFE-STUDY
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OBJECTIVES: The Losartan Intervention For Endpoint Reduction (LIFE) in hypertension study was a randomised, double-blinded trial comparing effects of losartan with atenolol on cardiovascular morbidity and death. A population of 9193 hypertensive patients with left ventricular hypertrophy (LVH) in different countries was studied. As compared to atenolol, losartan reduced the combined risk of cardiovascular morbidity and mortality by 13% (p = 0.021), and reduced risk of stroke by 25% (p = 0.001), despite comparable blood pressure control. Our objective was to conduct a cost-effectiveness analysis of losartan compared with atenolol from the Dutch health care perspective. METHODS: Utilisation of losartan and atenolol within the trial period and an estimation of direct medical costs of stroke for The Netherlands were combined with estimates of reduction in life expectancy through stroke. Medication cost and stroke incidence during 3.5 years of patient follow-up were estimated separately, adjusted for the baseline degree of LVH and Framingham risk score. To estimate lifetime stroke costs, the cumulative incidence of stroke was multiplied by the lifetime direct medical costs attributable to stroke. All costs in 2004 Dutch prices were discounted at 4%, and effects at 1.5% (new guideline). RESULTS: Prevention of stroke resulted in a gain of 5.1 discounted life years. As a consequence, losartan treatment resulted in 0.081 life years gained per patient. Losartan reduced stroke related cost by €946. After inclusion of study medication cost, net cost per patient was €237 higher for losartan than atenolol. The net cost per life year gained was €2926 which is below the Dutch pharmacoeconomic threshold of €20,000/LYG for accepting interventions. The corresponding probability of a cost-effectiveness ratio below the Dutch threshold was 0.96. CONCLUSIONS: In The Netherlands, treatment with losartan compared with atenolol is a cost-effective intervention based on the reduced risk of stroke observed in the LIFE trial.

CLOPIDOGREL VERSUS ASPIRIN IN HIGH-RISK PATIENTS WITH RECENT ISCHEMIC STROKE OR TRANSIENT ISCHEMIC ATTACK: COST-EFFECTIVENESS ANALYSIS IN ITALY

OBJECTIVES: To compare total costs of the Handmaster treatment as addition to current standard treatment of post stroke patients with the costs of the current standard treatment alone. METHODS: A health economic model was used to perform a cost-consequence analysis in order to determine cost savings resulting from the clinical effects of the Handmaster. The patient population consisted of severe patients with a score of 4 or 5 according to the Modified Ashworth Scale and with a non-functional upper extremity. The data sources were published literature, including the Handmaster clinical trials, Delphi panel and official price/tariff lists. The primary perspective of the study was that of the health insurer in The Netherlands. RESULTS: The costs of treatment with the Handmaster consist of purchasing and service costs. Linear depreciation was applied to the purchase costs. The use of the Handmaster resulted in net cost savings of €320 and €477, respectively at the end of year 1 and over the 3-year period. Sensitivity analysis showed that outcomes for the model were most sensitive to frequency and intensity of physiotherapy. CONCLUSION: Although treatment with the Handmaster requires an initial investment, purchase and service costs are largely compensated by saving of costs in other components of the regular medical care in the chronic phase post stroke.

COST AND OUTCOMES AFTER FIRST STROKE HOSPITAL ADMISSION: A LONGITUDINAL STUDY USING ADMINISTRATIVE DATABASES

OBJECTIVE: To assess the economic and epidemiologic impact of stroke in Friuli Venezia Giulia (FVG) a region of approximately 1.2 million inhabitants in the north-eastern Italy. METHODS: All residents of FVG are registered in to Regional Health Service (RHS) database, which keeps tracks of the use of medical care admissions and reimbursement purposes. We selected residents of FVG who had during year 2000 a first stroke hospital admission and we followed them up till death, or December 31, 2004. (we a priory excluded people who during the period 1995–1999 had a previous CVD event). Mortality was investigated by collecting information from Regional Citizen Register file. We obtained information on medical costs from electronic databases of prescriptions, hospitalizations, visits and diagnostic examinations in FVG. Direct medical costs were quantified in the perspective of the RHS and are expressed in Euro 2005. RESULTS: We enrolled 936 patients with incident stroke (mean age 77 ±
PST6
FACTORS RELATED TO LONGER HOSPITAL STAY AFTER FIRST-EVER ISCHEMIC STROKE
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OBJECTIVES: To assess factors influencing acute hospitalization for patients with first-ever ischemic stroke in Taiwan.
METHODS: Data were prospectively collected from 360 first-ever ischemic stroke patients consecutively admitted to a medical center within 48 hours after symptom onset. Longer stay was defined as length of stay (LOS) >7 days after admission in department of neurology for acute care. The association between demographic characteristics or clinical variables and LOS was examined using multivariate logistic regression analysis. Discrimination of the model was assessed by the area under the receiver operating characteristic curve, and calibration was assessed using goodness of fit test. RESULTS: Patients (58% male) had mean age 64.9±12.7 (range, 18 to 93) years. Median National Institutes of Health Stroke Scale (NIHSS) score at admission was 6 (25th to 75th percentile, 3 to 12), median modified Barthel Index (MBI; on a scale of 0 to 20) at admission was 12 (25th to 75th percentile, 5 to 16). The LOS was >7 days in 169 (47%) patients. Male sex (odds ratio [OR], 1.7; 95% CI, 1.0 to 2.8), baseline NIHSS score 7–15 (versus 0–6) (OR, 2.9; 95% CI, 1.5 to 5.7), baseline NIHSS score ≥16 (versus 0–6) (OR, 3.1; 95% CI, 1.3 to 7.4), baseline MBI ≥12 (OR, 0.5; 95% CI, 0.3 to 1.0), and small vessel occlusive subtype (OR, 0.35; 95% CI, 0.2 to 0.6) were independent predictors of longer stay. Goodness-of-fit test (Hosmer-Lemeshow test) was not significant (P = 0.49), indicating adequate fitness. The model’s discrimination was adequate with an under the curve area (receiver operating characteristic curve) of 0.776.
CONCLUSIONS: Stroke imposes a large social and economic burden on NHS and society because of the large number of hospitalisation and the high rate of mortality. Future investigations will be conduct to assess the relationships between comorbidity, costs, drug therapy and survival.

PST7
DO PATIENTS WITH ATRIAL FIBRILLATION RECEIVE APPROPRIATE STROKE PREVENTION THERAPY IN PRACTICE?
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OBJECTIVES: Clinical practice guidelines and several clinical trials support the use of warfarin for stroke prevention in most patients with atrial fibrillation (AF). Warfarin should not be used in cases where contraindications exist or the risk of stroke is low. It is not clear what proportion of are there patients at risk of stroke and without contraindications do not receive warfarin in practice. METHODS: A MEDLINE search was conducted (1966–2001) using the MeSH terms anticoagulants, AF, warfarin and cerebrovascular disorder (prevention and control). Practice-based studies reporting the proportion of patients eligible to receive warfarin (i.e., no contraindications to thromboprophylaxis and at moderate or high risk of stroke) who actually received warfarin for stroke prevention in AF were retrieved.
RESULTS: Twenty-one practice-based studies were found, of which 3 were excluded because the patient population or centre/setting significantly varied from the other identified studies. Approximately 47–89% of patients enrolled in the remaining 18 studies were eligible for stroke prevention. Only 15–64% of eligible patients received warfarin and 15–56% did not receive any form of stroke prevention therapy at all (i.e., no warfarin or antiplatelet agent).
CONCLUSIONS: Despite the publication of multiple clinical trials and practice guidelines supporting the use of warfarin for stroke prevention in AF, many eligible patients do not receive appropriate preventive therapy, and therefore remain at increased risk of stroke. Reasons for the sub-optimal use of warfarin for stroke prevention in AF require further research.

PST8
WARFARIN PATIENT SEGMENTS: GENERAL PRACTITIONERS VERSUS SPECIALISTS
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OBJECTIVES: There is a documented lack of treatment and undertreatment with warfarin in AF patients. GPs and Specialists (SPs) may take different approaches to anticoagulation for their AF patients. The objective is to identify, compare and quantify warfarin patient segments for both SPs and GPs.
METHODS: Physicians from Toronto, Montreal and Vancouver, randomly recruited from lists of high warfarin prescribers, participated in 60 minute qualitative interviews. Thirty-Six physicians were interviewed (14 GPs, 8 Cardiologists, 6 Internists and 3 Haematologists). RESULTS: SPs placed patients in 3 major segments: untreated (5% of their patients), treated (90–95%) and undertreated (5%). GPs had only 2 segments: untreated (10–25%) and treated (75–90%). Both physician groups identified untreated patients as those at risk of falling, demented, prone to bleed, immobile or refusing treatment. SPs referred to undertreated patients as those using ASA. GPs saw ASA users as part of their treated group. The other segment within the GP treated group was warfarin users. SPs divided their treated segment into well-controlled and not well-controlled. CONCLUSION: SPs and GPs use similar criteria in determining which patients do not receive warfarin. However, views on the value of ASA seem different. Further, GPs in this study did not distinguish between well and not well-controlled warfarin, but rather indicated ASA vs. warfarin users are both considered treated. Further research is required to further investigate the differences in opinion, lack of treatment and to quantify each segment.

PST9
MANDARIN VERSION OF STROKE IMPACT SCALE: ADAPTATION AND VALIDATION
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OBJECTIVES: To assess the properties of the Mandarin version of the Stroke Impact Scale (SIS) versions 3.0, developed by Pamela W. Duncan et al. METHODS: The SIS, a stroke-specific outcome measure, assesses 8 domains: strength (4 items), memory (7 items), emotion (9 items), communication (7 items), activities of daily living/instrumental activities of daily living (ADL/IADL) (10 items), mobility (9 items), hand function (5 items), and participation (8 items). SIS was translated and back-translated
according to the standardized guidelines for cross-cultural adaptation. Patients consecutively admitted with ischemic stroke were recruited, until 30 patients in each of three groups of stroke severity were reached. Stroke severity was evaluated with NIH stroke scale and categorized as mild (0–6), moderate (7–15), or severe (16–38). Patients were assessed 3 times, within 7 days of admission, 3 months and 6 months afterwards. Ten randomly selected patients were re-administered 2 weeks after first administration for test-retest study. RESULTS: We studied 50 mild, 36 moderate, and 33 severe stroke patients. Cronbach’s alpha was high for 6 domains (0.95 to 0.98), moderate for emotion (0.69) and participation (0.77). Intraclass correlation coefficients ranged from 0.63 to 0.89, except for memory (0.13), hand function (0.47), and ADL/IADL (0.53). Based on first assessment, memory and communication may have potential for ceiling effects in mild stroke group, strength and hand function may have potential for floor effects in moderate stroke group, and all domains may have potential for floor/ceiling effects in severe stroke group. The correlations between each of the physical domains (strength, ADL/IADL, mobility, hand function) and Barthel Index were good (0.72 to 0.92). Memory domain showed a high correlation with MMSE (0.81). CONCLUSIONS: The Mandarin version of the SIS is an acceptable stroke-specific outcome measure in most domains. Further studies in determining the content should enhance confidence in its validity.

THE USE OF MULTI-CRITERIA DECISION METHODS IN HEALTH CARE. WHICH METHOD IS MOST SUITABLE FOR HEALTHY AND COGNITIVELY IMPAIRED POPULATION?

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OBJECTIVES: To select the best multi-criteria decision making method for use with cognitively impaired patients. A convenience sample of 28 subjects, 12 healthy and 16 cognitively impaired. METHODS: Based on a literature review, 5 multicriteria methods were chosen for comparison including: Kepner-tregoe analysis (KTA), simple multi attribute rating technique (SMART), SMART using swing weights (SWING), Analytic Hierarchy Process (AHP) and Conjoint Analysis (CA). Four attributes of treatment were identified (impact, duration, and end-result of treatment and associated risks). Subjects were asked to rank and rate the importance of these attributes with each method. The order of methods was randomized and the total length of the interview was restricted to one hour. Some subjects therefore did not use all methods. Subjects were interviewed either once (n = 14) or twice (n = 14) (Only the results of the first measurement are presented) RESULTS: The highest percentages of rank reversals were found between CA and other methods (55–62%). The lowest percentage of rank reversals was between KTA and SMART (18%). The percentage of rank reversals was significantly higher in impaired population (An average of 54% compared to 36% in unimpaired population). When comparing actual weights, AHP and SMART correlate highly with all other methods except CA. CONCLUSIONS: The high percentages in rank reversal and divergent correlation between individual weights (especially CA compared to other methods) show that the method chosen influences outcome. This has to be taken into account when the ranks or weights are used in multi-criteria decision analysis to make actual treatment decisions. The dissimilar methodology of CA might explain the high percentages of rank-reversals and low correlation between this method and other. Also, the design of the survey might have influenced CA weights and ranking.

THE METHODOLOGY BEHIND A PROSPECTIVE, OBSERVATIONAL STUDY OF THE ECONOMIC BURDEN OF ISCHEMIC STROKE

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OBJECTIVES: To present steps involved in launching the first national, prospective study determining resource utilization and direct (hospitalization, rehabilitation, outpatient, community care) and indirect (lost productivity, caregiver) costs of managing ischemic stroke in the first 6-months post-stroke. METHODS: A prospective, observational study was designed. A cohort (N = 200) of ischemic stroke patients will be recruited in a consecutive manner by stroke centres across Canada. Ethics approvals will be obtained and a minimum of one neurologist and one study coordinator per centre will participate to identify eligible patients, obtain informed consent, and interview patients. Three sets of questionnaires (baseline, 3-months, and 6-months) will be completed. Questionnaires include clinical and drug histories, stroke severity, disability, resource utilization, depression and utility. Patients will also complete diaries to quantify indirect costs. A pilot study will be conducted to evaluate the study tools. Data collected will be entered electronically via a secure website. RESULTS: Ten stroke centres across Canada (Ottawa, Toronto, Calgary, Montreal, Quebec City, Edmonton, Vancouver, Halifax, Saint John and Thunder Bay) will each recruit 20 eligible ischemic stroke patients into this study. Inclusion criteria such as age, language, neuroimaging evidence and non-interventional clinical trial involvement have been defined in order for the study to be launched on September 26, 2005 (with a 3-month recruitment period) and end July 2006. The primary analysis will provide an overall estimate of costs per ischemic stroke patient. Sub-analyses for atrial fibrillation and severity will also be conducted. CONCLUSIONS: The BURST study will be the first Canadian study that will determine the resource utilization and overall costs of treating ischemic stroke in both acute and post-acute settings with participation from tertiary-based and community-based stroke centres. The economic data collected will be critical for future stroke care funding systems.
ticriteria methods were chosen for comparison including: Kepner-Tregoe analysis (KTA), simple multi attribute rating technique (SMART), SMART using swing weights (SWING), Analytic Hierarchy Process (AHP) and Conjoint Analysis (CA). Four attributes of treatment were identified (identified, duration, and end-result of treatment and associated risks). Subjects were asked to both rank and rate the importance of these attributes. After using the methods to establish preferences for treatment, subjects were asked to judge the overall difficulty of the techniques on a 1-10 score, and answer questions regarding clarity of explanation of method, difficulty in answering questions, understanding method in relation to goal, and use of the method in health care situations. Subjects were interviewed either once (n = 14) or twice (n = 14) (Only the results of the first measurement are presented).

RESULTS: In the overall rating of methods CA scored best (mean score 3.65), followed by SMART (3.70), AHP (4.00), SWING (4.40) and KTA (4.67). CA also scored best on verbal/explanation, understanding of method in relation to goal, second and usefulness in health care situations, and scored second place on difficulty in answering questions. In the impaired population, AHP was rated best on the overall difficulty score. CONCLUSIONS: In this pilot study, conjoint analysis was the most preferred method of preference elicitation. Our main concern regarding CA is the time it takes to fill out a CA questionnaire and the fact that data analysis is most complicated of all methods included. Another concern regarding the use of multicriteria methods needing further study is the rate of rank-reversal between methods in the cognitively impaired population.

**PST13**

**EFFECTIVENESS OF AN EARLY REHABILITATION STRATEGY WITH HOME FOLLOW-UP FOR PATIENTS WITH ISCHEMIC VASCULAR CEREBRAL DISEASE IN MEXICO**

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**OBJECTIVE:** To evaluate, in cases of ischemic vascular cerebral disease (VCD), effectiveness in terms of functional recovery and quality of life of an early hospital rehabilitation intervention with follow-up in the patient’s home by a nursing team. Material and METHODS: Patients with VCD >45 years of age were randomized for inclusion in an intervention program or control group. The patients were selected from three Mexican Social Security Institute (IMSS) hospitals in Mexico City between March 2003 and May 2004. The intervention consisted in a physical and social rehabilitation program involving a nursing team which began in the hospital and continued in the patient’s home; it had three phases: a) intensive, with daily visits over 15 days, b) intermediate, with two weekly visits during the following two weeks, and c) support, with a weekly visit over the following two months. The control group received only information regarding VCD and patient care and weekly visits. Barthel, Frenchay and SF 36 were evaluated on admittance in hospital, and at 3 and 6 months after discharge from hospital. RESULTS: Of a total of 187 patients recruited, 90 completed the follow-up, 45 in group 1 (intervention) and 44 in group 2 (control). Average age was similar in both groups (72 years). Around 82% in both groups present chronic disease. An increase of 43 points was observed in the Barthel index at the end of the follow-up period for both groups (p = 0.21). General health was better at the end of the follow-up for group 1 (p = 0.05). CONCLUSIONS: Early rehabilitation in hospital with subsequent follow-up improves the perception the VCD patient has of his/her health. It is also a useful support to the patient’s functional recovery.

**PDB1**

**DIABETIC PERIPHERAL NEUROPATHY: EVALUATION OF THE INTER-ASSOCIATION BETWEEN THE RANGES OF NEUROPATHIC SYMPTOMS**

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**OBJECTIVES:** Diabetic peripheral neuropathy (DPN) results in not only pain but a range of debilitating symptoms. The Neuropathy Total Symptom Score 6 (NTSS-6 [self administered]) characterizes the frequency and severity of the range DPN symptoms, the purpose of this study being to examine the inter-association between symptoms. METHODS: A postal survey using various instruments including the NTSS-6 was mailed to subjects identified at random from hospital records as having either type-1 or type-2 diabetes using the same methods as the Health Outcomes Data Repository (HODaR). Cross-sectional analysis was used to test for these inter-associations. This is a preliminary analysis of the first 604 returns. The NTSS-6 provides a score of 0 to 3.66 in each of 6 domains. The total score (which can range from 0 to 21.96) is simply summed with zero meaning no neuropathic symptoms. RESULTS: Of the 604 patients, 24% reported no symptoms; the characteristics of those without and with DPN symptoms was: 58 vs. 64 years; males 56% vs. 60%; diabetes duration 16 vs. 13 years; history of cardiovascular disease 31% vs. 50%; number of days in hospital in the last year 3.4 vs. 7.7 days and 4.4 vs. 7.0 ambulatory care attendances in the previous year, respectively. The proportion of patients experiencing symptoms was for Aching, Prickling, Alldynia (sensitivity), Numbness, Burning and Lancinating Pain: 62%, 58%, 46%, 44%, 42% and 39%, respectively. Multiple combinations of symptoms occurred at the following rates: 11% had one symptom type, 12% two, 12% three, 9% four, 12% five and 21% all 6 symptoms. CONCLUSIONS: DPN has a range of debilitating symptoms, although there is a tendency to focus on pain. DPN symptoms occur frequently, in combination and one fifth of respondents reported experiencing all six categories of symptoms.
HEALTH CARE UTILIZATION AND EXPENDITURES ASSOCIATED WITH USE OF INSULIN GLARGINE

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**OBJECTIVES:** Long-acting insulin analogs, such as insulin glargine, offer the promise of better glycemic control, reduced risk of complications, and moderation of health care use and costs in patients with diabetes. We studied initiation of insulin glargine to evaluate its association with changes in clinical measures and subsequent health care utilization and expenditures.

**METHODS:** U.S. Veterans Health Administration (VA) patients who initiated insulin glargine (N = 5,057) in 2001 or 2002 were compared to a sample of diabetes patients continuing to receive other insulin (N = 69,940), matched on month of prescription (index date). Hemoglobin A1c (HgA1c), hypoglycemia rates, and VA health care (inpatient and outpatient) in the 12 months after a patient’s index date were compared. Utilization differences were evaluated using Tobit regression and other differences using linear and logistic regression, controlling for prior utilization, demographics, co-morbidities, and diabetes severity. National average utilization and pharmacy costs were used to estimate value of VA expenditures.

**RESULTS:** Insulin glargine initiators were younger (59 vs. 65 years) than other insulin users with more diabetes complications and more intensive medication management. They had higher HgA1c (8.7% vs. 8.1%) and hypoglycemia rates (11.5% vs. 4.4%) prior to the index date, but greater subsequent reductions (HgA1c: -0.5% vs. 0.2%; hypoglycemia: -5.0% vs. -1.3%). Insulin glargine initiation was associated with 2.4 (95% CI: 1.1–3.7) fewer inpatient days for patients with any hospitalization (lower cost of $820 per initiator). This more than offset the higher costs of more outpatient encounters (1.6 (1.2–1.9) or $229 per initiator) and higher medication costs ($347 ($337–$356) per initiator).

**CONCLUSION:** Insulin glargine use was associated with improvements in glycemic control, hypoglycemia rates, and utilization expenditures. We conclude that insulin glargine use may improve management of diabetes patients leading to reduced risk of complications and less time in hospital with no net increase in cost.

IMPROVED TREATMENT SATISFACTION IN PATIENTS WITH TYPE-2 DIABETES TREATED WITH EXENATIDE OR INSULIN GLARGINE

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**OBJECTIVES:** This study compares the effect of two injectable therapies, exenatide and insulin glargine, on quality of life measurements in patients with Type-2 diabetes inadequately controlled on oral antidiabetic medications. Previous research has shown that increasing treatment complexity results in a negative impact on patient reported outcomes. As exenatide and insulin glargine are both adjunctive to pre-existing oral therapy in this study, the impact on quality of life from adding an injectable therapy is examined. Additionally, differences in quality of life between the medications are examined.

**METHODS:** Patients
were randomized to either twice daily exenatide (N = 228) or once daily glargine (N = 227) during the 26-week, non-inferiority trial. The Vitality Scale of the Short Form 36, The Diabetes Symptom Checklist—Revised, The EuroQol instrument (EQ-5D), The Treatment Flexibility Scale, and The Diabetes Treatment Satisfaction Questionnaire (DTSQ) were administered at baseline and endpoint. Change from baseline to endpoint was compared within each treatment, and then between treatment groups with analysis of covariance models, controlling for country and baseline scores. RESULTS: At endpoint, exenatide and glargine achieved similar HbA1c reductions. In each patient reported outcome instrument, both treatment groups improved from baseline to endpoint; however no statistically significant differences were observed between the treatment groups. Because exenatide was associated with a higher incidence of nausea, the impact of treatment satisfaction, as measured by the DTSQ, was assessed for those exenatide patients who experienced nausea during the trial (n = 126). These patients demonstrated improvement from baseline to endpoint as well. CONCLUSIONS: Both injectable medications significantly improved the quality of life when added to pre-existing oral therapy. Exenatide, injected twice daily, was associated with an elevated incidence of nausea. However, despite the addition of an injection requirement and side effect of nausea, treatment satisfaction in exenatide group was comparable to that of the glargine group.

**PDB6**

**REDUCTION IN DIABETES DRUGS USE AND DRUG COSTS IN OBESE PEOPLE TREATED WITH ORLISTAT**

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**OBJECTIVE:** In addition to weight reduction, there may be other benefits of obesity treatment including improved insulin sensitivity. The purpose of this study was to characterise concomitant diabetes drug use and the related costs in diabetic patients treated with orlistat in the first six months of weight management. METHODS: One hundred overweight diabetic patients were enrolled in a structured weight management clinic and treated with orlistat plus behavioural interventions. Among other measures, weight, glucose control (HbA1c) and drug treatments were recorded. Subjects were followed-up for a maximum of 24 months at intervals of 6 months, with a maximum treatment period of 24 months. RESULTS: The majority of subjects (90%) had type-2 diabetes. They had a median age of 55 years (IQR 47–63) and 55% were women. The mean BMI at baseline was 39.51 with a mean HbA1c of 7.56%. The mean reduction in weight at 6 months was 7.1 kg (p < 0.001), with an average absolute HbA1c improvement of 0.62% (p < 0.001). Of the 50 patients treated with insulin at baseline, three no longer required insulin by the 6 month follow up. Of those treated with insulin, the mean insulin dose was 130iu (SD 135.4) at baseline and 90iu (SD 125.4) at 6 months (p < 0.001). Twenty patients (45%) initially treated with oral hypoglycaemic agents alone reduced their dose after 6 months. Despite marked improvement in insulin sensitivity (baseline mean 1.24iu/kg: 6 month mean 0.90iu/kg (p < 0.001)) there was no correlation with BMI change. The average cost of diabetes treatment was £0.82 per day at baseline and £0.59 at 6 months (Δ 28%; p < 0.001). CONCLUSIONS: Orlistat therapy, in conjunction with a structured weight management programme, appears to reduce the need for concomitant diabetes medication irrespective of weight loss. This reduction is likely to translate into a large cost offset for orlistat treatment.
events. Transition probabilities were based on Framingham risk formulae. RESULTS: Over 10 years, in Type-2 diabetes patients with controlled LDL-c and low HDL-c (<1 mmol/L), addition of Niaspan® (2g daily) to statin treatment was projected to reduce the absolute incidence of MI (3.2%), angina (0.7%) and CHD death (1.6%) compared to statin monotherapy. Relative risk reductions were 13.3%, 12.5% and 13.1% respectively. In patients with elevated LDL-c (>3 mmol/L), ezetimibe plus statin was associated with a reduced absolute incidence for MI (2.3%), angina (0.5%) and CHD death (1.1%) versus statin alone. Relative risk reductions were 7.7%, 7.4% and 7.9% respectively. CONCLUSIONS: Over 10 years, both Niaspan® and ezetimibe may lead to substantial reductions in the cumulative incidence of CHD events in Type-2 diabetes patients failing to reach cholesterol targets with statin monotherapy. These findings highlight the potential long-term benefits of raising HDL-c in Type-2 diabetes patients with controlled LDL-c.

**PDB9**

**PROJECTED IMPACT ON CORONARY HEART DISEASE AT 5, 10 AND 35 YEARS OF ADDING PROLONGED-RELEASE NICOTINIC ACID (NIASPAN®) TO STATIN TREATMENT IN PATIENTS WITH TYPE-2 DIABETES**

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OBJECTIVES: To evaluate the clinical benefits of raising HDL-c by adding Niaspan® on coronary heart disease (CHD) endpoints in Type-2 diabetes patients on statin therapy. METHODS: Two successive models were developed to project long-term clinical benefits of treating patients over different time periods. The first model (Monte Carlo simulation) was used to evaluate the impact of simvastatin treatment on lipid levels and identify patients with low HDL-c. Baseline cohort characteristics and effects of statin treatment were taken from the diabetic sub-population of the 4S study. In patients with HDL-c <1 mmol/L, treatment with statin plus add-on Niaspan® was compared to statin monotherapy. Niaspan® treatment effects were taken from several clinical trials as summarized in the European SPC. The second model was then used to simulate the development of CHD events based on the Framingham risk formulae. This Markov model included five states: no CHD, history of myocardial infarction (MI), history of MI and angina, and dead. Cycle length was one year. RESULTS: Addition of Niaspan® (2g daily) to statin treatment was associated with a lower cumulative incidence of CHD events than statin monotherapy. Absolute risk reductions of 2.1%, 4.0%, and 8.1% for myocardial infarction, 0.5%, 0.9%, and 1.3% for angina, and 1.0%, 1.9%, and 4.0% for CHD death were projected at time horizons of 5, 10, and 35 years respectively. CONCLUSIONS: Due to its positive effect on HDL-c levels, addition of Niaspan® to statin treatment was projected to reduce the cumulative incidence of CHD events compared to statin monotherapy in Type-2 diabetes patients with persistently low HDL-c. These data indicate that as the treatment period increases, the clinical benefits associated with statin plus Niaspan® may also increase compared to statin monotherapy.

**PDB10**

**TYPE-2 DIABETES IN GERMANY: PREVALENCE AND MEDICATION USE**

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OBJECTIVE: Type-2 diabetes is recognized as a growing problem across the world, with the number of individuals diagnosed with this disorder expected to approximately double in the next 25 years. The objective of this study is to examine the prevalence of Type-2 diabetes as well as trends in antidiabetic medication use in Germany. METHODS: Data for this study were obtained from the German Disease Analyzer—Mediplus database. All patients who were identified with Type-2 diabetes between 01/01/2001 and 12/31/2003 and who were at least 20 years of age when first identified as having Type-2 diabetes were included in the prevalence estimate (N = 45988). While the 2003 prevalence estimate was based on data from a three year window, patient characteristics and medication use was examined for each of the three calendar years. These cohorts consisted of patients identified with Type-2 diabetes who were at least age 20 during the year (N = 20766 for 2001; N = 22778 for 2002; and N = 23326 for 2003). RESULTS: The prevalence of Type-2 diabetes was estimated to be 3.93% in 2003. From 2001 to 2003, there was a decrease in the percentage of patients with Type-2 diabetes who were not receiving antidiabetic medication (from 34.28% to 28.27%; p < 0.0001) as well as a significant decrease in the use of sulfonylureas (from 20.02% to 16.02%; p < 0.0001). In contrast, there were significant increases in monotherapy insulin use (from 7.95% to 9.90%; p < 0.0001), monotherapy metformin use (from 14.04% to 18.71%; p < 0.0001), and oral combination antidiabetic medication use (from 14.34% to 16.99%; p < 0.0001) over the same time period. CONCLUSIONS: The prevalence estimate confirms that Type-2 diabetes is a significant health concern in Germany. Furthermore, recent trends demonstrate that physicians are increasingly likely to prescribe antidiabetic therapies for the treatment of this disease.

**PDB11**

**WITHDRAWN**
BUDGET IMPACT ANALYSIS OF THE INTRODUCTION OF ROSIGLITAZONE IN THE TREATMENT OF TYPE-2 DIABETES. THE ITALIAN NHS PERSPECTIVE

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OBJECTIVES: To evaluate the budget impact on the Italian NHS of rosiglitazone based treatment strategies, compared to current therapy.

METHODS: Estimated target population for alternative treatments was based on algorithms previously reported. Three groups of patients were identified to compare alternative treatment strategies: 1) Rosiglitazone monotherapy vs. SU monotherapy; 2) Rosiglitazone + metformin vs. SU + metformin; and 3) Siltiglazone + SU vs. insulin alone or in association with SU. The perspective used was that of the Italian NHS. Time horizon was one year. Costs/patient/year considered were: drug acquisition costs; glycaemia self-monitoring costs; severe hypoglycaemias costs; and clinical tests costs (according to therapy). Glycaemia self-monitoring assumptions were based on AMD (Italian Association of Diabetologists) guidelines. Sensitivity analysis was performed to test the robustness of the assumptions made and their influence on the results.

RESULTS: The epidemiological algorithms assigned 19.84% of patients to group 1, 37.8% to group 2 and 42.36% to group 3. Treatment costs/patient/year were: group 1—€459.91 for rosiglitazone vs. €469.06 for SU; group 2—€531.06 for rosiglitazone + metformin vs. €540.20 for SU + metformin; group 3—€749.44 for rosiglitazone + SU vs. €1,258.11 for insulin + SU and €1,832.97 for insulin alone. For a hypothetical cohort of 10,000 patients, total costs were: group 1—€912,460.31 vs. SU €930,581.45; group 2—rosiglitazone + metformin €2,007,419.76 vs. SU + metformin €2,041,944.92; group 3—rosiglitazone + SU €3,174,623.90, insulin + SU €1,862,082.89 and insulin alone €5,051,558.94. Total costs of Rosiglitazone based therapy were €6,094,503.97 vs. €9,886,168.20 of current treatments.

CONCLUSIONS: Rosiglitazone, when compared to alternative treatment, may offer potential savings to the Italian NHS estimated by our model in €3,791,664 every 10,000 diabetics per year. Savings were mainly related to a reduction in costs of glucose self-monitoring and insulin administration. Drug utilization of glitazones in Italy, ISPOR, 7th Annual European Congress.

COST OF DIABETES MELLITUS TYPE-2 AND SELF MEASUREMENT OF BLOOD GLUCOSE IN GERMANY: A HEALTH INSURANCE PERSPECTIVE

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OBJECTIVES: It is extremely difficult to assess the prevalence, the total costs of Diabetes mellitus and the impact of self-measurement of blood glucose (SMBG) for the German health care system. The last sound assessment of the total costs is based on the CODE-2 study, although this study reflects the situation in 1998.

METHODS: In this analysis we assessed the total costs of diabetes mellitus type-2 and self measurement of blood glucose (SMBG) for the German health care system in the year 2004, based on the analysis of a retrospective, multicenter trial carried out recently, dealing with the impact of SMBG on long term patient outcomes. Our assessment is based on costs for 18 diabetes related complications (including surgical interventions), follow-up-costs for these complications, costs for outpatient physician services, cost of antidiabetic and additional pharmaceutical treatment and costs for strips and lancets for patients performing SMBG.

RESULTS: Overall, yearly costs for the treatment of diabetes mellitus type-2 and its complications amounts to €3489 per patient. This equals to 4.6% to 8.2% of the German health care expenditure, in function of the estimated prevalence of the disease in Germany. The cost difference between the cohort with and without SMBG was not essential (€276 higher costs in the cohort with SMBG). This cost difference should be connected with a reduction of mortality from 4.6 to 2.7% and a reduction of non-fatal endpoints from 10.4 to 7.2% for the Non-SMBG and SMBG group respectively reported in the underlying study.

CONCLUSIONS: From a public health standpoint, prevention of diabetes mellitus or at minimum prevention of its complications by optimizing glucose metabolism should be given highest priority in times of limited resources for health care. SMBG may be a valuable tool to achieve this target.

THE ESTIMATION OF POTENTIAL BUDGETARY IMPACT OF INSULIN GLARGINE IN POLISH SETTINGS

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OBJECTIVES: To estimate incremental drug costs and savings resulting from hypoglycemia risk reduction produced by insulin Glargine compared to NPH insulin from payers perspective in Poland.

METHODS: Epidemiological data and expert panel were used to evaluate the number of patients eligible for insulin Glargine treatment in Poland. Logistic model of switching rate from NPH insulin to insulin Glargine was developed for 3 years time horizon for diabetes patients according to NICE guidelines. Net drug costs reflect incremental acquisition costs per i.u. as well as difference between mean daily doses of insulin Glargine and NPH. Savings resulting from hypoglycemia risk reduction were estimated based on literature review and unit cost of hypoglycemic event treatment (payers perspective). Event associated with hospitalization or ER visit.

RESULTS: Number of patients eligible for insulin Glargine treatment was estimated at 64,608 patients accounting for 5.48% of all diabetic patients in Poland.

Mean annual drug costs were estimated at 24.5mln EUR (PPP value) while savings resulting from hypoglycemia risk reduction at 4mln EUR. Subgroup showed for patients with annual hypoglycemia risk reduction associated with insulin Glargine 68.4% drug acquisition expenditures, which are balanced by hypoglycemia treatment savings. CONCLUSIONS: Insulin Glargine treatment was found to be budgetary neutral from payers perspective for patients with very high risk of hypoglycemia in Poland.

A MODEL BASED ANALYSIS OF COSTS AND EFFECTIVENESS OF CHIROPODIST CARE IN DIABETIC PATIENTS

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OBJECTIVE: The diabetic foot is a complex late complication, it is difficult to treat and has severe impact on quality of life and causes an enormous financial burden for society. Aim of this
study was to evaluate structured chiropodist care (CC) with regard to healing rates and costs provided by intensively instructed professionals. METHODS: One year follow-up-data of a randomized and controlled trial (RCT) performed in the province of Styria, Austria showed significantly reduced reulceration rates under chiropodist care. Patients in the intervention group received chiropodist care in average 11 times per year and were reimbursed for the costs (€29 per visit). Based on a published paper Austrian specific cost data of 2001 were used to build a Markov Model to evaluate 10 years outcome. A Monte-Carlo-Simulation (n = 10.000) was performed for patients with chiropodist care (intervention) and no chiropodist care (control).

RESULTS: Mean follow-up-duration for 91 patients of the RCT was 386 days with a reulceration rate of 36% in the intervention group (n = 47) and 55% in the control group (p = 0.05). The model calculation over 10 years showed treatment costs per patient of €12,094 (SD 13,379) in the intervention and €18,538 (SD 16,120) in the control group. Costs for the general treatment of diabetes were not taken into account. The amputation rate under intervention declined to 40% versus 67% in the control group. Taking the mean life expectancy into account (6.1 vs. 5.1 yrs.) average costs per patient-year were 1.985 € in the intervention group versus €3,654 in the control group.

CONCLUSION: The model based analysis demonstrated the benefit of CC over a 10 year period in terms of reduced amputation rates and lower costs per patient and year.

**PDB16**

COSTS ASSOCIATED WITH GLUCOSE CONTROL IN THE NON-DIABETIC CRITICALLY ILL PATIENT

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OBJECTIVES: Hyperglycemia in the critically ill, non-diabetic patient has been shown to negatively affect clinical outcomes. Administration of continuous insulin infusion (CII) to maintain blood glucose (BG) between 80–110mg/dL has thus become standard of care. The objective of this study was to compare the costs and BG levels associated with glucose control among patients pre- and post-CII protocol implementation in an intensive care unit (ICU).

METHODS: Combination of time-in-motion (TIM) observations and retrospective random chart review to compare glucose control and costs in 2001 and 2004, prior to and after CII implementation respectively. TIM data determined time spent on activities related to glucose management and chart data determined frequency of respective activities per year. Study population included ICU patients >16 years old, mechanically ventilated for >12 hours, with no diagnosis of diabetes. Costs were determined for glucose monitoring with no insulin orders (2001), glucose management with sliding scale subcutaneous insulin (2001), and management with CII protocol (2004) using 2005 US$ from the hospital perspective.

RESULTS: From a total 460 charts in 2001, 49 (11%) were reviewed. From a total 540 charts in 2004, 83 (15%) were reviewed. No differences in age, gender, marital status, or race by year were noted (p > 0.05). Costs (mean +/-SD) associated with monitoring and no insulin were $0.16 +/-0.56 (median = $0.00) per patient day, with subcutaneous insulin $10.08 +/-4.96 (median = $8.42), and with CII protocol $21.87 +/-3.90 (median = $22.49). Mean +/-SD daily blood glucose values were 138mg/dL +/-24, 157mg/dL +/-32, and 108mg/dL +/-10, respectively. Regression analysis demonstrated statistical differences in BG (p < 0.01) by method. CONCLUSION: Costs associated with CII protocol are more than twice the costs of sliding scale subcutaneous orders per patient day, but result in recommended BG values below 110mg/dL. Impact of costs on hospital policy will be discussed.

**PDB17**

ECONOMIC ASSESSMENT OF ADD-ON THERAPY WITH PROLONGED-RELEASE NICOTINIC ACID (NIASPAN®) IN STATIN-TREATED PATIENTS WITH DYSLIPIDEMIA AND TYPE-2 DIABETES IN GERMANY AND SWEDEN

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OBJECTIVES: To evaluate the long-term clinical and economic outcomes of adding Niaspan® to statin treatment in Type-2 diabetes patients with persistently low HDL-c. METHODS: Two models were developed to project long-term clinical and economic benefits. The first simulated the evolution of lipid levels with treatment utilising second order Monte Carlo methodology, and the second was designed to calculate the risk of coronary heart disease (CHD) events each subsequent year using standard Markov modeling techniques. Transition probabilities for CHD events were derived from the Framingham risk formulae. Baseline cohort characteristics and simvastatin treatment effects were taken from the 4S clinical trial (diabetes sub-group). Patients with persistently low HDL-c (<1mmol/L) on statin treatment received either add-on Niaspan® or continued statin monotherapy. Treatment effects of Niaspan® were taken from several clinical studies summarized in the European SPC. Direct costs (2004 Euros) were accounted from a third party payer perspective. Annual discount rates of 5% (Germany) and 3% (Sweden) were applied to clinical outcomes and costs. RESULTS: A total of 23.42% of patients were projected to have persistently low HDL-c levels after statin treatment. In these patients mean undiscounted life expectancies of 19.72 years and 19.13 years were projected for the Niaspan® and statin monotherapy arms respectively (undiscounted difference 0.59 years). Improvements in discounted life expectancy were 0.26 and 0.35 years respectively for Germany and Sweden. Lifetime direct medical costs were higher by €6,038 in Germany and €6,170 (SEK 56,308) in Sweden with addition of Niaspan®. Incremental cost-effectiveness ratios based on discounted life expectancies were €23,404 in Germany and €17,538 (SEK 160,099) per life year gained in Sweden for statin plus Niaspan® versus statin monotherapy. CONCLUSIONS: In Germany and Sweden, addition of Niaspan® to statin treatment was highly cost-effective in Type-2 diabetes patients with persistently low HDL-c compared to statin monotherapy.

**PDB18**

COST-EFFECTIVENESS OF ADD-ON PROLONGED-RELEASE NICOTINIC ACID (NIASPAN®) THERAPY IN DIABETIC VERSUS NON-DIABETIC PATIENTS WITH DYSLIPIDEMIA: A UK PERSPECTIVE

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OBJECTIVES: To compare the long-term cost-effectiveness of adding Niaspan® to statin treatment in diabetic and non-diabetic patients with persistently low HDL c. METHODS: Two models were developed to project long-term clinical and economic outcomes. The first model (Monte Carlo simulation) was used to evaluate the impact of simvastatin treatment on lipid levels and identify patients with low HDL-c. Baseline cohort characteristics were taken from the diabetic sub-population of the 4S study. In
patients with HDL-c <1 mmol/L, treatment with statin plus add-on Niaspan® was compared to statin monotherapy. Niaspan® treatment effects were taken from several clinical trials as summarized in the European SPC. The second model (Markov) simulated the development of coronary heart disease events based on the Framingham risk formulae. Direct medical costs were accounted from a third-party payer perspective in the UK and expressed in pounds sterling (£). Annual discount rates of 3.5% were applied to clinical and cost outcomes. RESULTS: Niaspan® was associated with improved in mean discounted life expectancy in diabetic (0.32 years) and non-diabetic cohorts (0.29 years) compared to statin monotherapy. Similarly, improvements in quality-adjusted life expectancy of (diabetic) 0.26 and (non-diabetic) 0.23 quality-adjusted life years (QALYs) were projected. Niaspan® was associated with increases in mean lifetime costs of €4492 (diabetic) and €4891 (non-diabetic) versus statin alone. This led to incremental cost-effectiveness ratios of £17,296 per QALY gained in the diabetic cohort and £21,150 in the non-diabetic cohort. CONCLUSIONS: Addition of Niaspan® to statin treatment was cost-effective by generally accepted standards compared to statin monotherapy in patients with persistently low HDL-c in the UK. In patients with Type-2 diabetes and an associated high risk of CHD events, add-on therapy with Niaspan® represented better value for money than in non-diabetic patients.

ECONOMIC EVALUATION OF SWITCHING TYPE-1 DIABETES PATIENTS FROM LONG-ACTING INSULIN GLARGINE IN A BASAL/BOLUS REGIMEN TO LONG-ACTING INSULIN DETEMIR IN AN AUSTRIAN SETTING


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OBJECTIVES: To project long-term clinical and cost outcomes associated with biphasic insulin aspart 30 (BIAsp 30) and oral hypoglycemic agents (OHAs) in a Swedish setting based on the findings of a randomized clinical trial. METHODS: A published, validated and peer-reviewed model of diabetes was used to simulate the progression of diabetes-related complications based on clinical trial data which showed that switching to BIAsp 30 significantly reduced HbA1c compared to continuation of OHAs in insulin-naïve patients with Type-2 diabetes over 16 weeks (difference in HbA1c reduction 0.648%; p < 0.001). Direct medical costs were accounted from a third-party payer perspective in Sweden and expressed in 2004 Swedish Kroner (SEK). Costs and clinical benefits were discounted at 3% annually and sensitivity analyses were performed on treatment effect, time horizon and discount rates. RESULTS: BIAsp 30 was projected to extend life expectancy (mean [standard deviation]) by 0.47 [0.22] compared to OHAs (11.38 vs. 10.90 years). Quality-adjusted life expectancy was improved with BIAsp 30 by 0.42 [0.15] quality-adjusted life years (QALYs) versus OHAs (7.94 vs. 7.52 QALYs). BIAsp 30 was associated with a lower cumulative incidence of diabetes-related complications, particularly retinopathy and nephropathy. Mean direct lifetime costs were higher in the BIAsp 30 group (SEK 286,467 [11,745]) than in patients receiving OHAs (SEK 272,752 [12,885]), a difference of SEK 13,716 [5,860], leading to an incremental cost-effectiveness ratio of SEK 32,736 per QALY gained. Sensitivity analysis showed that these findings were robust under variation in a range of assumptions. CONCLUSIONS: Switching to BIAsp 30 was projected to reduce the incidence of diabetes-related complications, and improve life expectancy and quality-adjusted life expectancy, compared to continuation of OHAs in Type-2 diabetes patients. Switching to BIAsp 30 was projected to represent good value for money by internationally accepted standards in the Swedish setting.

COST-EFFECTIVENESS ANALYSIS OF BASAL/BOLUS THERAPY IN TYPE-1 DIABETES USING INSULIN DETEMIR + INSULIN ASPART OR HUMAN SOLUBLE INSULIN-BASED BASAL/BOLUS REGIMENS IN GERMANY

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OBJECTIVES: In patients with type-1 diabetes, poor glycemic control is associated with an increased risk of complications. A recent clinical study provided evidence that basal/bolus treatment with insulin detemir + insulin aspart (IDet/Aasp) improved HbA1c (0.22%-points lower after 18 weeks), reduced the risk of hypoglycemic events (by 21%), and decreased body mass index.
(BMI) (~0.3 kg.m^-2) in comparison to neutral protamine Hagedorn insulin + human soluble insulin (NPH/HSI). The aim of this study was to project the long-term clinical and cost outcomes associated with IDet/IAsp versus NPH/IAsp basal/bolus therapy in the German setting based on these findings. METHODS: A published, validated and peer-reviewed model that combines Markov sub-models and Monte Carlo simulation was used to simulate the progression of diabetes and its complications (cardiovascular disease, neuropathy, renal and eye disease). Transition probabilities and HbA1c-dependent adjustments were derived from published sources. Baseline cohort characteristics and treatment effect data were based on the clinical study. Direct costs were retrieved from published sources and projected over patient lifetimes from a German National Health care perspective. Costs and clinical benefits were discounted at 3.5% annually. RESULTS: IDet/IAsp treatment was associated with fewer diabetes-related complications, improved life expectancy (0.23 life years gained) and quality-adjusted life expectancy (0.21 QALYs gained) compared to NPH/HSI. Mean total lifetime costs were €3163 per patient higher with IDet/IAsp, leading to incremental cost-effectiveness ratios (ICERs) of €13,761 per life year and €15,071 per QALY gained. CONCLUSIONS: Short-term clinical benefits in glycemic control, hypoglycemic event rates and BMI associated with IDet/IAsp basal/bolus therapy were projected to lead to fewer complications, improved life expectancy and quality-adjusted life expectancy compared to NPH/HSI. This resulted in ICERs for IDet/IAsp versus NPH/HSI in the range considered to represent good value for money.

PD B22

ASSESSING THE EFFICIENCY OF USING CONTINUOUS SUBCUTANEOUS INSULIN-INFUSION (CSI) VERSUS MULTIPLE DAILY INJECTIONS (MDI) IN SPANISH DIABETES MELLITUS TYPE-1 (DM1) PATIENTS. COST—EFFECTIVENESS ANALYSIS

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OBJECTIVES: In a recent randomized, controlled clinical study in 447 patients with type-1 diabetes, use of insulin detemir (IDet) versus neutral protamine hagedorn (NPH) insulin in a basal (twice daily)/bolus regimen with insulin aspart (IAsp) as bolus insulin, demonstrated that IDet/IAsp was associated with a risk reduction of 22% for hypoglycemic events (p = 0.029), a reduction of 0.2 kg in body weight (p < 0.001) and decreased systolic blood pressure (SBP) (3 mmHg, p < 0.001) versus NPH/IAsp over 6 months of treatment. No significant difference in HbA1c was noted. The aim of this analysis was to assess the impact of these changes over long-term treatment with IDet/IAsp versus NPH/IAsp. METHODS: A peer-reviewed, validated computer simulation model was used to project these short-term findings to evaluate long-term clinical and cost outcomes. Transition probabilities and risk adjustments were derived from published studies. Baseline cohort characteristics were taken from the clinical trial. Total direct costs (complications + treatment costs) were derived from published sources and projected over patients’ lifetimes from a German National Health care perspective. Costs and clinical benefits were discounted at 3.5% annually. RESULTS: Decreased incidence of hypoglycemic events, improved BMI and SBP associated with IDet/IAsp treatment led to fewer diabetes-related complications, increased life expectancy (0.15 years) and improved quality-adjusted life expectancy (0.22 QALYs) compared to NPH/IAsp. Mean total lifetime costs were €1204 per patient higher in the IDet/IAsp treatment arm than in the NPH/IAsp group, leading to incremental cost-effectiveness ratios of €8027 per LYG and €5473 per QALY gained. CONCLUSIONS: Short-term clinical improvements associated with IDet/IAsp were projected to lead to a lower incidence of complications, improved life expectancy and quality-adjusted life expectancy compared to NPH/IAsp. Reductions in the cost of complications partially offset the costs of IDet/IAsp treatment, leading to incremental cost-effectiveness ratios within the range considered to represent good value for money.

PD B23

ECONOMIC EVALUATION OF DETEMIR-BASED BASAL/BOLUS THERAPY VERSUS NPH-BASED BASAL/BOLUS THERAPY FOR TYPE-1 DIABETES IN GERMANY

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OBJECTIVES: To evaluate the long-term clinical and cost outcomes associated with insulin aspart vs. human insulin + metformin (IAsp/MET) in patients with Type-2 diabetes in a German setting based on the findings of the PHAZIT clinical trial. METHODS: Long-term outcomes were

PD B24

ASSESSMENT OF THE LONG-TERM COST-EFFECTIVENESS OF INSULIN ASPART + METFORMIN VERSUS HUMAN INSULIN + METFORMIN REGIMENS IN TYPE-2 DIABETES IN GERMANY BASED ON THE CLINICAL FINDINGS OF THE PHAZIT STUDY

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OBJECTIVES: To evaluate the long-term clinical and cost outcomes associated with insulin aspart + metformin (IAsp/MET) versus human insulin + metformin (HI/MET) in patients with Type-2 diabetes in a German setting based on the findings of the PHAZIT clinical trial. METHODS: Long-term outcomes were...
projected using a peer-reviewed and validated computer simulation model of diabetes. Clinical input (cohort characteristics and treatment effects) were taken from PHAZIT, a prospective, non-randomized, observational study of Type-2 diabetes patients from 51 German diabetes centers. In PHAZIT, patients were switched to a combination of IAsp/MET (n = 392) or HI/MET (n = 353) at baseline. 24-week results showed an improvement in HbA1c of 0.15% and decreased body mass index (BMI) (0.3 kg/m²) with IAsp/MET versus HI/MET. No significant changes in hypoglycemic event rates were observed. Transition probabilities in the model and HbA1c-dependent adjustments were derived from published sources. Direct costs were retrieved from published data and accounted over patient lifetimes. Costs and clinical benefits were discounted at 3.5% annually. RESULTS: Long-term projections showed that IAsp/MET treatment was associated with fewer diabetes-related complications, improved clinical benefits were discounted at 3% annually. RESULTS: Long-term projections showed that IAsp/MET treatment was associated with fewer diabetes-related complications, improved

**FIXED COMBINATION METFORMIN PLUS GLIBENCLAMIDE (GLUCOVANCE®) IS COST AND LIFE SAVING COMPARED TO METFORMIN PLUS ROSIGLITAZONE IN TYPE-2 DIABETES PATIENTS IN FRANCE**

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OBJECTIVES: To evaluate the cost-effectiveness of oral anti-diabetic therapies, a fixed combination (metformin plus glibenclamide, Glucovance®) and a free combination (metformin plus rosiglitazone), in France. METHODS: A peer-reviewed, published, validated computer simulation model was used to project long-term clinical and cost outcomes of treatment with Glucovance® or metformin + rosiglitazone. The model combined standard Markov sub-models to simulate the incidence and progression of complications and calculate costs over patients’ lifetimes. Transition probabilities and risk adjustments were derived from published sources, including the UKPDS. Treatment effects, average doses and baseline cohort characteristics were taken from a recent double-blind randomized clinical trial showing that Glucovance® resulted in significantly greater reductions in HbA1c (−0.4%) compared with metformin + rosiglitazone in Type-2 diabetes patients inadequately controlled on metformin monotherapy. Direct costs (2004 Euros) were retrieved from published sources and projected over patient lifetimes from a third party health care payer perspective. Costs and clinical benefits were discounted at 3% annually. RESULTS: In the long-term, Glucovance® treatment was associated with improvements greated cost-effectiveness (30,924 per QALY). Cardiovascular, neurological, renal, and retinal complication rates were assessed. Lifetime costs were calculated as the annual direct pharmacy costs plus complication costs (US Medicare perspective). Clinical outcomes and costs were discounted at 3% annually. Sensitivity analyses were performed. RESULTS: Improvements in glycemic control corresponded with incremental increases in LYG and QALY favoring BIAsp 30 versus glargine (0.28 ± 0.21 and 0.27 ± 0.15 years, respectively). Treatment with BIAsp 30 was associated with reductions in the cumulative incidence of diabetes-related complications, notably in renal (18% less end-stage renal disease) and retinal (12% less severe vision loss) co-morbidities. An ICER of $30,924 per QALY gained was deduced. Sensitivity analyses support the reliability of the results. CONCLUSIONS: Among a sub-population of poorly controlled insulin naive Type-2 patients, BIAsp 30 was estimated to reduce lifetime complication incidences and be cost-effective within commonly supported thresholds when compared to insulin glargine.
COST-EFFECTIVENESS OF ACARBOSE IN ADDITION TO EXISTING TREATMENTS IN TYPE-2 DIABETES IN GERMANY
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OBJECTIVES: Based on findings of a recent meta-analysis, evaluate long-term cost-effectiveness of acarbose given in addition to existing treatments in type-2 diabetes patients in a German setting. METHODS: The CORE Diabetes Model (peer-reviewed, published, validated computer simulation model) was used to project long-term clinical and cost outcomes in type-2 diabetes patients receiving acarbose or placebo in addition to their existing treatment. Transition probabilities and risk adjustments came from published sources. Treatment effects and baseline cohort characteristics were based on recently published retrospective meta-analysis of placebo-controlled, double-blind, long-term studies in type-2 diabetes, showing that acarbose treatment was associated with improvements in HbA1c, systolic blood pressure, lipid levels and BMI, and significant reduction in the risk of cardiovascular events. Direct costs were retrieved from published sources and projected over patient lifetimes from a third party health care payer perspective in Germany. Costs and clinical benefits were discounted at five percent per annum. Sensitivity analyses were performed. RESULTS: Acarbose treatment was associated with improvements in mean discounted life expectancy of 0.21 years (7.78 ± 0.13 versus 7.57 ± 0.13 years [mean ± standard deviation]) and quality-adjusted life expectancy of 0.19 QALYs (5.36 ± 0.09 versus 5.17 ± 0.09 QALYs). Lifetime direct costs were on average €134 per patient more expensive with acarbose than with placebo (€32,778 ± 1194 versus €32,643 ± 1285). Reduced complication costs partially offset greater treatment costs in the acarbose arm, leading to incremental cost-effectiveness ratios of €633 per QALY gained and €692 per quality-adjusted life year gained. Sensitivity analysis showed that these results were robust under variation in a range of assumptions. CONCLUSIONS: Addition of acarbose to existing treatment was projected to lead to improvements in life expectancy and quality-adjusted life expectancy, and provide excellent value for money over patient lifetimes by current standards in the German setting.

COST-EFFECTIVENESS ANALYSES OF BASAL-BOLUS THERAPY OF TYPE-1 DIABETES USING INSULIN DETEMIR + HUMAN SOLUBLE INSULIN VERSUS NEUTRAL PROTAMINE HAGEDORN + HUMAN SOLUBLE INSULIN REGIMENS IN GERMANY
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OBJECTIVES: A recent European-based clinical trial showed that basal/bolus treatment of 747 subjects with type-1 diabetes with insulin detemir + human soluble insulin (IDet/HSI) significantly improved HbA1c (0.11%-points lower after 26 weeks) and body weight (~0.61 kg) compared to a regimen of neutral protamine hagedorn insulin + human soluble insulin (NPH/HSI). No significant changes in hypoglycemic event rates were observed. The aim of this analysis was to estimate the long-term clinical and cost outcomes associated with IDet/HSI and NPH/HSI regimens based on German cost data. METHODS: A validated, peer-reviewed computer simulation model was used to project the incidence of complications, life expectancy, quality-adjusted life expectancy and costs over patient lifetimes. The model simulated the progression of diabetes and its complications (cardiovascular disease, neuropathy, renal and eye disease). Transition probabilities and risk adjustments were derived from published clinical and epidemiological studies. Baseline cohort characteristics and treatment effects were taken from the 26-week clinical study. Direct costs of diabetes complications and treatments were retrieved from published sources and accounted from a German Health care payer perspective. An annual discount rate of 3.5% was applied to costs and clinical benefits. RESULTS: Long-term basal/bolus therapy with IDet/HSI was projected to decrease the incidence of diabetes-related complications, improve life expectancy (0.13 life years gained) and quality-adjusted life expectancy (0.09 QALYs gained) compared to NPH/HSI. Lower complication costs in the IDet/HSI arm partially offset the increased costs of treatment. Mean total lifetime costs were €1798 per patient higher with IDet/HSI than with NPH/HSI, leading to incremental cost-effectiveness ratios of €13,831 per life year gained and €19,978 per QALY gained. CONCLUSIONS: Based on short-term clinical trial findings, IDet/HSI was projected to reduce the incidence of long-term complications, improve life expectancy and quality-adjusted life expectancy, and can be considered to represent good value for money by German and international standards.

HEALTH ECONOMIC EVALUATION OF INSULIN GLARGINE FOR THE TREATMENT OF TYPE-1 AND TYPE-2 DIABETES
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OBJECTIVES: Managing diabetes within accepted limits (A1c < 7%) is often complicated by the occurrence of hypoglycemia. To reduce the risk of hypoglycemia, patients and clinicians sometimes settle for sub-optimal glucose control. However, suboptimal glycemic control increases the risk of diabetes-related complications, having important economic consequences to the health care system. Basal insulin glargine, has a distinctive A1c hypoglycemia relationship compared to NPH insulin, with reduced chance of hypoglycemia at lower A1c values. The objective is to assess the value of insulin glargine, compared to NPH insulin, in insulin treated people with Type-2 diabetes who failed to achieve an A1c < 7%. METHODS: A 36-year time horizon state transition model simulating the natural history of diabetes and projecting clinical and economic benefits of insulin glargine compared to NPH insulin, was used. The study used Canadian costs and utilities from previous publications. UKPDS and DCCT provided the base for complication risks. The Ministry of Health perspective was taken. RESULTS: Considering the 36-year (lifetime) direct drug and complications costs, NPH was found to be less expensive than insulin glargine ($1559 in type-1 diabetes and $2248 in type-2 diabetes). However, since the treatment with insulin glargine substantially reduced risk of long-term complications, it produces greater life years (LY) (0.08 LY gained and 0.25 LY gained in type-1 and type-2 diabetes, respectively) and quality-adjusted life years (QALYs) (0.07 QALY gained and 0.23 QALY gained in type-1 and type-2 diabetes, respectively). When considering glargine over NPH, the incremental cost per LY gained and cost per QALY gained were $20,317 and $23,717 for type-1 diabetes, and $9131 and $9804 for type-2 diabetes. CONCLUSIONS: For type-2 patients, insulin glargine therapy results in substantial clinical benefits and represents an economical alternative to NPH insulin with competitive cost-effectiveness ratios.
PDB30

ECONOMIC EVALUATION OF THE LAPTOP-STUDY RESULTS

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OBJECTIVES: To perform an economic evaluation of once-daily insulin glargine plus oral antidiabetic therapy (BOT) versus twice-daily administration of pre-mixed insulin (30/70) based on the LAPTOP-Study results from the German health insurance’s (GKV) perspective.

METHODS: A cost-minimization analysis was performed from the GKV viewpoint taking into account insulin-naïve type-2 diabetes mellitus patients poorly controlled with oral antidiabetic drugs (OAD). First year of insulin treatment was analyzed. Costs included medication, application devices and blood sugar control. Other costs were either the same in both groups or not relevant for the GKV perspective. Underlying prices were retail prices. Insulin use for the first 24 weeks and OAD use were taken from the study results, blood sugar control followed the study’s recommendations. Insulin use for weeks 25 to 52 was extrapolated. Although the study results showed a slight improvement in the BOT arm we assumed equality. Univariate sensitivity analyses were performed to account for uncertainties.

RESULTS: Annual insulin use was 10,500 I.U. and 23,900 I.U. in the BOT and pre-mixed insulin group, respectively. Assuming base-case conditions overall annual costs were €236 lower for the BOT regimen. Parameter variation of +/-20% still kept the difference between the regimens negative, i.e., favourable for BOT. Also some variations reflecting potential differences between the study results and German treatment reality were all favourable for BOT. If varied individually, insulin prices and insulin use had the highest impact, but if insulin use and prices were varied in both groups simultaneously, the number of blood sugar controls per day had the highest impact. Other known risk factors for diabetes complications were also found to be similar. The lifetime health care costs per-patient estimated by the model were £9585 for pioglitazone and £10,299 for rosiglitazone. Patients treated with pioglitazone had a discounted life-expectancy of 8.83 years versus 8.79 years for rosiglitazone patients. Pioglitazone patients also experienced additional quality-adjusted life-years (6.8070 vs. 6.7686). With improved health outcomes and lower costs, treatment with pioglitazone dominated rosiglitazone treatment.

CONCLUSIONS: High quality evidence from a large head-to-head trial indicates superior serum lipid profiles and similar HbA1c profile in patients treated with pioglitazone. In addition, treatment with pioglitazone is associated with lower costs than rosiglitazone. It follows that pioglitazone is the cost-effective treatment choice for this patient population.

PDB31

A LIFETIME MODELLLED ECONOMIC EVALUATION COMPARING PIOGLITAZONE AND ROSIGLITAZONE FOR THE TREATMENT OF TYPE-2 DIABETES MELLITUS IN THE UK

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OBJECTIVES: Our objective was to develop a lifetime model of Type-2 diabetes mellitus and its sequelae in order to compare the costs and benefits of pioglitazone versus rosiglitazone oral treatment.

METHODS: A decision-analytic model employing a Monte Carlo simulation of a Markov process was constructed. The model incorporated efficacy data from a large (n = 802) key clinical trial comparing the glycaemic and lipid control of pioglitazone and rosiglitazone (Study H6E-US-GLAI). These efficacy data were used with a recently published UKPDS algorithm to calculate the risk of diabetic complications, including mortality, as patients progressed through each treatment arm in the model. The model was calculated from the perspective of the National Health Service in the UK and included direct health care costs only. Patient outcomes measured in the model included life-expectancy and quality-adjusted life-expectancy.

RESULTS: Patients treated with pioglitazone achieved a reduction in their total cholesterol to high-density lipoprotein ratio (TC:HDL) of 0.34 whereas the TC:HDL increased by 0.65 in those receiving rosiglitazone (p < 0.001). The HbA1c profile was similar between the treatment groups (p = 0.13). Other known risk factors for diabetes complications were also found to be similar. The lifetime health care costs per-patient estimated by the model were £9585 for pioglitazone and £10,299 for rosiglitazone. Patients treated with pioglitazone had a discounted life-expectancy of 8.83 years versus 8.79 years for rosiglitazone patients. Pioglitazone patients also experienced additional quality-adjusted life-years (6.8070 vs. 6.7686). With improved health outcomes and lower costs, treatment with pioglitazone dominated rosiglitazone treatment.

CONCLUSIONS: High quality evidence from a large head-to-head trial indicates superior serum lipid profiles and similar HbA1c profile in patients treated with pioglitazone. In addition, treatment with pioglitazone is associated with lower costs than rosiglitazone. It follows that pioglitazone is the cost-effective treatment choice for this patient population.
COST-CONSEQUENCE ANALYSIS OF SCREENING AND OPTIMIZED TREATMENT OF NEPHROPATHY IN HYPERTENSIVE PATIENTS WITH TYPE-2 DIABETES IN A FRENCH SETTING

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OBJECTIVES: Type-2 diabetes patients with hypertension have a high risk of developing nephropathy, with increased risks of morbidity/mortality. Screening for, and treatment of nephropathy, is currently suboptimal in France. We assessed the long-term morbidity/mortality. Screening for, and treatment of nephropathy followed by optimal anti-hypertensive therapy in those in which nephropathy is detected in France. METHODS: A Markov model projected lifetime impacts of screening, identification, and appropriate treatment of nephropathy using semi-quantitative urine dipsticks in a primary care setting, followed by treatment with irbesartan 300 mg added to conventional antihypertensives in a typical cohort of hypertensive Type-2 diabetes patients. The model simulated progression from no renal disease to end-stage renal disease (ESRD). Probabilities and costs came from published sources. Monte Carlo simulation was used to account for uncertainty in multiple parameters. RESULTS: In a cohort of 1000 patients, screening for nephropathy followed by optimal treatment reduced cumulative incidence of ESRD from (mean ± SD) 11.0 ± 1.7% to 6.5 ± 1.1%, increased number of ESRD-free years by 524 ± 80 years, increased undiscounted LE by 361 ± 60 years, and reduced costs (discounted 3% annually) by €3,340,200 ± 799,800. Sensitivity analysis showed that screening was most beneficial in younger patients. CONCLUSIONS: In hypertensive type-2 diabetes patients, screening for albuminuria followed by optimal antihypertensive treatment that includes irbesartan 300 mg, is projected to lead to substantial reductions in the incidence of ESRD, improvements in ESRD-free survival and life expectancy, and overall cost savings.

THE COST OF DIABETES MELLITUS IN SPAIN

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OBJECTIVE: To estimate the cost of diabetes mellitus (DM) in Spain by reviewing all available DM cost data. METHODS: Outstanding articles and unpublished data were identified through searches of PubMed, Spanish Medical Index, Spanish databases for doctoral thesis, Ministry of Health, Carlos III Health Institute, Spanish Health Technology Assessment Agencies, SAMFYC diabetes group, Spanish Federation of Diabetes Education Societies, and other DM sources from 1966 to November 2004. All studies with outstanding information on direct or indirect costs of DM diagnosis, treatment or complications were included (cost estimates in € of 2004). RESULTS: In total, 32 cost-of-illness (COI) studies published between 1982 and 2004 met the inclusion criteria (16.354 DM patients), 23 of them were performed with the prevalence method, 1 with the incidence method and 6 were pharmacoeconomic analyses. Total annual costs of DM in Spain would range between €685 and €2.771 million (1.6–6.4% of the Spanish public health expenditure). However, those results could underestimate the real DM cost (according to CODE-2 study, the Type-2 DM cost in Spain would be around 2.317 million € per year). The annual average cost per patient with DM would range between 1.627 and €3.982 for DM type-1 and €1.049–€5.091 for DM Type-2. The cost of hospital admissions, primary care visits and antidiabetic treatments would be 36–58%, 7–14% and 11–13% of the total cost, respectively. The indirect costs would be 28–43% of total DM costs. DM complications costs: serious hypoglycemia (€3.469), hyperglycemia (€3.357), infections (€2.703), ketoacidosis (€2.633), stroke (€4.091), ischemic cardiac disease (€3.675), neuropathy (€3.540), nephropathy (€3.525) and retinopathy (€2.109). CONCLUSIONS: The variability in the costs estimates was due to the differences of the studies design. To estimate the real cost of DM, a well designed COI prospective study is needed.

COST OF TYPE-2 DIABETES MELLITUS IN HONG KONG

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OBJECTIVES: Despite the recent increase in incidence and prevalence of Type-2 diabetes mellitus (T2DM) in Hong Kong, the economic impact of the disease has never been investigated. This study aims to estimate the total economic burden of a group of T2DM patients attending a public hospital in Hong Kong...
using a prevalence-based cost-of-illness approach. METHODS: A retrospective cohort observational study was conducted. The direct medical costs incurred at the public hospital were collected from a hospital electronic database. The other costs were estimated using a standard Chinese questionnaire. The figures obtained were extrapolated to estimate the total burden for the whole T2DM population in Hong Kong. The study was conducted from the perspective of a public hospital. RESULTS: Two hundred and four patients with T2DM were randomly selected to join this study and 147 were subsequently enrolled. Annual total direct medical cost per patient was US$1492 in which the government was shouldering 90.6%, while the patients only paid for the remaining 9.4%. Among these, specialist outpatient clinic visit costs and inpatient costs were the major cost drivers, which contributed up to 39.6% and 43.0% of the overall cost, respectively. The direct medical cost jumped dramatically, by 1.3 times, if the patient had complications. The total government direct medical cost for those without complication was US$1254/patient/year, which would jump to US$1692 for patients developing both microvascular and macrovascular complications. T2DM was found to have significant impact to the local health care budget. It contributed to about 5.0% of the total Hong Kong health care expenditure. CONCLUSIONS: This study confirmed T2DM and its complications pose a significant burden on the health care budget of Hong Kong. Slowing the progression of the disease to the more advanced and costly states should be cost saving.

OBJECTIVE: To estimate the French hospital extra costs of cardiovascular events (CVE) occurring in diabetic and non diabetic patients. METHODS: Hospital stays were extracted from the 2003 national Diagnosis Related Group (DRG) including the whole French stays (around 18 million records). Stays were selected on the ICD-10 and/or procedures codes related to the following events: stroke, myocardial infarction, unstable angina, and coronary revascularisation. Diabetic patients were picked out using secondary diagnosis related to diabetes mellitus (type I and II). The level of resource consumption and average length of stay were analyzed in both diabetic and non diabetic groups. For the economic analysis, an adjustment method based on national DRG costs (public and private hospitals) was used to take into account extra length of stay of diabetic patients compared with average DRG length of stay. RESULTS: Average length of stay of diabetics was significantly longer than non diabetics (stroke: 2.45 days, myocardial infarction: +1.48 days, unstable angina: +1.25 days, revascularisation: 2.82 days; p < 0.001 for each). The mean number of medical procedures recorded by stay was higher in the diabetic group (stroke: +0.51; myocardial infarction: +0.80; unstable angina: +0.92; revascularisation: +1.91; p < 0.001 for each) and diabetic patients had more Intensive Care Unit transfer for myocardial infarction and unstable angina (odd ratio diabetic versus non diabetic: 1.7 and 1.3; p < 0.001). Adjusted hospitalization costs of events for diabetic patients were the following: stroke (non fatal event): €5703, myocardial infarction (non fatal event): €4721, unstable angina: €4147, coronary revascularisation: €11,679. The overcosts of diabetic patients for these events compared with average DRG cost were respectively +23.9%, +10.4%, +6.1% and +9.1%.

CONCLUSION: Diabetic patients with CVE required higher medical consumptions than non diabetic during hospital management. Extra costs associated with diabetes were estimated and can be used in cost-effectiveness studies.

ANALYSIS OF THE COST OF DIABETES TREATMENT IN BULGARIA

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OBJECTIVES: Cost study of diabetes therapy was conducted at national level in 1997 but the introduction of health insurance system and a lot of new medicines changed treatment patterns as well the cost of therapy. The goal of this study is to analyse the cost of diabetes therapy from the National Health Insurance Fund (NHIF) point of view and to compare prescribing practice with the previous study. METHODS: Information by the NHIF electronic data base was collected at national level and representative sample of 3410 and 2440 prescriptions for type-1 and type-2 diabetic patients was analyzed. The observed patients were also systematized for the available complications and their treatment cost was calculated on the basis of NHIF tariffs. Manufacturers’ information for the insulin market was collected and compared with the prescribing information. RESULTS: The number of diabetic patients increased since 1997 from 150,000 to 225,000 and patients on insulin therapy account for 35%. The cost of the ambulatory treatment with peroral antidiabetics account for €800,000 while expenditures for insulin are €32 million. The metformin was prescribed in 43% and glibenclamid in 25% of prescriptions. It was revealed substantial growth in the total insulin market from 610MU in 1997 to 969MU sold in 2004 with prevailing prescribing of insulin mixtures in 59%. Micro and macro vascular complications prevail in 97% of the patients and account for 59% of expenditures paid for hospitalization and 20% of ambulatory expenditures. Expenditures for insulin account for 18% of the cost of diabetes treatment while per oral antidiabetics for less than 8%. CONCLUSION: The cost of insulin treatment of one patient is close to cost reported by similar European studies but Bulgaria delay with the introduction of insulin analogues and it could affect the future complications therapy.

EVALUATION OF THE COST-UTILITY OF INSULIN DETEMIR COMPARED TO INSULIN GLARGINE, BOTH IN COMBINATION WITH INSULIN ASPART IN TYPE-1 DIABETES IN GERMANY AND AUSTRIA

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OBJECTIVES: Intensive insulin treatment is associated with an increased risk of hypoglycemic events in type-1 diabetes. A recent 26-week randomized clinical trial demonstrated that basal/bolus treatment of type-1 diabetic patients with insulin detemir + insulin aspart (IDet/IAsp), compared to insulin glargine + insulin aspart (IGlar/IAsp), led to a 72% lower risk of major hypoglycemic events (p < 0.05). METHODS: A validated model was used to project long-term complications, quality-adjusted life expectancy, long-term direct and indirect costs, and incremental cost-utility ratios (ICURs) for IDet/IAsp versus IGlar/IAsp in Austria and Germany. Markov modeling was used to describe the incidence and progression of complications (cardiovascular disease, neuropathy, renal and eye disease). Probabilities of com-
plications were derived from the DCCT, Framingham, and WESDR studies. Clinical input was taken from the 26-week multicenter, multinational, open-label trial. Costs were retrieved from published sources. Direct and indirect costs of diabetes complications and treatment with IDet/IAsp or IGlAr/IAsp were projected over patients’ lifetimes from a societal health care perspective. Costs and outcomes were discounted at 3.5% annually.

RESULTS: In this analysis, a reduction in major hypoglycemic events associated with IDet/IAsp led to an increase in quality-adjusted life expectancy of 0.11 quality-adjusted life years (QALYs). Direct lifetime costs were slightly higher with IDet/IAsp treatment than with IGlAr/IAsp treatment, leading to ICURs of €21,453 per QALY gained in Austria and €13,607 per QALY gained in Germany. When indirect costs were included in the analysis, IDet/IAsp was dominant to IGlAr/IAsp in both countries. CONCLUSIONS: IDet/IAsp therapy was associated with improved quality-adjusted life expectancy, leading to an ICUR based on direct costs that was well within the range considered to represent good value for money in Austria and Germany.

COST-UTILITY ANALYSIS IN A USA SETTING OF SCREENING AND OPTIMIZED TREATMENT OF NEPHROPATHY IN HYPERTENSIVE PATIENTS WITH TYPE-2 DIABETES
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OBJECTIVES: Forty percent of hypertensive type-2 diabetes patients will develop nephropathy, indicating end organ damage, increased risk of cardiovascular disease (CVD), and death. In the US, screening rates and nephropathy treatment are suboptimal. We assessed the health economic impact of nephropathy screening followed by optimal antihypertensive therapy in those who have nephropathy in the US. METHODS: A Markov/Monte Carlo model simulated lifetime impacts of screening for nephropathy using semi-quantitative urine dipsticks in a primary care setting, and subsequent addition of irbesartan 300mg to conventional antihypertensives in hypertensive type-2 diabetes patients in those patients identified as having nephropathy. Progression from no renal disease to end-stage renal disease (ESRD) was simulated. Probabilities, utilities and costs of CVD events, medications and ESRD treatment came from published sources. Number of days of ESRD avoided, quality-adjusted life years (QALYs) and direct costs were projected. Second-order Monte Carlo simulation was used to account for uncertainty in multiple parameters. Costs and QALYs were discounted three percent annually. RESULTS: Screening followed by optimized treatment led to 36,683 ± 5767 days of ESRD avoided in 1000 simulated patients, with incremental costs per QALY gained of $7315. There was a 98% probability that screening and optimized antihypertensive therapy would be considered cost-effective with a willingness to pay ≥$20,000. Sensitivity analysis showed that screening and optimized treatment would dominate “no screening” in patients <55 years of age. CONCLUSIONS: In hypertensive patients with type-2 diabetes, screening for albuminuria followed by optimal antihypertensive treatment is cost-effective in a US setting.

DIABETIC PERIPHERAL NEUROPATHY: EVALUATION OF THE ASSOCIATION BETWEEN NEUROPATHIC SYMPTOMS (NTSS-6-SA) AND HEALTH CARE RESOURCE USE AND PRODUCTIVE LOSSES
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INTRODUCTION: Diabetes increases resource use, and complications add to costs. The purpose of this study was to characterise the association between increasing frequency and severity of the symptoms of diabetic peripheral neuropathy (SDPN), measured by the Neuropathy Total Symptom Score (NTSS)-6-SA, and health care resource use and loss of productivity. METHODS: A postal survey was mailed to subjects identified at random from hospital records as having either type-1 or Type-2 diabetes using the same methods as the Health Outcomes Data Repository (HODaR). Cross-sectional, univariate and multivariate analyses were used to test for the associations in this preliminary analysis of the first 604 responses. Where appropriate, four categories were used for cross-sectional analysis based on quartiles of the NTSS-6-SA scores, Q1 being the lowest score. RESULTS: The mean age of respondents was 64 years (IQR 55–73); 58% male and the mean duration of diabetes were 14 years (IQR 5–18). 24% reported no SDPN symptoms. The mean number of days in hospital in the previous year was: Q1 = 3.4 and Q4 = 8.3. Mean number of ambulatory care in last year: Q1 = 4.4 and Q4 = 10.6. Mean contacts with a GP or nurse in the community over six months: Q1 = 6.0 and Q4 = 14.3. Mean productive days lost in the previous six months: Q1 = 35 and Q4 = 128 (note: multiple categories can occur on the same day). In multivariate analysis adjusting for age and other complications, the NTSS-6-SA score remained highly significant. Using days in hospital since 1995 (10 years) as the dependent variable, there was an increase of 0.3 days per NTSS-6-SA unit (p < 0.001), and using outpatient attendances since 1997 as the dependent variable (8 years), there was an increase of 1.13 visits per unit (p < 0.001). CONCLUSIONS: There was a direct association between increase SDPN and increasing health care resource use; furthermore, increasing SDPN was associated with lost productivity.

IMPROVING DIABETES CARE MANAGEMENT ACROSS A SET OF COMPREHENSIVE MEASURES IN A MEDICAID MANAGED CARE ORGANIZATION
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Diabetes Mellitus is a significant public health problem in the United States. Monitoring of glycemic status, eye exam, LDL-C levels, and nephropathy testing is essential for diabetes care. OBJECTIVES: To improve diabetic care within a Medicaid Managed Care Organization. METHODS: This is a prospective interventional, pre- and post comparison study with retrospective claims data and medical chart review. Four indicators: HbA1c, LDL-C, eye exam, and nephropathy monitoring were targeted for quality improvement interventions. A random sample of 411 diabetic members aged 18–75 years was selected using administrative and medical records. Patient demographics, past medical history, eye exam, and laboratory data were recorded using a standard form. Patient and provider interventions included: case manager phone outreach program to remind
members to follow up with their physicians; patient reminder postcards; educational materials and newsletters; Diabetic Control Network—a 12-month patient self educated program; vision provider contract requirement included performance guarantees to improve eye exam rates; mailings to providers a list of their diabetic patients who had not received the necessary services; provider and patient gift certificate incentive programs; providers on site education, and updated ADA diabetes standards of care. Results of baseline measurement and 12-month post intervention re-measurement were compared. RESULTS: A significant improvement in all selected quality indicators were found: HbA1c poorly controlled rate was 48.42%, a decreased of 19.46% (p < 0.001) from baseline; eye exam rates detection was 48.66%, an increased of 10.70% (p < 0.05) from baseline; LDL-C level <130mg/dL was 55.96%, an increased of 10.46% (p < 0.05) from baseline, LDL-C level <100mg/dL was 31.87%; and nephropathy monitoring was 53.28%, an increased of 8.51% (p < 0.05) from baseline. CONCLUSIONS: Results of this study demonstrated substantial improvement in all selected diabetes indicators. Although results of our interventions are encouraging, expanded effort is still needed to further improve rates of diabetes management among Medicaid members.

PDB43
SHOULD WE LOOK FOR A NEW APPROACH IN DIABETES MELLITUS (DM) MANAGEMENT? IS IT A COST-EFFECTIVE STRATEGY IN THE POLISH SETTING?
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The high prevalence of undiagnosed diabetes and the large proportion of individuals with complications at diagnosis (50% according to UKPDS 33) argue for screening for Type-2 diabetes. The NHANES study confirms the substantially higher risk of death, lower survival, and lower life expectancy of diabetic adults compared with non-diabetic adults. A UK Prospective Diabetes Study shows that intensive blood-glucose control can reduce risk of any diabetes-related death and any diabetes-related endpoints. OBJECTIVE: The aim of the study was to assess cost-effectiveness of active screening for DM and intensive blood-glucose control in comparison with conventional treatment in patients with DM II in the Polish population. METHODS: The Markov model of DM progression to stimulate lifetime and related health care cost was constructed. Demographic characteristics of a stimulated cohort as well as cost of health care were based on a CODIP study population. Costs were analysed from a societal viewpoint and included only direct medical costs. Costs of active searching for DM and the distribution of people on diagnostic pathways came from an epidemiological Screen-Pol 2 study. The age-dependant risk of death and transition probabilities between disease stages were obtained from the NHANES study. The effectiveness of active blood-glucose control was derived from the UKPDS 33. RESULTS: In the long term (20 years), a strategy based on active blood-glucose control could bring an additional 0.4 life years saved (LYS) per patient. An additional LYS costs €457. If active blood-glucose control is preceded by the active screening for DM, this strategy could bring 0.71 LYS per patient. The cost-effectiveness ratio amounts to €108,621/LYS. CONCLUSIONS: The most effective strategy in DM management is based on an early detection program and active blood-glucose control. The cost-effectiveness ratio for active glucose control is extremely low.

PDB44
USE OF ACETYL-SALICYLIC ACID FOR CARDIOVASCULAR PREVENTION IN PRIMARY CARE PATIENTS WITH DIABETES MELLITUS
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OBJECTIVE: Use of acetyl salicylic acid (ASA) for primary prevention (PP) and secondary prevention (SP) of cardiovascular disease (CVD) in adult diabetic patients is highly recommended. This study was conducted in order to determine the use of ASA and to assess the achievement of therapeutic targets in diabetic patients. METHODS: This is a retrospective and observational study. Sample consisted of patients >18 years with diabetes mellitus followed in four primary care centers. Measurements included demographics, use of ASA and/or antiagulant drugs, co-morbidities, clinical parameters and proportion of patient at therapeutic target (TT). Descriptive statistics, chi-square test and logistic regression model were used for significance. RESULTS: A total of 4140 diabetic patients were analyzed, 79.1% (95% confidence interval: 77.7%–80.5%) in PP and 20.9% (18.2%–23.7%) in SP. Mean age was 64.1 (13.8) years, and 49.3% of patient were men (PP: 46.3; SP: 60.7; p = 0.000). ASA were prescribed on a routine basis in 29.2% (27.8%–30.6%); 20.8% (19.4%–22.2%) in PP and 60.8% (57.6%–64.0%) in SP. Proportion of patient at TT was 48.0% for hypertensives and 59.8% for hypercholesterolemic, being these the most frequent antecedents observed in SP. Older patients [OR = 1.01 (1.00–1.02); p = 0.011], number of cardiovascular-risk factors [OR = 1.14 (CI: 1.03–1.27); p = 0.013], LDL-c TT [OR = 1.42 (1.06–1.88); p = 0.017], and a poor metabolic control of glycated hemoglobin [OR = 1.51 (1.22–1.89); p = 0.000] were covariates associated to the use of ASS in PP. CONCLUSIONS: Treatment with ASA is underused for PP in patients with diabetes mellitus in Primary Care. Achievement of TT should be improved.

PDB45
PREDICTORS OF DIABETES MEDICATION UTILIZATION AND HEALTH CARE COSTS IN U.S. PATIENTS WITH TYPE-2 DIABETES: RESULTS FROM A NATIONAL SURVEY STUDY
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OBJECTIVE: This study determined the predictors of antidiabetes medication adherence and health care costs in adults with Type-2 diabetes mellitus in the United States. METHODS: The 2000 Medical Expenditure Panel survey was used for the analyses. The population for analyses was identified using ICD-9 CM codes for Type-2 diabetes. The predictor variables were demographics variables, self-reported health status (EuroQol score), and health services utilization variables. The dependent variables in this analysis were diabetes medication possession (number of diabetes medication refills) and annual health care costs. Multivariate weighted analysis was performed to identify significant predictors of medication utilization and health care costs. RESULTS: There were 11.7 million patients with reported Type-2 diabetes in the United States in 2000, based on survey extrapolation. On an average, there were ten diabetes drug refills reported by patients. The average annual health care costs for these patients were $7466, while the mean EuroQol summary score was 48%. Increase in the health status summary score (EuroQol) by 10% was associated with a slight (1%) decrease in diabetes drug refills (p < 0.05). An additional diabetes related emergency visit or an inpatient visit was associated with a nearly 50% increase compared to the average diabetes medication util-
PDB46

**KNOWLEDGE ABOUT INSULIN AND WILLINGNESS TO USE IT INFLUENCE GLYCEMIC CONTROL IN PATIENTS WITH TYPE-2 DIABETES MELLITUS ONLY TREATED WITH ORAL ANTIDIABETIC DRUGS—A GERMAN SURVEY**

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**OBJECTIVE:** In patients with type-2 diabetes (PwT2D) sufficient blood glucose control, also at an early stage, often cannot be reached by using oral antidiabetic drugs (OAD) alone so that the administration of insulin is necessary. Frequently, insulin therapy is initiated too late, which is mostly due to the patients’ aversion to insulin. The aim of this survey was to investigate the influence of knowledge about insulin and the willingness to start using insulin treatment (WUI) in PwT2D on HbA1c not adequately controlled on OAD alone.

**METHODS:** Study materials were sent out nation-wide to general practitioners by mail. The patient questionnaire covered the following topics: WUI; patients’ reported well-being; perceived seriousness of T2D; perceived susceptibility to diabetic complications; expectations regarding beneficial and adverse effects of insulin; perceived incompatibility with daily routine. A 10-point rating scale (1 = totally disagree / 10 = totally agree) was used to document patient assessments. The assessments were analyzed descriptively.

**RESULTS:** Out of 729 patients, 448 were treated with OAD only. In total, 222 had low WUI (1–5 points = group1/G1); 217 had high WUI (6–10 points = group2/G2); not answered n = 9. A high percentage of patients indicated that they were aware of the seriousness of their T2D (G1 = 83%; G2 = 93% agreement). Yet, the majority of the patients did not agree that they had a severe stage of T2D (G1 = 79%; G2 = 73%). Patients with lower WUI showed less knowledge regarding insulin. HbA1c was significantly associated with a 117% increase in average health care costs by 3.7% (p < 0.001). An increase in the EuroQol score by 10% was significantly associated with decrease in annual health care costs by 4.5% (p < 0.05). Each diabetes drug refill was significantly associated with increase in the average health care costs by 3.7% (p < 0.001), while each diabetes related inpatient visit was associated with a 117% increase in average health care costs (p < 0.001). CONCLUSIONS: This study showed significant associations between diabetes related utilization, health status and diabetes medication adherence. Medication utilization was further significantly associated with health care costs. The study findings highlight the need for maintaining improved health status, and promoting cost-effective drug therapy in Type-2 diabetes.

PDB47

**TYPE-2 DIABETES AND GLYCEMIC CONTROL IN GERMANY**

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**OBJECTIVE:** Given that control of blood glucose improves long-term outcomes for patients diagnosed with type-2 diabetes, the objective of this study is to examine levels of glycemic control and antidiabetic medication use in Germany. **METHODS:** Data for this study were obtained from the German Disease Analyzer—Mediplus database. All patients who were identified with type-2 diabetes between January 1, 2004 and December 31, 2004, were at least 20 years of age, and received at least one HbA1c test between April 1, 2004 and December 31, 2004 were included in the analysis (N = 5,135). Medication use was examined for the 90 days prior to the individual’s most recent HbA1c test.

**RESULTS:** Among those patients who were treated with antidiabetic medication (61.99%), individuals were most commonly prescribed metformin monotherapy (33.55%), sulfonylurea monotherapy (18.18%), oral combination therapy (17.68%), insulin monotherapy (16.92%), or insulin plus oral therapy (7.13%). Over half of all patients diagnosed with type-2 diabetes (52.74%) did not obtain a recommended range of glycemic control of 6.5% or below. Comparing patients who were within the recommended range of glycemic control to those above the targeted range revealed no significant differences in mean age, sex, or comorbidities reported in 2004. In contrast, there were significant differences in the percentage of patients who obtained the recommended range of glycemic control based on antidiabetic medication prescribed (p < 0.0001). Patients treated with insulin combination therapy or insulin monotherapy were least likely to be within the targeted range of HbA1c (22.91% and 26.58%, respectively), while only 31.85% of those treated with oral combination therapy were within the targeted range.

**CONCLUSIONS:** Over half of patients diagnosed with type-2 diabetes do not achieve the targeted range of glycemic control. For a majority of patients, alternative therapy regimens seem necessary to achieve good glycemic control.
was comparable in both groups (7.3% ± 1.3). In G2, the number of patients reaching HbA1c < 7% was higher by 11.6%. CONCLUSION: PwT2D have a “DEFICIT” in knowledge regarding insulin in general. On an individual basis, PwT2D often underestimate the severity of their diabetes. Higher level of knowledge is correlated with higher WUI and leads to better glycemic control.

**PDB49**

**PATTERNS OF BLOOD GLUCOSE MONITORING IN RELATION TO GLYCAEMIC CONTROL AMONG PATIENTS WITH TYPE-2 DIABETES IN THE UK**

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**OBJECTIVES:** The study compared patterns of blood glucose monitoring among patients with type-2 diabetes initiating therapy with insulin or oral medication and examined the relationship between the quantity of prescribed monitoring strips and glycaemic control. **METHODS:** Data were obtained from the UK General Practice Research Database. Patients were eligible if they were identified as having type-2 diabetes, initiated therapy with insulin or an oral agent, and had 12-month post-initiation data. Differences in patient characteristics and number of test strips prescribed between the insulin (n = 347) and oral cohorts (n = 2436) were examined. Multivariate regressions analyzed the relationship between quantity of monitoring and glycaemic control for a subset of patients (n = 245 insulin; n = 1795 oral) with available glycosylated haemoglobin (HbA1c) data.

**RESULTS:** During the 12-month post-initiation period, patients in the insulin cohort were prescribed approximately twice as many test strips compared to those patients in the oral medication cohort. Multivariate regression revealed that individuals who initiated therapy with insulin and were prescribed enough test strips to test at least once per day in the six months prior to the test date had, on average, a 0.65% lower HbA1c value (p = 0.02) compared to the HbA1c values for individuals who were prescribed fewer test strips. In contrast there was no significant relationship between HbA1c levels and quantity of test strips prescribed for individuals who initiated therapy with oral antidiabetic agents. **CONCLUSIONS:** Results indicate significant differences in the prescription of blood glucose monitoring strips, with patients initiated on insulin prescribed almost twice as many test strips compared to patients initiated on oral agents. The greater number of blood glucose test strips prescribed was associated with lower HbA1c values for insulin patients only. Physicians may therefore wish to encourage frequent blood glucose monitoring among patients with type-2 diabetes who are treated with insulin.

**PDB50**

**MODELLING THE CLINICAL CONSEQUENCES OF RIMOBANANT IN ADDITION TO DIET AND EXERCISE IN ABDOMINALLY OBESE PATIENTS WITH TYPE-2 DIABETES**

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**OBJECTIVES:** Rimonabant is the first selective CB1 blocker, currently under clinical investigation to reduce multiple cardiometabolic risk factors including improvements in lipid and glucose parameters, in addition to reductions of weight and waist circumference. In patients with type-2 diabetes not adequately controlled with a monotherapy, a 0.7% reduction in HbA1c from a 7.3% HbA1c at baseline versus placebo was reported compared to diet and exercise alone, with a 15.4% increase in HDLc and 9% decrease in triglycerides from baseline. Approximately 50% of these effects were independent from weight loss. The objective was to predict the long-term clinical outcomes of treatment with rimonabant in the management of cardiovascular risk in abdominally obese diabetics. **METHODS:** A 20-year Markov model with a 6-month cycle-length and states representing diabetes, smoking, cardiovascular disease and death was developed. The weight-loss and beyond-weight-loss effects of rimonabant were modeled using the Framingham and UKPDS risk equations. A flexible time horizon of 1 to 20 years was applied. Patient characteristics and clinical data from the Rio diabetes study were used. Extensive probabilistic sensitivity analyses were carried out. **RESULTS:** For a cohort of 1000 patients, 1 year rimonabant treatment compared to diet and exercise alone, prevented 15 events (stroke, MI, fatal and non-fatal; angina, TIA) over a 20-year period, resulting in 50 life years gained. For a 2-year treatment duration, 27 events would be avoided, resulting in 84 life years gained. **CONCLUSION:** The treatment of cardiometabolic risk factors with rimonabant in abdominally obese patients with type-2 diabetes is likely to result in significant long-term clinical benefits.

**PDB51**

**EVALUATING INTERVENTIONS ALONG THE COURSE OF DISEASE: MODELING DIABETES AND ITS MACROVASCULAR COMPLICATIONS**

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Diabetes Mellitus and its complications cause a high burden of disease. Many different options for primary prevention and the prevention of its complications exist. To support decision makers in allocating money to different interventions in health care, insight into their costs and health effects over time is important, as well as the possibility to analyze the consequences of different objectives and constraints of the decision maker. **OBJECTIVES:** To develop a model that enables the comparison of primary prevention with the prevention of complications in diabetes patients as to costs of care and health effects. This is the first step in the development of a budget allocation model for diabetes. **METHODS:** Based on the RIVM Chronic Disease Model, a multistate transition model was developed with states representing individuals’ risk factor and disease status. The model describes the relations between diabetes, its risk factors and its macrovascular complications. A health economics module computes outcomes in terms of intervention costs, costs of care and composite health effects and finally cost-effectiveness ratios. **RESULTS:** A set of formal equations defines the diabetes model and a health economics module. These were implemented in Mathematica and combined with estimates of input data, to result in a population model, linking risk factor prevalence in the population to incidence of diabetes, and linking risk factor prevalence in the diabetes population to incidence of complications. **CONCLUSIONS:** Basing the model on the Chronic Disease Model had the advantages of full inclusion of competing death risks in the model and easy generalizability to other chronic diseases. The model with the health economics module enables to compare the costs and effects of interventions on
different risk factors for cardiovascular complications, both in the general population and in diabetes patients.

**PDB52**

**TYPE-2 DIABETES MODELS THAT DO NOT ACCOUNT FOR MICROVASCULAR DISEASE SCREENING RATES AND IMPORTANT CONCOMITANT MEDICATION USE MAY LEAD TO SUBSTANTIAL MISREPRESENTATION OF THE COST-EFFECTIVENESS OF NEW MEDICATIONS**

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**OBJECTIVES:** A number of diabetes models have recently been published. They are often used to assess the cost-effectiveness of new interventions and to generate health economic arguments for reimbursement submissions. The majority of these models do not account for rates of screening for important diabetes-related microvascular (eye, renal and foot) disease, nor do they consider the rates of use of important concomitant medications like ACE inhibitors/angiotensin-2-receptor inhibitors, statins, or aspirin. Our aim was to test the hypothesis that not accounting for these important factors may substantially influence projected long-term cost-effectiveness of new interventions.

**METHODS:** A published and validated diabetes model was used to project the long-term cost-effectiveness of a hypothetical intervention that lowered HbA1c by 0.4%-points, and which cost an additional $500/patient/year, versus no intervention. Quality-adjusted life years (QALY) and lifetime direct medical costs were calculated for each treatment arm, taking into consideration: A) no screening for- and appropriate treatment of diabetes-related complications, or B) screening rates and concomitant medication use as seen in a typical type-2 diabetes population in the US.

**RESULTS:** If screening rates and concomitant medication use were not considered, the hypothetical intervention was dominant to no intervention, with 0.214 QALYs gained (discounted 3% annually), and discounted lifetime direct cost savings of $165/patient. When screening rates and concomitant medication rates were accounted for, the intervention led to smaller improvements in QALYs, and increased costs, with incremental costs/QALY gained of $34,024.

**CONCLUSIONS:** Health economic models of diabetes must account for the costs and clinical effects of screening for- and appropriate treatment of important diabetic microvascular complications, and the costs and effects of important concomitant medications. Failure to account for these factors may lead to inaccurate assessment of the cost-effectiveness of new interventions in Type-2 diabetes patients.

**PDB53**

**INTERNAL VALIDATION OF THE ECONOMIC ASSESSMENT OF GLYCEMIC CONTROL AND LONG-TERM EFFECTS (EAGLE) DIABETES MODEL**

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**OBJECTIVES:** The Economic Assessment of Glycemic control and Long-term Effects (EAGLE) model version 2.0 simulates long-term diabetes-related complications and related costs for type-1 and Type-2 diabetes using equations derived from the published results of several large interventional studies (DCCT, WESDR, and UKPDS). To assess the model's validity, EAGLE was internally validated according to current guidelines.

**METHODS:** Following in-house testing protocols, first-order validation identified inconsistencies in results and corrected programming errors. Second-order validation involved the following steps: 1) Simulation sets were created in EAGLE based on baseline data from the studies used to build the model; 2) Simulations were run. The results obtained with EAGLE were compared with the published event rates; and 3) Risk equations were refined if a deviation of >10% was observed between the model-derived and published results. Patient numbers and iterations were systematically changed until a final run was performed with 50,000 patients and 100 iterations. **RESULTS:** Fulfilling a criterion for validity, the cumulative incidence per 1000 patient-years and incidence rates for all events simulated with EAGLE fell within the range of ±10%. The difference between published data and model results ranged from 0% to 9% for all patient populations after possible refinements. For example, in Type-2 diabetes, EAGLE successfully predicted the end-stage renal disease and fatal event rates reported in UKPDS (deviation = 0%). The rates of severe hypoglycemia differed by 1%. The EAGLE event rates for proliferative and non-proliferative retinopathy corresponded well with event rates derived from the WESDR publications (deviation = 3% and 4%, respectively). **CONCLUSIONS:** EAGLE consistently predicts event rates reported by UKPDS, WESDR, and DCCT, and is thus a valid and robust tool for the analysis of the long-term diabetes-related complications and related costs in type-1 and Type-2 diabetes.
MEASURING QUALITY OF LIFE WITH EQ-5D IN AN AUSTRIAN OUTPATIENT CLINIC FOR PATIENTS WITH DIABETES MELLITUS
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OBJECTIVE: EQ-5D has become a standardised instrument for measuring quality of life (QoL). Actually there is no data available for Austrian diabetic patients. We surveyed QoL of diabetic patients in an outpatient clinic in Styria and applied EQ-5D the first time in such a setting. Aim of the survey was to gain insights into the overall QoL in this patient group and testing the practicality and understandability of EQ-5D in an Austrian outpatient clinic setting.

METHODS: EQ-5D and EQ-VAS were used to measure QoL at a random sample visiting the outpatient clinic within the 12 weeks of survey. The form was handed out in hard-copy to n = 103 patients (7% in-patient, 93% out-patient) during the waiting time for consultation. All 103 patients responded to the form.

RESULTS: Rate of completed questions was high, 94% responded to mobility, 95% to personal care, 93% to usual activities, 92% to anxiety/depression and 86% to VAS-Score. It turned out that VAS was the most difficult question for the patients to assign. 24% of patients had Diabetes mellitus (DM) 1 (39% women) with a mean age of 43 (SD ±13) years, 75% of patients with DM2 (53% women) were mean 65 (SD ± 12) years old, in 1% of patients DM type was missing. Mean QoL measured with VAS-Score was in patients with DM1 82 (±15), Median 83 (80–90) and mean Qol 62 (±21), Median 63 (50–80) for patients with DM2. Patients with DM1 had a significantly higher QoL (p < 0.001, Wilcoxon test) than patients with DM2.

CONCLUSION: The survey showed that EQ-5D can be easily integrated in the operating processes of an outpatient clinic and all patients were willing to fill out the EQ-5D. In a next step EQ-5D will be linked to medical data to gain more information about EQ-5D and medical situation.

AN ASSESSMENT OF THE LONG-TERM OUTCOME FOR LIRAGLUTIDE-METFORMIN VERSUS METFORMIN AND VERSUS METFORMIN-GLIMPIRIDE IN TYPE-2 PATIENTS WITH INADE-QUATE GLYCAEMIC CONTROL
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OBJECTIVES: Poor glycemic control is associated with increased risk of complications in Type-2 diabetes. A clinical trial demonstrated that Liraglutide plus Metformin (Lira/Met) versus Metformin (Met) significantly improved HbA1c (0.82% points lower after 5 weeks). In the same study Lira/Met versus Metformin plus Glimipiride (Met/SU) significantly improved weight by approximately 3% points. The objective is to link these short-term outcomes to long-term complication rates.

METHODS: A validated model which project long-term complications, improvements in Life-Years Gained (LYG) and Quality-Adjusted Life Years (QALY). Standard Markov modeling was used to describe incidence and progression of com-placations (cardiovascular disease, neuropathy, renal and eye disease). Probabilities of complications and HbA1c-dependent adjustments were derived from the DCCT, UKPDS, and WESDR studies. Clinical input was taken from a 5 week double-blind, double-dummy, randomized, parallel-group, dose titration study with an open labelled OHA arm phase II trial in Type-2 patients. Outcomes were estimated at 3% per annum and benefits were projected over patients’ lifetime.

RESULTS: Improved glycemic control and weight profile with Lira/Met versus Met and versus Met/SU, respectively, led to decreased diabetes-related complications, with a subsequent in-increase in LYG of 0.33 and 0.29 QALYs compared to Met and 0.18 LYG and 0.14 QALY compared to Met/SU.

CONCLUSION: Improvements in glycemic control and weight led to long-term improvement of both LYG and QALY when comparing Lira/Met treat-mint to Met and Met/SU treatment.
OBJECTIVE: Diabetic peripheral neuropathy (DPN) is a debilitating complication of diabetes and causes sensory symptoms that impact health and functionality. The purpose of this study was to test the hypothesis that there was a direct association between the symptoms associated with DPN (SDPN), as measured by a new instrument the Neuropathy Total Symptom Score (NTSS-6 [self administered]), and health-related utility as measured by the EQ5Dmax. The NTSS-6 provided a score of 0 to 3.66 in each of six domains. The score (range 0 to 21.96) is simply summed with zero meaning no symptoms. METHODS: A postal survey using various instruments including the NTSS-6 and the EQ5D was mailed to subjects identified at random as having either type-1 or Type-2 diabetes using the same methods as the Health Outcomes Data Repository (HODaR). Univariate and multivariate analysis were applied. This is a preliminary analysis of the first 604 returns. RESULTS: The mean age of respondents was 64 years (IQR 55–73); 58% were male and the mean duration of diabetes was 14 years (IQR 5–18). Of the 604 patients, 24% reported having no neuropathic symptoms. The overall mean (SD) EQ5Dmax was 0.65 (0.33), and mean NTSS-6 score 6.2 (median and IQR 4.33, 1.0–10.33). In univariate analysis there was a direct association between the two instruments (correlation coefficient 0.57). Modeling the EQ5Dmax in multiple linear regression analysis to account for confounding, the NTSS-6 score was found to remain directly associated with utility, whereby an increase of one unit on the NTSS-6 resulted in an increase of 0.029 units in the EQ5Dmax (p < 0.001). CONCLUSIONS: DPN, as measured by the NTSS-6, were directly associated with health-related utility. After accounting for confounding factors, a unit change in the NTSS-6 was equivalent to a change in utility that is considered to be clinically meaningful.

DEVELOPMENT OF A SCALE FOR DIABETIC PATIENT PROFILING BASED ON PATIENT ATTITUDE TOWARDS INSULIN
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OBJECTIVE: To develop self-report questionnaires for physicians use in the evaluation of diabetic patient reluctance to start or step up insulin regimens. METHODS: An Advisory Committee (AC) was set up. It consisted of 3 diabetes specialists/endocrinologists, 1 behavioural psychiatrist and 2 general practitioners. Three patient focus groups were formed from a pool of 23 type-1 and 2 diabetic patients. Interviewees were asked to list fears, constraints and benefits associated with insulinization, injection and insulin regimen step-up. After analysis of the focus groups, a list of detailed concepts and two test questionnaires were developed and independently validated by the AC with content validity being assessed on 16 type-1 and 2 diabetic patients. Patients then redrafted and tested on 16 other patients. After analysis of patient tests, a revised questionnaire was produced and validated by the AC. RESULTS: Eleven elements (Insulinization: symbolic, fears, constraints, benefits, product physical characteristics, Injection: symbolic, fears, constraints, positive points. Insulin regimen intensification: symbolic, fears) and 31 detailed concepts were identified using the patient focus groups. Each test questionnaire contained 22 items (20 relating to insulin regimen start or insulin regimen step-up plus 2 relating to inhaled insulin). After initial cognitive debriefing, one item was added, taking each questionnaire to 23 items and response choices were significantly modified in both questionnaires by the AC. After second cognitive debriefing 2 items were excluded from both questionnaires by the AC. The pilot questionnaires therefore included 21 items. CONCLUSION: These pilot questionnaires may help physicians to assess the hurdles faced by diabetic patients in starting or stepping up insulin regimens. The questionnaires are now undergoing item reduction, scoring and validation in two case-report studies.

DEVELOPMENT AND EVALUATION OF THE ASK ADHERENCE BARRIER SURVEY IN PATIENTS WITH CHRONIC CONDITIONS
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OBJECTIVE: To develop and evaluate a self-report clinical and research adherence barrier survey designed to screen for specific barriers to adherence across a spectrum of chronic conditions. METHODS: Item generation and domain structures were based on literature and expert opinion. Interviews with 33 patients with asthma, diabetes, and heart failure were used to develop 47 Likert-type items. These were tested on the Web with 605 patients with asthma, diabetes, and depression. Factor analysis was performed to identify conceptually similar item groupings; and item validity in relation to a self-reported measure of adherence, the distribution of item responses, and factor structure were studied to select final survey items. RESULTS: Twenty items were retained based on correlation with validity criteria and clinical relevance in the following domains: Lifestyle, Attitudes and Beliefs, Help from Others, Talking with Health care Team, and Difficulty Taking Medicines. A post hoc cut point dichotomizing responses into “present” and “absent” was selected for each item. The Barrier Total Index (BTI), the number of “barrier-present” items, had an observed range from 0 to 18, a mean of 4.2 (±3.4), and good reliability (Cronbach’s alpha = 0.77). The validity of the BTI with a self-report of a missed dose of medicine in the past week was excellent. Patients who “missed” had a mean of 6 barriers vs. 2.6 for those who did not (p < 0.0001). CONCLUSION: The ASK Adherence Barrier Survey appears to be a useful tool to identify barriers to adherence in chronic diseases. The survey can facilitate discussion of adherence and identify opportunities to implement barrier-specific interventions.

PERCEIVED HEALTH CARE INFORMATION ON DIABETES: MEASUREMENT OF PATIENT SATISFACTION
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Patient knowledge on own disease is recognised as key factor to reach therapeutic goals. OBJECTIVE: To develop a questionnaire exploring patient preference on SBGM systems; to measure patient satisfaction on medical information delivered by the hospital health care personnel. METHODS: 454 NIDDM patients,
between 40 and 80, were recruited by 40 diabetes clinics. A pilot test-retest validity testing was performed on the same 10 respondents following 2 weeks interval. Ten self-assessment items were developed for exploring preference on home glucometers; 3 items were developed for the following domains: needs for better understanding on diabetes (yes/no); blood glucose self-monitoring period (<6 months, >6 <18 months, >18 months <3 years, >3 <6 years, >6 years); access to diabetes clinics (regularly scheduled—yes/no). The Pearson chi-square statistic for two-way tables was used to test the association between variables; alpha level of 0.05 was used in all analyses. RESULTS: Patients were comparable for sex within each class of age (p = 0.670 / 40–50 years; p = 0.132 / 50–60 years; p = 0.371 / 60–70 years; p = 0.370 / 70–80 years). Unsatisfied (u) and satisfied (s) patients on general information on diabetes respectively decreased and grew with increasing age: 60.98% (u), 39.02% (s) / 40–50 years; 52.14% (u), 47.86% (s) / 50–60 years; 45.77% (u), 54.23% (s) / 60–70 years; 41.67% (u), 58.33% (s) / 70–80 years (p = 0.03) without correlating to SBGM period (p = 0.690). Frequency of accesses to diabetes clinics increases with age from 40 to 80 (p = 0.004).

CONCLUSIONS: Patient perceived dissatisfaction with general information on diabetes decreases with age and is independent of SBGM period. Further studies have to be performed to evaluate if a better perceived knowledge of the disease can improve adherence to the treatment and clinical outcomes.

TREATMENT SATISFACTION IN SUBJECTS WITH TYPE-2 DIABETES RECEIVING INSULIN GLARGINE

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Storms F, on behalf of the AT Lawtus Study Group1

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OBJECTIVES: To assess treatment satisfaction (TS) in a large population of Type-2 diabetes subjects (T2DM) treated with insulin glargine (GLAR). METHODS: The 24-week, multinational ATLANTUS study investigated TS with GLAR initiation and titration (target Fbg ≤5.5 mmol/L) according to two algorithms (Alg): Alg1 was physician based; Alg2 involved subject self-titration. TS were assessed using the Diabetes Treatment Satisfaction Questionnaire status (DTSQs) and change (DTSQC). Since blood glucose (BG) controls and stability (MODD, MAGE, 8-point BG profiles) improved significantly, relationships with TS were explored. RESULTS: TS was evaluated in a group of subjects from the eight countries in which the questionnaire was validated, with 1289 subjects at baseline and 1023 subjects at endpoint. Mean baseline DTSQs scores were comparable between Alg. (26.5 vs. 26.1) with significant improvements at endpoint (both +4.99; p < 0.001). Perceived hyperglycaemia significantly decreased (p < 0.001) with both Alg. TS evolution over time (DTSQC) improved by +1.36 with both Alg. Perceived hyperglycaemia decreased in the DTSQC. There were significant (p < 0.0001) correlations between fasting BG, mean 8-point BG and evolution of TS scores and perceived hyperglycaemia. Evolution of perceived hyperglycaemia was also associated with movements towards BG stability (MAGE: p < 0.0001; MODD: p = 0.0004). A similar pattern of results was seen in the Type-1 population. CONCLUSIONS: This study provides one of the largest assessments of TS to date and shows that aggressive titration of GLAR is associated with significantly improved TS. Self-titration was associated with greater improvements in perceived hyperglycaemia versus physician-based titration. Perceived overall TS, hyperglycaemia and hypoglycaemia at endpoint were all correlated with movements towards BG control and stability, providing potential explanation as to why subjects feel better with GLAR than their prior therapy.

ANXIETY AND DEPRESSION IN WET AGE-RELATED MACULAR DEGENERATION (ARMD)

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OBJECTIVE: To study the relationship of ARMD severity to anxiety and depression in three European countries: France, Germany and Italy. METHODS: Patients with wet ARMD were included in a retrospective cross-sectional survey. Sociodemographic and medical data were collected during a visit by a retina specialist. Anxiety and depression were assessed with the Hospital Anxiety and Depression Scale (HADS). Two thresholds were used to dichotomize visual acuity (VA): 20/40 for the best eye (BE) and 20/200 for the worst eye (WE). Comparisons with general population matched on age and gender were possible for the German patients (Hinz, 2004). Analysis of variance was performed to estimate the effect of each eye adjusted on age, gender and country. RESULTS: A total of 360 patients were included. The patients (40% male) averaged 77 years of age and 2.3 years of disease duration. VA was 0.49 LogMAR on the BE the day of the visit. In the German population, ARMD patient anxiety score was higher than the general population both in male (5.4 vs. 4.7) and female (7.7 vs. 5.7). Some associations were found between the severity of the disease and the depression score (BE P < 0.004) and (WE P < 0.12) while no association was found on the anxiety score. The prevalence of severe depression according to HADS was 0% in the less severe (BE > = 20/40; WE > = 20/200) but 7.6% in the most severe group (BE < 20/40; WE < 20/200). CONCLUSION: Associations were found between ARMD and depression and anxiety as measured by the HADS. The severe depression prevalence rate increases when both eyes are affected by the disease.

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USE OF NEURAL NETWORKS TO PREDICT NIGHT INTRA-OCULAR PRESSURE (IOP) PEAK CONTROL BY PROSTAGLANDIN ANALOGUES

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OBJECTIVE: The control of daily IOP variations is a key driver of visual field protection. IOP is rarely measured during the night in clinical trials. A model was used to predict nocturnal IOP peaks from daytime measurements. METHODS: Two clinical trials documenting IOP every 4 hours over several days were pooled. Nocturnal IOP peak was defined as the maximum value observed at midnight and 4 AM and was related to diurnal measures (taken at 8:00, 12:00, 16:00 and 20:00). We employed neural networks that included linear, radial basis, and multi-layer perceptron (MLP) selected to minimize error and take into account diversity. The probability of a nocturnal IOP peak > 17.5 mmHg was estimated. The neural network model was then applied to data from a trial comparing timolol, travoprost and latanoprost over 1 year. Drug comparisons were made using a mixed linear model. RESULTS: 440 pairs of day and night IOP measures were identified. A MLP (2:7:1) model was selected based on sensitivity and specificity which were both close to one. The analysis of the MLP output showed afternoo IOPs were stronger predictors of night peaks than morning IOPs. Applying
the MLP to the trial data showed that timolol-treated patients had a higher risk of developing night IOP peaks than travoprost-treated patients. The estimates were 57.8% versus 58.2% (P < 0.90) respectively for travoprost and latanoprost using 8:00 IOPs, but 43.6% versus 50.0% (P < 0.05) with 10:00 IOPs, and 43.9% versus 53.3% (P < 0.005) using 16:00 IOPs. CONCLUSION: IOP measures during the day are correlated with night measures. The MLP results suggest that control of IOP in late afternoon might also prevent night IOP peaks. Prostaglandin analogues were associated with a lower probability of late afternoon and night IOP peaks than timolol. The travoprost night IOP peak probability was lower than that for latanoprost.

PEY3

INTRA-OCULAR PRESSURE (IOP) CONTROL OF LATANOPROST AND TRAVOPROST MONOTHERAPY IN DAILY PRACTICE
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OBJECTIVE: To confirm randomized clinical trial results showing that travoprost reduces IOP with sustained efficacy in the afternoon, 20–24 hours after the last instillation.

METHODS: Patients treated with a prostaglandin analogue monotherapy for ocular hypertension or glaucoma was included in this cross-sectional retrospective survey. Demographics, anamnesis, previous treatments were collected from medical chart. IOP and the last instillation time were collected during the visit. ANOVA, logistic regressions and propensity scores were used to compare the 2 treatments. RESULTS: 2503 patients were included by 494 ophthalmologists. Patients averaged 64 years old (45% male). 2032 patients were treated with travoprost or latanoprost and the last instillation time was documented for 1702 of them. 1241 patients had properly used their medication between the previous day and 461 patients had failed to take it. IOP was 25 mmHg at diagnosis and 22.5 mmHg at the initiation of the current treatment. The two groups were comparable but travoprost-treated patients had a shorter disease and treatment duration. The instillation was given when the day was during the given day before, travoprost better controlled IOP at 12.00 and 16.00 hours (16.79 versus 17.51 mmHg; P < 0.05) and after 16.00 (16.55 versus 17.67 mmHg; P < 0.003). When the interval time between the instillation and IOP recordings was >24 hours, travoprost-treated patients had a lower IOP (16.76 versus 17.80 mmHg; P < 0.002). The percentage of patients reaching the pre-defined target IOP was higher with travoprost than with latanoprost, independent of instillation time (81.9% versus 67.3% (P < 0.0001) when intake was the previous day, and 78.5% versus 68.3% (P < 0.03) when intake >24 hours. These differences persisted after adjustment for confounding factors. CONCLUSION: This observational survey confirmed the previous clinical data demonstrating that travoprost uniformly controls IOP through the day with a strong remnant effect, since IOP remains well controlled for more than 24 hours.

PEYS

COMPARING EFFICACY OF PROSTAGLANDIN ANALOGUES FOR CONTROLLING INTRA-OCULAR PRESSURE (IOP): RESULTS OF A META-ANALYSIS
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OBJECTIVE: To compare the efficacy of latanoprost, bimatoprost and travoprost for controlling IOP using data published in the literature. METHODS: Randomized clinical trials were identified on Medline and Embase using the following key words: glaucoma, ocular hypertension, randomization, trial, latanoprost, bimatoprost and travoprost. The trials had to compare at least two prostaglandins head-to-head in monotherapy. Cross-over experimental designs were excluded. Sample size, IOP at inclusion and final visit, age, gender, race and period of follow-up were collected. Daily average IOP was estimated when measurements were available over the study period. Latanoprost was used as the reference treatment for comparisons. Multiple regression analyses estimated the effects of the different treatments on IOP after controlling for IOP at inclusion and duration of follow-up. All analyses were weighted using number of patients (inversely proportional to variance weights).

RESULTS: A total of 224 papers were identified, including 15 randomized clinical trials, which compared two prostaglandin monotherapies. Six studies were excluded: three cross-over designs, one with daily intake not in accordance with the SmPC, one combination study, and one without documented average IOP. The average age varied from 56.7 to 68.8 years and the IOP at inclusion from 22.3 to 26.5 mmHg. 378 patients were treated at the Glasgow Royal Infirmary from 1981 to present. Data elements recorded for each patient included demographics, diagnosis, and treatment history. Treatment history included initial and subsequent medication regimens. Patient IOP was measured before and after treatment change and mean change with 95% C.I. was calculated. RESULTS: Eighty-three cases of POAG were identified where treatment was changed from evening dosed latanoprost to latanoprost-timolol once daily to achieve or maintain lower target IOP. The mean incremental reduction in IOP was 2.01 mmHg (95% C.I. 1.22–2.81). CONCLUSIONS: In POAG patients treated with latanoprost who require lower target pressures to control their disease, latanoprost-timolol fixed combination provides additional incremental IOP reduction. Additional research should be conducted to further characterize and understand the importance of efficacy of combination therapy in the treatment of glaucoma.
A PUBLIC HEALTH IMPACT MODEL OF ANECORTAVE ACETATE IN WET AGE-RELATED MACULAR DEGENERATION

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OBJECTIVE: This study aimed at estimating the potential public health impact of Retaene 15 mg (anecortave acetate suspension) in age-related macular degeneration. METHODS: Based on clinical trial results and literature, a Markov model was built to compare anecortave acetate to best supportive care (BSC) during the lifetime of ARMD patients. Patients entering the model were 75 years of age with a new diagnosis of wet ARMD in one eye. This model took into account the efficacy of anecortave acetate to slow deterioration and delay visual disability, the probability for a patient to develop the disease in the fellow eye, and mortality. RESULTS: The model was expressed in terms of duration of low vision (with blindness in one eye) and blindness in both eyes. Health consequences of blindness and low vision were estimated for depression and hip fractures as well as for institutionalization. Duration of the model was 25 years and the cycle length was 1 month. The fellow eye could be affected in 30% of the patients at five years. Premature mortality associated with blindness and low vision was estimated. RESULTS: Anecortave acetate decreased the number of prevalent blind cases by 20% and the average time with blindness by 30%. Depression prevalent cases were decreased by 21% and those with hip fracture by 10%. The number of patients who were institutionalized was decreased by 27%. Decrease in life expectancy due to premature mortality associated with blindness and low vision could be estimated at 17% in the BSC group and 15.5% in the anecortave acetate group. Life expectancy was increased by 3 months. CONCLUSION: Anecortave acetate presents important and favorable potential public health outcomes in patients with wet ARMD. According to the model it could reduce the rates of depression, hip fractures and institutionalization, and increase life expectancy compared with BSC.

NUMBER OF TREATABLE EYES WITH WET SUB-FOveal AGE-RELATED MACULAR DEGENERATION (ARMD): USE OF DIRECT STANDARDIZATION AND MARKOV MODEL

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OBJECTIVE: To estimate the number of treatable eyes with wet sub-foveal ARMD in France. METHODS: Surveys documenting wet ARMD incidence rate were searched in the literature. Direct standardization according to age and gender was performed using INSEE demographic data. Projection at year 2025 was performed using OECD data. A 75 years old cohort was simulated using a 7-states Markov model. Mean treatment duration of New Chemical Entity is not known today and therefore was fixed arbitrarily at 2 years. The probability to develop ARMD in the fellow eye was fixed at 30% at 5 years. Monthly death incidence rate was modeled from INSEE mortality tables. The time horizon of the model was 25 years and the cycle length one month. Sensitivity analyses were performed. RESULTS: 3 surveys were identified. The Rotterdam Study, the only one performed in the EU, was chosen as the best proxy for France. In 2005, 30,192 citizens will develop ARMD in the first eye; of those 17,585 will be wet and 13,805 will be wet sub-foveal (Olsen, 2004). Taking into account the fellow eye, mortality and the base case scenario treatment duration, the number of wet sub-foveal treatable eyes would be 37,019. Treatment duration is the most sensitive parameter of the model. Number of eyes would be 18,899, 53,204, 67,535, and 80,162 for a treatment duration of 1, 3, 4 and 5 years, respectively. The number of treatable eyes will increase by 7.1% if probability to develop the disease in the second eye is 40%, and decrease by ~9.0% if it is 20%. A 2% yearly increase is expected till 2025 due to population aging and the 1950s’ baby-boom. CONCLUSION: According to our model, the number of sub-foveal wet ARMD treatable eyes would be 37,019, in France. Average treatment duration was the most sensitive parameter.

EYE ADVERSE EFFECTS ASSOCIATED WITH POLYVINYL ALCOHOL TEAR DROPS AFTER LASER ASSISTED SUBEPITHELIAL KERATECTOMY (LASEK)

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OBJECTIVE: LASEK is one of the current surgical technique to correct refractive errors of the eye, such as myopia, hyperopia, and astigmatism. In this method, the corneal epithelial flap is lifted then replaced after laser ablation of the subepithelial cornea. The hinged flap is created by epithelial marking and exposure of the marking ethyl alcohol (20%) for 5 seconds. METHODS: LASIK (Laser in Situ Keratomileusis) is a surgical procedure to correct myopia by corneal stroma subtraction. It involves the use of a microkeratome to make a lamellar dissection of the cornea creating a flap with intact corneal epithelium. After the flap is lifted, the underlying midstroma is reshaped with an excimer laser and the flap is returned to its original position. We have detected eighteen cases where the treatment of patients that had been subjected to LASEK with polyvinyl alcohol artificial tear drops provoked eye adverse effects. Toxigenic keratitis, partial epithelium detachment, and allergic and toxicogenic conjunctivitis were observed. These adverse effects disappeared upon discontinuing tear drops administration and reappeared after their reintroduction. We used the Naranjo et al. algorithm to confirm the cause-effect relationship. RESULTS: All cases were confirmed as definitive. CONCLUSION: We have not observed any case of eye adverse effect in patients subjected to LASIK caused by polyvinyl alcohol tear drops.

COST-EFFECTIVENESS MODEL FOR AGE-RELATED MACULAR DEGENERATION: COMPARING MACUGEN TO VISUDYNE

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OBJECTIVE: To develop a health-economic assessment for Macugen, a new treatment for age-related macular degeneration (AMD). A comprehensive model compares Macugen (pegaptanib sodium), indicated for all patients with neovascular AMD, relative to the existing photodynamic therapy with Visudyne (verteporfin). METHODS: A Markov framework was used to model the lifetime movement of an AMD cohort through five
health states based on visual acuity (VA): >20/40, 20/40 to >20/80, 20/80 to >20/200, 20/200 to >20/400, and >20/400. The model incorporates patients across all lesion subtypes: predominantly classic, minimally classic, and occult. All drug and procedure costs were derived from US published sources, including Medicare Part B Drugs Average Sales Price and RBRVS. Expert interviews were conducted to determine adverse events treatment patterns and vision rehabilitation resource use. Relative risks and costs associated with effects associated with declining VA (depression, bone fractures, skilled nursing facilities, and nursing homes) were extracted from a Medicare analysis. Transition probabilities were derived from published trial data for both products for each of the 3-month cycles. Utilities were derived from similar published sources as previous AMD models. Results are expressed as vision years, quality-adjusted life years (QALYs), medical costs and other costs, as well as the average cost per vision year and QALY gained. RESULTS: For a lifetime analysis the average cost per vision year was $20,459 for Macugen and $26,079 for Visudyne and the average cost per QALY was $19,744, $46,911, $67,058, and $135,400 versus standard care for Macugen and $26,136 for PDT. A patient treated with Macugen had on average 3.68 vision years over a lifetime compared to 2.65 for a patient treated with Visudyne. CONCLUSIONS: Macugen treatment produces more years of sight than Visudyne for AMD treated patients. Macugen is more cost-effective versus active treatment with Visudyne. A limitation of the model is the absence of direct clinical comparison between the products.

COMBIGAN—COST-MINIMIZATION ANALYSIS OF BRIMONIDINE/TIMOLOL FIXED COMBINATION IN THE TREATMENT OF PRIMARY OPEN ANGLE GLAUCOMA Poulsen PB1, Buchholz P2, Wal I

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OBJECTIVES: Many patients suffering from glaucoma find it necessary to use a second adjunctive topical agent to adequately reduce the intraocular pressure (IOP). New more convenient fixed combination products containing two active anti-glaucoma medications have been developed. The objective of this analysis is to compare the cost of brimonidine/timolol fixed combination (Combigan®) with concomitant administration of brimonidine (Alphagan®) and timolol, dorzolamide/timolol fixed combination (Cosopt®), and concomitant administration of dorzolamide (Trusopt®) and timolol. METHODS: RCTs have documented equivalent safety and efficacy in terms of IOP control of combination products in comparison with their individual components (Sall et al., 2003; Solish et al., 2004). A cost-minimization analysis including drug costs and visits at the ophthalmologist was carried out for UK and other European countries with both a health care and drug alone perspective. An RCT (Simmons et al., 2001) has shown that Alphagan-timolol was more effective than Trusopt-timolol in terms of patients achieving target IOP, therefore a cost-effectiveness analysis was constructed for this comparison. RESULTS: The 3-months health care costs analysis (drug alone) in the UK using Combigan was £264.00 (£30.00) compared with £268.11 (£34.11) for Alphagan-timolol and £264.15 (£30.15) for Cosopt. With a 12-months perspective, including additional drug and visits, the health care costs (drug alone) rose to £510.00 (£120.00) for Combigan compared with £526.44 (£136.44) for Alphagan-timolol and £510.60 (£120.60) for Cosopt. The cost-effectiveness analysis documented that Alphagan was more cost-effective than Trusopt adjunctively. CONCLUSION: Combigan provided better cost value than Alphagan-timolol adjunctively. The use of Combigan instead of Alphagan-timolol would result in annual societal savings of around £728,000 in the UK. Combigan resulted in slightly lower health care costs when modeling equal effectiveness compared with Cosopt.

PHARMA ECONOMIC ANALYSIS OF LATANOPROST VERSUS DORZOLAMIDE/TIMOLOL IN THE TREATMENT OF OPEN-ANGLE GLAUCOMA IN SPAIN Orieta P, Soto J, Fernández-Arias I, De Miguel V

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OBJECTIVE: To estimate the efficiency of latanoprost against the fixed-combination of dorzolamide/timolol in treating patients with glaucoma in Spain. METHODS: A cost-minimization analysis was carried out by building a decision analytical model, because the effectiveness of both therapeutic options in lowering intraocular pressure (IOP) was similar in a performed systematic review of the literature. However, dorzolamide/timolol was associated with a higher incidence of adverse
PEY13 COSTS AND CONSEQUENCES OF ENDOPTHALMITIS: RESULTS FROM THE NATIONAL ENDOPTHALMITIS SURVEY

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OBJECTIVE: Endophthalmitis is the most severe infection following eye trauma (injury, surgery, injection, etc.). Medical costs and visual loss consequences are compared here. METHODS: A mailing announcing the creation of the National Endophthalmitis Survey was sent to all French ophthalmologists. A total of 424 replies were received and 346 (82%) were positive. A standardized anonymous questionnaire collected information on the operative conditions, endophthalmitis characteristics, treatments and clinical outcomes. The economic point of view was that of the French NHS and medical costs were extracted from the national Diagnosis Related Group database. Utility related to visual acuity loss was estimated from the literature (Brown). A €50,000/QALY threshold was used to assess cost-effective social value related to vision loss. A 5% discount rate was used.

RESULTS: Information on 88 cases of endophthalmitis was collected. The mean age was 75.1 years and 44% were women. All patients were hospitalized, had bacteriological samples, and were treated with either systemic or intra-vitreal antibiotics. 25.3% had a vitrectomy. Complications were reported in 23.1% and most were mainly retinal detachments. 3 months after surgery, 29.4% of the eyes had a visual acuity (VA) less than 1/20 and in 57.4% VA was less than 5/10. The average endophthalmitis medical cost was €4125. The loss in utility was 0.203 on average (baseline VA fixed at 8/10). With a life expectancy of 5 years, the average discounted social value of endophthalmitis vision loss was €46,000. CONCLUSION: The social value attributable to vision loss subsequent to endophthalmitis is more than ten times higher than its medical cost.
costs exceeded the weighted DRG cost by €1396 for the public and €813 for the private hospital. Overall endophthalmitis costs were 4:12:5. Using DRG 60 (Severe acute ocular infections) as a proxy of endophthalmitis would understate dramatically (>45%) its cost. Endophthalmitis expenses were estimated at €6,509,000 for the French Health Care System. CONCLUSION: Using DRG 60 as a proxy of endophthalmitis in health economics evaluation to estimate the hospital true cost is inappropriate. The PMSI clustering algorithm underestimates the budget allocation required to treat endophthalmitis in the public and private sectors. The PMSI (reporting exhaustively all hospitalisations) could be used to better capture the yearly endophthalmitis incidence rate.

PEY16
THE PREVALENCE AND COST OF TREATMENT OF PATIENTS TAKING ANTIGLAUCOMA AGENTS FOR GLAUCOMA OR OCULAR HYPERTENSION IN FRANCE
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OBJECTIVE: The aim of the study was to estimate the prevalence of patients treated with antiglaucoma agents for glaucoma or ocular hypertension in France, and the cost of treatment over one year. METHOD: Prevalence was estimated using a permanent panel of subjects affiliated to a French national health insurance scheme, the EPAS panel. Patients with glaucoma or ocular hypertension (OHT) were identified by the prescription of antiglaucoma preparations and miotics (ATC code S01E). Chronic patients were defined as those who had been prescribed at least three boxes during the year. The three years 2001, 2002 and 2003 were studied to check the stability of estimations. The cost of treating ambulatory patients was estimated using data from the EPAS panel on consultations, specialist procedures and drug prescriptions. The cost of inpatient care over the three years 2001 to 2003 in public and private hospitals for patients with a principal diagnosis of glaucoma was estimated using PMSI data (a French system of recording hospital procedures performed on given patient groups), the French national cost study and the approved tariffs for the private sector. RESULTS: The estimated prevalence was stable over 3 years, between 1.1 to 1.2 million patients. The average age of patients was 71 years for women and 67 for men. The average cost, for social security, per patient for ambulatory care was €291 in 2003, €204 of which was for drug prescriptions. About 1.2% of patients were hospitalised and the average cost per patient was €26. In one in three cases, glaucoma surgery was accompanied by lens surgery. The total spending on treatment in 2003 was €382 million. CONCLUSION: The study confirms that glaucoma is a major eye disease. The cost of disease across three years seems to be stable.

PEY17
MODELING TREATMENTS FOR SUBFOVEAL CHOROIDAL NEOVASCULARIZATION SECONDARY TO AGE RELATED MACULAR DEGENERATION: COST-EFFECTIVENESS
METHODS
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OBJECTIVE: Licensing and reimbursement decisions for age-related macular degeneration (AMD) therapies may be driven by different macular outcome and cost relationships across payers and thus any model should be flexible to accommodate these variances transparently. METHODS: To accurately assess cost-effectiveness of treatment as desired by European countries, a comprehensive model considering all direct costs is important. A Markov framework was used to model a cohort’s lifetime movement through visual acuity (VA) states of >20/40, 20/40 to >20/80, 20/80 to >20/200, 20/200 to >20/400, and >20/400. Preventing lesion subtypes (i.e., predominately classic, minimally classic, and occult) were considered. Unlike previous models, patients could experience more than one gain or loss of VA over their lifetimes. This comprehensive model was initially populated from a US perspective. Drug, procedure, monitoring, outpatient, vision rehabilitation, and adverse events (AEs) costs were obtained from standard US published sources. Expert interviews were conducted to determine AE treatment patterns and vision rehabilitation resource use. Relative risks and costs associated with effects associated with declining VA were extracted from a Medicare analysis. Efficacy data was taken from published literature for two years of treatment for all lesion subtypes. Efficacy beyond two years was extrapolated from clinical trials. Utilities were taken from similar published sources as previous models. RESULTS: Results are expressed as vision years, quality-adjusted life years (QALYs), drug, treatment, AE, and other costs as well as incremental cost per vision year and QALY gained. Outcomes were discounted 3% per annum. This model is more robust than previous models as patient movement is not limited and represents natural disease progression over a lifetime, costs attributed to declining VA are included, and all lesion subtypes have been analyzed. CONCLUSIONS: Thus, cost-effectiveness of treatment of AMD with respect to differing licensing and reimbursement is more accurately analyzed.

PEY18
USING DISCRETE CHOICE EXPERIMENTS TO ESTIMATE QUALITY WEIGHTS WITHIN THE FRAMEWORK OF QALYS: AN APPLICATION TO GLAUCOMA
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OBJECTIVES: While standard gamble and time trade off are commonly used to estimate quality weights within the Quality Adjusted Life Year (QALY) framework, a potentially useful technique is discrete choice experiments (DCEs). Whilst DCEs have been extensively used in health economics, their application to estimate quality weights is limited. Here we report the results of a study using the DCE methodology to derive a utility scale for patients with glaucoma. METHODS: Based on qualitative research, literature reviews, expert opinion and validated profile tools, a 6-dimensional glaucoma profile outcome measure was developed. The six dimensions were: “central and near vision”, “lighting and glare”, “outdoor mobility”, “activities of daily living”, “local eye discomfort” and “other effects of glaucoma and its treatment”. Levels assigned to each dimension were: “no difficulty”; “some difficulty”; “quite a lot of difficulty” and “severe difficulty”. Experimental design techniques, ensuring the properties of orthogonality, minimum overlap and level balance, were used to derive a sample of the outcome states for which preferences were elicited. A face-to-face questionnaire was administered to subjects from clinics in Aberdeen and Leeds. In addition, a postal questionnaire was sent to patients with glaucoma, self selected from the International Glaucoma Association. Response data were analysed using logistic regression techniques. RESULTS: Weights were estimated for all parameters of the model (all levels of all dimensions), and from this a normalised utility score was estimated, anchored between zero (worst level of all attributes) and one (best level of all attributes).
CONCLUSIONS: It proved practical and feasible to use DCEs as a basis of quality weights within a programme specific QALY framework. Important areas for future research include developing profile measures into index measures, ensuring realistic designs that satisfy both statistical and respondent efficiency and anchoring at full health and death for use within a QALY framework.

METHODS FOR A POPULATION-BASED INTERNATIONAL STUDY ON THE BURDEN OF ILLNESS OF NEOVASCULAR AGE-RELATED MACULAR DEGENERATION


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OBJECTIVES: Age-related macular degeneration (AMD) is the leading cause of blindness in the developed countries and accounted for 8.7 million cases of blindness around the world in 2002. Insufficient documentation of the impact of AMD on patients and their caregivers limits our understanding of the disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden. The objective of this study is to document the humanistic and economic impact of exudative (wet) AMD on disease burden.

METHODS: This is a multinational, cross-sectional, observational study of self-reported functional health and disease burden among elderly subjects with and without subfoveal, exudative AMD. Each of the five participating countries, Canada, France, Germany, Spain, and the UK, will recruit 100 bilateral AMD patients and 100 controls. The primary objective is to compare the difference in humanistic impact as measured by the National Eye Institute Visual Function Questionnaire (NEI-VFQ25) between AMD patients and control group of similar age patients in general medical care. Other end points include assessment of the disparity in health-related quality of life burden due to wet AMD compared to non-AMD controls using the EuroQol and Hospital Anxiety and Depression Scale. Information on resource utilization and economic impact of AMD on patients and caregivers will be collected from physicians and patients. RESULTS: Data collection began in April 2005 and is expected to complete by November 2005. Final analysis will use standard bivariate and multivariate methods to explore relationships between severity of AMD and sociodemographic characteristics, health-related quality of life, depression, falls, and resource utilization variables. Summary analysis will be conducted in aggregate and by country. CONCLUSIONS: Analysis of a wide range of factors affecting AMD patients will provide useful guidance to health care providers, payers, and AMD support groups when determining the benefits of emerging therapies for wet AMD.

IMPACT OF BEST AND WORST EYE VISUAL ACUITY ON VISION-SPECIFIC HEALTH-RELATED QUALITY OF LIFE AND UTILITY IN PATIENTS SUFFERING FROM AGE-RELATED MACULAR DEGENERATION


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OBJECTIVE: To assess the impact of best and worst eye visual acuity (VA) on vision-specific health-related quality of life (HRQol) and utility in patients with wet Age-Related Macular Degeneration (AMD) METHODS: A cross-sectional study was carried out in three European countries: France, Germany, Italy. Patients were enrolled when they visited a participating retina specialist. VA at diagnosis and at inclusion was collected. Two HRQol instruments were administered at the visit day: the National Eye Institute Visual Function Questionnaire—25 items (NEI-VFQ-25), and the Health Utility index (HUI). Patients were stratified into four groups of severity using two VA thresholds, 20/40 for the best eye (BE) and 20/200 for the worst eye (WE). Analysis of variance was performed on QoL and utility scores to estimate the impact of each eye adjusted on age, gender and country. RESULTS: 360 patients were included, mainly females (60%). Mean age and time since AMD diagnosis was respectively 77 years and 2.3 years. At inclusion, mean VA was 0.49 LogMar for BE and 1.0 LogMar for WE. HUIs mean scores decreased with severity from 0.62 to 0.39 for HUI3 and from 0.76 to 0.63 for HUI2. For both utility indexes, scores were mainly linked to BE VA. The NEI-VFQ-25 scale also exhibits a decreasing trend in the global score as VA decreases. Mean global score varied from 67.0 for the less severe group to 47.0 for the more severe one. Global NEI-VFQ-25 score was significantly affected by BE and WE VA (BE p < 0.0001; WE p = 0.0306). This contribution was also observed for the General vision, distance vision, driving, and mental health subscales. CONCLUSION: HRQol and utility scores decreased with the deterioration of VA. BE VA and WE VA is two independent factors of vision-related QoL. Vision preservation in both eyes should maintain QoL for AMD patients.

UTILITY ASSESSMENT AMONG PATIENTS WITH DRY EYE DISEASE IN THE UK


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OBJECTIVES: To determine and compare utility values (patient preferences) associated with dry eye disease with other disease utilities. METHODS: Forty-four patients with mild to severe dry eye attending a tertiary specialist dry eye clinic in the UK were surveyed via interactive utility assessment software. Utility values were measured by the time trade-off (TTO), standard gamble (SG), and rating scale (RS) methods and adjusted to scores from 1.0 = perfect health to 0.0 = death. Patients reported utilities for: self-reported current dry eye status, self-reported current comorbidities, various dry eye severities, and binocular and monocular painful blindness. Visual functioning and ocular symptoms were assessed by the 2.5 Item National Eye Institute Visual Function Questionnaire and the Ocular Surface Disease Index. Patient dry eye severity was independently classified by patient and physician assessments. Pearson correlation coefficients were computed for patients’ self-reported dry eye utility and physician-reported severity. Agreement between self-reported and physician-reported patient severity was analyzed (Kappa). RESULTS: Patients reported higher utilities for their current dry eye condition than for monocular and binocular blindness (SG:0.34 > 0.60 > 0.51; TTO:0.67 > 0.43 > 0.38; RS:0.55 > 0.37 > 0.24). Using TTO, the mean score for asymptomatic dry eye (0.68) was similar to that for “some physical and role limitations with occasional pain” and severe dry eye requiring surgery scored (0.56) similarly to hospital dialysis (0.56–0.59). Utilities described by patients of other dry eye severity levels were similar for patients self-reported as mild to moderate versus those self-
reported as severe. For current dry eye condition, mean utilities for these groups were 0.72 for self-reported mild to moderate and 0.61 for self-reported severe. CONCLUSIONS: Utilities for dry eye were in the range of conditions accepted as lowering health utilities. Severe dry eye utilities were similar to those reported for dialysis and severe angina. Findings highlight the impact of dry eye on patients.

PEY22
DEVELOPMENT AND VALIDATION OF A COMPREHENSIVE PAINFUL SYMPTOM CHECKLIST ALLOWING PROVIDING A COMPLETE DESCRIPTION OF PAIN IN OPHTHALMIC DISEASES

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OBJECTIVE: Ophthalmologists have to face various acute or chronic painful diseases. They miss specific tools assessing ocular pain. Our objective was to develop and validate a tool to quickly and precisely describe patient’s complaint, measure pain intensity and elicit possible causes. METHODS: Different types of quantification and description of pain identified from the literature were proposed to 20 patients suffering from acute or chronic painful ophthalmic diseases. A questionnaire was developed, validated by an Advisory Committee (AC) and tested with 8 other patients. The pilot questionnaire was produced and validated by the AC. A cross-sectional, observational study was carried out to validate the questionnaire for a use in clinical practice and to provide a typology of painful ocular pathologies. The questionnaire was completed by 536 consecutive patients presenting with pain complaint in 43 centres. The clinicians completed a medical form and assessed the questionnaire’s usefulness and feasibility in clinical practice. RESULTS: The test questionnaire was developed taking into account the preference given by patients to visual analogus or graduated scales to quantify pain, and to pictograms to describe pain. This test version was considered valid and easy to use, except for the emotional descriptors of pain. The pilot questionnaire contained five sections: “General Health”, “Eyes and eyesight”, “Pain”, “Pain relief”, “Pictograms and sensorial descriptors”. A description of pain characteristics was provided for the most frequent painful diseases, including traumatisms (183), ocular surface diseases (71), cornea pathologies (58). A total of 27 ophthalmologists evaluated the questionnaire and 78% of them considered it helpful for patient management. CONCLUSION: The ODEON® questionnaire is a unique, promising tool designed for use in clinical practice to allow patients with ocular pain to comprehensively quantify and describe their pain in a standardised format. Further work is needed to establish specific recommendations.

Abstracts

A COMPARISON OF FREQUENTIST AND BAYESIAN STATISTICAL APPROACHES IN COST-BENEFIT ANALYSIS

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OBJECTIVES: To compare the results of a prospective cost-benefit analysis (CBA) of the South Carolina Palmetto Poison Center (PPC) using Bayesian and frequentist (inferential) statistical approaches to estimation. METHODS: Results from a cost-benefit analysis of a statewide poison control center were used in this analysis. The CBA was conducted based on a follow-up survey of 652 callers to the PPC who were recommended for home management of their suspected poisoning exposure. A payor perspective was taken and costs included direct costs. Benefits were measured as direct medical costs avoided (e.g. emergency department visit, ambulance service, physician visit) by the use of the PPC. A series of decision analytic models were constructed and analyzed separately with frequentist and Bayesian statistical methods. Data from a similar CBA of the PPC conducted in 1998 was used to obtain the “prior” information needed for the Bayesian analysis. BC ratios using the two approaches were compared and their interpretations explored. RESULTS: Calculation of BC ratios using Bayesian and frequentist approaches yielded similar measures. The BC ratio was 7.77 in the frequentist approach with a 95% CI of (6.93, 8.61) and 7.42 in the Bayesian approach with a 95% credible interval of (5.46, 9.38). See the abstract titled “Cost-Beneficial Acceptability Curves: Calculation and Comparison between Frequentist and Bayesian Statistical Approaches in Cost-Benefit Analysis” for the detailed CBA data and description. CONCLUSIONS: The PPC is cost-beneficial over a reasonable range of cost and benefit values. Results are similar between the frequentist and Bayesian approaches, although interpretation of the two approaches differs significantly.

IMPLEMENTATION OF AN EVIDENCE BASED GUIDELINE FOR CLINICAL NUTRITION IN A 500 BED HOSPITAL IN NORTHERN GERMANY: INFLUENCE ON DIRECT COST FOR CLINICAL NUTRITION

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OBJECTIVES: To evaluate the influence of an evidence based guideline for clinical nutrition on direct cost for enteral and parenteral nutrition. METHODS: Annual cost for enteral and parenteral nutrition has been analysed. An evidence based guideline for clinical nutrition was developed in the hospital by a multidisciplinary team consisting of medical doctors, nurses, dieticians and pharmacists. In general a guideline is a comprehensive approach to the best available evidence for clinical nutrition (enteral nutrition should be used when ever possible). The guideline was then implemented in the hospital by teaching nurses and doctors. One year after introduction of the guideline the annual cost were analysed. RESULTS: In 2003 the cost for parenteral nutrition were €86.908, and for enteral nutrition €16.273. After establishing the guideline the cost were reduced especially for parenteral nutrition (parenteral nutrition €52.243, enteral nutrition €16.092). The savings in 2004 were €34.844, (number of cases and severity of illness detected by disease staging TM medstat group did not change) CONCLUSIONS: The cost reduction for clinical nutrition could be influenced by several factors: 1) It is possible that the regained awareness of costs have influenced the behaviour of the clinicians independent of the guideline, and 2) The implementation of the guideline lead to an improved knowledge of the clinicians in clinical nutrition and reduced variance in individual decision making. Thus nutritional status improved whereas costs were lowered. Further studies are needed to detect changes in nutritional status of patients after having established a guideline. A study has been initiated (Nutricor).
COST OF SEVERE BLUNT TRAUMA IN THE UK
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OBJECTIVE: Severe blunt trauma injuries are known to affect more than 12,000 individuals in the UK (UK) each year, the majority of whom require very intensive and expensive emergency care. A number of studies have estimated the direct and indirect cost of severe trauma injuries in different countries. The objective of this study is to provide an estimate of the direct medical cost of severe blunt trauma in the UK. METHODS: A bottom-up costing exercise was undertaken to estimate the direct medical cost of a typical severe blunt trauma patient involved in a motor vehicle traffic accident from the perspective of the UK NHS. The typical severe blunt trauma patient used in the analysis was adapted from previously published literature to be representative of patients presenting at UK trauma centers. UK-specific unit costs were applied to the different items of resource use identified in order to estimate the direct medical cost of a severe blunt trauma patient in the UK. RESULTS: The estimated direct medical cost of a severe blunt trauma patient in the UK is £48,813. The main cost drivers are ICU stay (56%) and surgical intervention (32%). This estimate is similar to those reported in the literature. The incidence of severe trauma in UK is estimated to be four per one million per week (approximately 12,000 per year). This indicates that the total direct cost to the UK NHS of severe trauma is around £0.6 billion per year. Given that published studies suggest that the direct medical costs of trauma represent about 25% of the total cost, the total cost of trauma in the UK would be around £2.4 billion per year. CONCLUSIONS: The direct medical cost of trauma represents a substantial economic burden to society. Initiatives that reduce this burden (e.g. prevention, treatment) are welcomed.

DRUG PRICE INDICES 1980–2004 IN FINLAND
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OBJECTIVES: To describe the development of drug wholesale price indices in Finland in 1980–2004. METHODS: Price indices covering study period (The Helsinki Research Institute for Business Administration [1980–1990], IMS [1991–1994] and Statistics Finland [1995–2004]) were merged into two index clusters (1980 = 100 and 1990 = 100). The latter enables more precise classification according to reimbursement categories. Real price indices were produced by adjusting nominal indices with Consumer Price Index (CPI, Statistics Finland) and its sub-index Consumer Price Index for Health Care (CPI—H, Statistics Finland). RESULTS: In 2004, the index (1980 = 100) for all drugs was 167 (CPI adjusted 65; CPI—H adjusted 33) and for basic refund category 141 (55; 28), respectively. The respective figures in 1990 = 100 index were: all drugs 107 (84; 60), prescription based 101 (79; 57), reimbursed 96 (75; 54), Basic Refund (“50%”) 96 (76; 54), Lower Special Refund (“75%”) 91 (71; 51) and Higher Special Refund (“100%”) 102 (80; 58). CONCLUSIONS: Nominal drug wholesale prices have increased...
in Finland since 1980 and also slightly from 1990, but real prices have constantly decreased. Depending from the adjustment index used, the real prices of all drugs have decreased 35–67% since 1980, or 16–40% since 1990. For reimbursed drugs the development was similar; in Basic Refund category real prices have decreased 24–46% since 1990, and even 45–72% since 1980. Since the effectiveness of drugs has not decreased during the time period studied, we suggest that the cost-effectiveness of drug treatment has clearly increased in Finland.

MANAGING ACUTE INJURIES RESULTING FROM MOTORCYCLE ACCIDENTS: EMERGENCY DEPARTMENT AND INPATIENT HOSPITAL RESOURCE USE AND COSTS

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OBJECTIVES: To examine resource use and cost of Emergency Department (ED) and hospital care for acute injuries resulting from motorcycle accidents. METHODS: 2003 ED visit and hospital discharge data from Massachusetts, where a mandatory all age helmet law applies, were analyzed. Cases with motorcycle accident-related injuries were identified by ICD-9 diagnosis and external cause codes (E codes: E810.2–E825.2, E810.3–E825.3). Inpatient cases were restricted to those admitted via ED. Type and circumstance of injury, time of occurrence, demographics, costs, length of stay (LOS)/visit, and disposition were examined. Charges were adjusted by a 0.55 cost-to-charge ratio and adjusted to national values. Cost estimates (2003US$) include accommodations and ancillary services. RESULTS: Acute injuries from motorcycle accidents resulted in 3066 ED visits and 420 hospitalizations during the year. Males comprised 87% of cases; injured party was driver in 93%. Mean age was 32 years (49% < 30 years). The majority (76%) occurred between May-September, Friday-Sunday (32%), and 4:00 PM-midnight (34%). Multiple injuries were noted in 44% of cases. Head injury/skull fractures were coded for 8%. Fatality rates were noted in <1% of cases. On average, hospital LOS was 7 days (±10.1) with cost per stay of $19,535 (±$34,688). At hospital discharge, 82% went home (14% with home care), 17% transferred to sub-acute facilities, 1% AMA. ED visit cost without hospitalization was $787 (±$51,136) and was 2.7 hours (±3), on average. Management of these injuries resulted in use of 2877 hospital days and 9274 ED visit hours at a cumulative cost of $10.5 million. CONCLUSIONS: This analysis shows that nearly half of the motorcycle accident victims sustained more than one injury; the majority survived, and most acute injuries were managed successfully in the ED. Although substantial, these acute care costs are conservative estimates of injury-related costs, as they do not include physician-related or post-acute care costs.

RESOURCE CONSUMPTION IN PLATELET PRODUCTION FROM THE PERSPECTIVE OF A TRANSFUSION MEDICINE DEPARTMENT IN GERMANY


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OBJECTIVE: Internal Cost Allocation (ICA), (e.g. Haematology—Transfusion medicine), becomes increasingly important, which is mainly caused by the G-DRG system. To guarantee optimal patient care, transparency on resources, costs and benefits is necessary. Therefore, in a first step resource consumption in platelet production was assessed to calculate finally costs from the provider’s perspective. METHODS: Prospective cost-study (full cost pricing/process cost finding). First, main processes of platelet production were identified. Secondly, an Excel model for standardized data entry and calculation was developed. Data was collected by multimeasurement-time analysis (laboratory processes three times, other processes ten times) and material consumption by trained staff. For cost calculations, the determined average from previous analysis was consulted. Unit cost data were collected from internal departments, e.g. materials logistics or personnel management. RESULTS: Platelet production consists of five processes: preparations before and after donation, medical examination, donation itself and laboratory tests to detect possible infections and increase blood safety. These require one secretary, one operator (registered nurse), four medical-technical-assistants and two doctors. The average of 62.44 minutes per donor could be prorated to the staff as follows: secretary 8.55%, doctor 7.7%, medical-technical-assistant 32.63%, and operator 51.12%. At the material consumption, the biggest part belonged to the laboratory reagents, which are needed for the standard-screening consisting of infection-serology, polymerase-chain-reaction, blood-type determination and the determination of the remaining leucocytes. Cost evaluation is still ongoing. CONCLUSION: Platelet production is a time- and resource-binding process. In the context of ICA, transparency on costs is important for budget negotiations, particularly when costs and benefits of the introduction of innovations in transfusion medicine shall be evaluated. It can be assumed that the relevance of platelet transfusions due to new therapy approaches is growing and in consequence, product differentiation and economic aspects are getting more important for resource allocation in German hospitals.

PHARMACEUTICAL CARE IN GREECE: A CITIZEN SATISFACTION SURVEY

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OBJECTIVES: To evaluate user satisfaction from pharmaceutical care and determine the factors affecting it in Greece. METHODS: A telephone survey was conducted by using a random sample of 1000 individuals, stratified by age, county and gender. A questionnaire was designed, containing questions about the characteristics of the drug users, their out of pocket spending on pharmaceuticals, the type and shape of the drug and their satisfaction from medication. A logistic regression is done, using as dependent variables various dimensions of satisfaction, such as: (a) the drug effectiveness, (b) the drug shape, (c) the health professionals’ responsiveness, (d) the appearances of side effects, (e) the price adequacy. As independent variables various characteristics of the respondents are used such as demographic, epidemiological and socioeconomic factors. RESULTS: 80% of Greek population is high satisfied from pharmaceutical care, 91.93% from health professionals’ responsiveness, 86.03% from the non appearances of side effects, 85.59 % from the drug shape, 62.99 from price adequacy and 59.78% from the drug effectiveness. Satisfaction from the drug shape, appearance of side effects, drug effectiveness and improvement of health depend on health status. Individuals of better health status have a higher probability to evaluate higher their satisfaction from medication. Satisfaction from health professionals’ responsiveness depends on age. Older individuals have a higher probability to evaluate higher their satisfaction from health professionals’ responsiveness. Satisfaction from price adequacy depends on age, social class and degree of urbanization. Lower social class older individuals and cities residents have a lower probability to eval-
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OBJECTIVE: Many Medicare enrolled veterans view the Department of Veterans Affairs (VA) as a preferred source of pharmacy services, even when they have access to pharmacy coverage elsewhere. With the implementation of the Medicare pharmacy benefit imminent, the objective of these analyses was to examine how one alternative source of pharmacy care, Medicare managed care (HMO) enrollment, affects the use of VA pharmacy services.

METHODS: We combined national calendar year (CY) 2002 Medicare enrollment data for Medicare-enrolled VA users with pharmacy cost records from the VA’s national Decision Support System (DSS) files. VA users were identified as a Medicare HMO enrollee if they were enrolled in a Medicare HMO at any time during CY 2002. RESULTS: In CY 2002, 2.3 million Medicare enrolled veterans (5.4\% of all Medicare beneficiaries) received medications from the VA, at a total cost of $2.4 billion (68\% of all VA pharmacy costs). Across the 127 individual VA medical centers (VAMCs) there was wide variation in the percentage of HMO enrollees among Medicare enrolled pharmacy users (from \textless{}1\% to \textgreater{}49\%) and in the percentage of pharmacy costs associated with their use (from \textless{}1\% to \textgreater{}41\%). HMO enrollees were just as likely as non-enrollees to use VA pharmacy care, although the average annual cost of their care was lower—$847 per year [sd = $1969] versus $1101 [$2794] for non-enrollees (p = 0.0001). CONCLUSIONS: VA users who are enrolled in Medicare HMOs continue to use VA pharmacy services, even though the large majority of them have access to pharmacy coverage through their HMO plans. Although the implementation of the Medicare prescription drug benefit in 2006 is expected to increase access to prescription drugs for Medicare beneficiaries, the VA will likely remain a significant pharmacy provider for Medicare enrolled veterans.

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OBJECTIVES: To provide a comprehensive and systematic review of the literature on medical tourism and health tourism, to present a grounded conceptual model for the constructs and to provide a historical background on the matter. METHODS: “Medical tourism” and “health tourism” were separately searched using the Medline database to review the literature on the availability and use of the terms. Given the limited results for both terms, the broader term “tourism” was searched. Results referring to a type of tourism were investigated further for classification of the variants of tourism and to understand their nature and context of use in the field. RESULTS: The Medline search for “medical tourism” generated only nine results while the term “health tourism” produced 15 results. The term “tourism” produced 445 entries 177 of which were non-English; all languages were considered in the abstract review. Of the 445 entries, 58 types of tourism and four categories were generated with “well-being” as main reference for the grounded conceptual model. Analysis of the results revealed that an explicit definition for either term is the exception rather than the rule and that the two terms are treated as similar concepts. CONCLUSION: The review of the literature underlined the problem of a severely limited literature and the lack of consensus on definitions and clarity on the conceptual framework. This paper defined health tourism as travel outside one’s local environment for the maintenance, improvement or restoration of the individual’s well-being in mind and body while medical tourism, a subset of the health tourism is travel outside one’s natural health care jurisdiction for the improvement or restoration of the individual’s well-being in mind and body. This overview has presented that as a matter of history, the concept of health tourism and medical tourism is not new.
OPPS PHARMACY HANDLING COSTS: POLICY IMPLICATIONS

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CONCLUSIONS: Most differences between the organisations could be explained by their differing objectives, scope of activities and timing of their intervention. The SMC was more concerned with timely and comprehensive coverage of all drugs, reflecting its closer links to NHS. NICE was only beginning to address implementation. Properly co-ordinated, the sequence of evaluations could follow a logical development of evidence quality over time, with minimal redundant work on company submissions. Without such co-ordination a waste of valuable time and resources is likely.

PHP14

OPPS PHARMACY HANDLING COSTS: POLICY IMPLICATIONS

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OBJECTIVE: The Medicare Prescription Drug, Improvement and Modernization Act (MMA) of 2003 directed the Medicare Payment Advisory Commission (MedPAC) to conduct a study of hospital pharmacy handling costs. The June 2005 MedPAC report recommended payment for handling costs of Part B specified outpatient drugs based on submitted charges, reduced to actual departmental cost and charge methods currently in use. Forty-three percent of survey respondents did include pharmacy handling costs. This study explores policy implications of MedPAC recommendation. METHODS: Published CMS and MedPAC sources were compared and underlying assumptions examined with a view toward predicting 2006 CMS approaches to determining hospital pharmacy handling cost payment methodology. RESULTS: Various methods of recording charges for pharmacy services were collected from a hospital survey of systems (n = 399) and categorized. Past CMS and MedPAC discussions of pharmacy costs and charges were identified and accumulated in an indexed database. Findings from the hospital sources and the governmental sources were compared and underlying assumptions examined with a view toward predicting 2006 CMS approaches to determining hospital pharmacy handling cost payment methodology. RESULTS: The hospital survey revealed significant variation in whether hospital pharmacy department drug charges recognize overhead such as handling costs. Forty-three percent of survey respondents did include such a charge. Types of charges reported were for dispensing (35%), compounding (25%), a combination of dispensing and compounding (23%) and all other (17%). When entries in the indexed database of CMS and MedPAC discussions of pharmacy costs and charges were compared to the hospital responses about actual departmental cost and charge methods currently in use, analyses revealed a significant differential between methods reported by hospital respondents (including charge compression) and methods discussed in published CMS and MedPAC sources. CONCLUSIONS: Future payment rates for hospital pharmacy handling costs will likely be derived from hospital submitted charges, per the MedPAC recommendation. If the payment methodology does not take existing variations of recording pharmacy costs and charges into account, the resulting method will be significantly flawed and hospital providers may find they are underpaid for pharmacy handling costs in 2006.

PHP15

THE CONSUMPTION OF DRUGS FINANCED BY THE SPANISH NATIONAL HEALTH SYSTEM AND THE IMPACT OF PHARMACOVIGILANT ACTIONS

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OBJECTIVES: The Spanish Agency of Medicines and Health care Products (SAMHP) makes regulatory decisions concerning pharmacovigilance. Here, we analyse the impact of actions related to safety adopted by the SAMHP on drug consumption financed by the Spanish National Health System (NHS), over the period 1990–2004. METHODS: A retrospective analysis of the consumption was made, selecting drugs which were eventually withdrawn from the market. Consumption data was provided by the Ministry of Health and Consumer (MHC) database and expressed as number of prescriptions. Drugs selected were classified according to type of Adverse Drug Reaction (ADR), Anatomic Therapeutic-Chemical Classification (ATC) and degree of therapeutic innovation at the moment of authorisation, according to the MHC. RESULTS: Fourteen drugs were selected for the purpose of this study, and none of these were categorised as “an exceptional therapeutic novelty”. The most common ADRs concerned severe liver (7/14) or heart (5/7) toxicity. At least 8 of the 14 drugs were associated with one safety action before being withdrawn. This was either a product labeling modification (astemizole, droticam, nimesulide, nefazodone, cerivastatine, trovafloxacine, and rofecoxib) or classification as hospitalary diagnostic (cisapride). Rofecoxib was the only one with two actions. A high level of consumption and in a very short time from authorisation until the first safety action (between one to three years) was found in nimesulide, cerivastatine and rofecoxib. In the rest of the drugs, the only action was the withdrawn. This happened after one year post-authorisation (tolcapone, serindol, and grepafloxacine) or in the case of etro tideine, two years. CONCLUSIONS: The drugs withdrawn after one or two years from their authorisation would seem reasonable not have been financed by NHS. In all drugs, the first safety action resulted in a significant decrease in consumption. In some of these cases, manufacturers requested to SAMHP drug to be withdrawn.

PHP16

ESTIMATING THE COST SAVINGS AND RATIONAL USE EFFECTS OF IMPLEMENTING AN ESSENTIAL MEDICINES LIST

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OBJECTIVES: To determine the effects of implementing essential medicines list on rational use of medicines and medicine cost savings in the public sector of West Bank, Palestine. METHODS: The effect of EML on medicine expenditure was divided into two separate components: the effect of EML on quantities used, and the effect on medicine prices. The quantities of 76 medicine groups were used as the dependent variable with real GDP per capita, EML dummy, hospital dummy, time, and percent of insured population, as independent variables. Another set of regressions were defined with real medicine price per defined daily dose as dependent variable and real GDP per capita, EML, and percent insured as independent variables. A sample of prescriptions was also analyzed to measure the indices of rational medicine use. The indicators of rational use of medicines were assumed to be a function of EML, and 16 health center dummy
variables. RESULTS: Expenditures on medicines declined due to negative impact of EML on quantities of medicines utilized per capita as well as on real prices. The quantities declined on average by 1.7 DDDs per capita per year. The medicine price reduced on average by about US $0.0013 per defined daily dose. The real cost saved for the years 2000 to 2003 was about US $5.9 million. The EML was effective in shifting all prescribing indicators towards the standard values. CONCLUSIONS: The PMOH should allocate more resources for pharmaceutical budget in the future. The EML was successful in containing medicine cost, and careful review and update of EML should further increase the savings. The development and implementation of antibiotic medicine policy is an urgent need. Introduction of treatment protocols for the most common diseases, and continuous education on rational medicine use for medical staff is required.

**PHP17**

**EFFECTS OF GENERIC SUBSTITUTION ON THE DEVELOPMENT OF PHARMACEUTICAL EXPENDITURES DURING THE PERIOD JANUARY 1998 TO MAY 2005**

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OBJECTIVE: Mandatory generic substitution of prescribed drugs aiming to moderate the cost increase of pharmaceuticals within the pharmaceutical benefits scheme, PBS, was introduced in October 2002. The study aims to investigate if the introduction of generic substitution had an impact on the development of costs in Sweden for prescribed drugs within PBS and in total.

METHODS: Data on the sales of pharmaceuticals to each county council and to the country in total was obtained. Data comprised both total sales (prescriptions, hospitals sales and over the counter sales) and sales of prescribed drugs within the PBS was used for the period January 2000 to May 2005. Expenditure data was expressed as retail prices excluding VAT per 1000 inhabitants in Swedish krona (SEK). Interrupted time series analysis was used to investigate effects related to generic substitution.

RESULTS: The county councils’ total cost for pharmaceuticals increased from 230 SEK/inhabitant in January 2000 to 280 SEK/inhabitant in May 2005. The county councils’ average monthly costs for PBS pharmaceuticals lay in three segments one constant cost of 190 SEK/inhabitant in 2000 and increased to 210 SEK/inhabitant in late 2002 where it stabilized and the second segment increased from 140 SEK/inhabitant in 2000 to ~170 SEK/inhabitant in late 2002 where it stabilized and the third segment ~190 SEK/inhabitant in 2000 and increased to ~210 SEK/inhabitants in late 2002 and after that it was constant. Generic substitution was associated with reduced the slope of increase of costs for drugs within the PBS for the whole country and several of the county councils according to preliminary analyses. This was also seen for several of the county councils’ total costs immediately after the introduction of generic substitution. CONCLUSIONS: Preliminary analyses show that generic substitution had an impact in the pace of increase of pharmaceutical expenditures.

**PHP18**

**GEOGRAPHICAL INFORMATION SYSTEM (GIS) ANALYSIS OF SMALL AREA INEQUALITIES IN DRUG EXPENDITURES IN HUNGARY**

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OBJECTIVES: The aim of this study is to analyse the small area inequalities in the health insurance reimbursement of drugs in Hungary. METHODS: Data derives from the central database of the Hungarian National Health Insurance Fund Administration (OEP) covering the year 2003 and containing all the drug reimbursement information from the whole country. For the analysis we used three different kinds of drug expenditures according to the source of funding: health insurance reimbursement (paid by OEP), maximum reimbursement for socially handicapped (coming from state budget), co-payment of patients (paid out-of-pocket of patients) for subsidized drugs. The statistical analysis was carried out with SPSS version 12.01. Small areas refer to the postal code (zip code) districts of Hungary and the patients were assigned to small areas according to their permanent address. The Geographical Information system (GIS) analysis was carried out by the MapInfo Professional software version 7.5. RESULTS: The health insurance reimbursement of drugs paid by the National Health Insurance Fund Administration is significantly higher (p < 0.05) in the eastern part of Hungary. The maximum reimbursement for socially handicapped paid by the National Health Insurance Fund Administration is also significantly higher (p < 0.05) in the eastern part of Hungary. The co-payment of patients is significantly higher (p < 0.05) in the western and central regions of Hungary. The results are presented on GIS maps also. CONCLUSIONS: The GIS analyses help to identify the geographical inequalities of the drug expenditures coming from different sources. In the more developed regions (western and central regions) the willingness and ability to pay the co-payment is higher. In the less developed regions of Hungary (northern and eastern regions) the people more rely on the reimbursement for socially handicapped financed from the state budget.

**PHP19**

**PRESCRIPTION DRUGS AND ANNUAL BENEFIT CAPS—DO PATIENTS ANTICIPATE EXCEEDING THE CAP?**

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OBJECTIVE: To investigate whether patients with a $1,000 annual prescription drug benefit cap reduced their drug consumption prior to exceeding the cap threshold. Previously, we found that the drug cap reduced overall drug consumption during the year. METHODS: All 183,640 subjects were 65+ years with Medicare insurance, had tiered copayments ($10 for generic & $15–35 for brand drugs), and were members of an integrated, prepaid delivery system: 146,050 subjects had an annual $1000 drug benefit limit; and 37,590 subjects had no benefit limit (because of supplementary insurance from former employers rather than individual choice). To compare drug consumption (measured in dollars) below the cap amount, we examined the risk of cap and non-cap subjects consuming $250, $500, $750, and $1000 in 2003 using proportional hazard models for each of these thresholds. We adjusted for age, gender, race/ethnicity, brand copayment amount, prior visits, socioeconomic status, comorbidity, and having a regular primary care provider. RESULTS: Among the 183,640 subjects, 16,657 (11%) of subjects with a cap and 7,888 (21%) of subjects without caps exceeded the $1,000 cap threshold during 2003. After adjustment for covariates, subjects with a cap were significantly less likely to exceed the $1,000 cap threshold (HR = 0.61, 95% CI: 0.56–0.66), compared with subjects without a cap. Similarly, subjects with a cap were significantly less likely to exceed lower drug consumption thresholds during the year, compared with
PHARMACOECONOMICS

RECENT DEVELOPMENTS AND THE ROLE OF PHARMACOECONOMICS
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OBJECTIVE: To evaluate the role of pharmacoeconomics in the Greek pharmaceutical environment. METHODS: The existing pharmaceutical reimbursement system in Greece and the proposal for the new pharmaceutical policy, announced in November 2004 by the Greek Ministry of Health and Social Solidarity were examined. RESULTS: The current reimbursement system in Greece consists of a positive reimbursement list. The main criterion for a product to be accepted for reimbursement is its daily drug cost in comparison to the average drug cost of the therapeutic cluster to which it belongs. Nevertheless, other factors are also taken into account in order to approve reimbursement, such as the non-mandatory submission of pharmacoeconomic studies, even though their role in a positive or negative reimbursement decision is not clarified. The new system announced by the Ministry states that it plans to abolish the reimbursement list. In the place of the current reimbursement system it proposes, among other measures that aim to contain costs and alleviate patient burden, the implementation of a rebate system where drugs are grouped into therapeutic clusters and a reference price is calculated for each cluster. Pharmaceutical companies will return the weighted difference between their products' price and the reference price to social insurance organizations. The proposal states that rebate levels can be adjusted based on pharmacoeconomic evidence in order to reward cost-effective therapies. Additionally, the proposal announces the establishment of a Health care Technology Evaluation Agency that will evaluate technologies and produce guidelines based on evidence based medicine and cost-effectiveness parameters. This Agency will also evaluate pharmacoeconomic evidence in cases where there is a need to adjust rebate levels for specific products. CONCLUSIONS: At present, pharmacoeconomics play a limited role in the reimbursement of pharmaceuticals in Greece. The new pharmaceutical policy proposal reinforces the role of pharmacoeconomics in Greece, which is a welcome development.

PHARMACOECONOMICS

EFFECTS OF DECENTRALIZED RESPONSIBILITY FOR COSTS OF OUTPATIENT PRESCRIPTION DRUGS ON THE PHARMACEUTICAL COST DEVELOPMENT IN SWEDEN
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OBJECTIVES: To cut the escalating costs for pharmaceuticals the responsibility for costs of outpatient prescription drugs was decentralized from the government in Sweden to the county councils in 2002. The study aims to investigate if the introduction of decentralized responsibility had an impact on the pharmaceutical cost development in Sweden. METHODS: Monthly sales data, on the pharmaceutical benefits scheme, PBS, to each county council was obtained for the period January 2000 to May 2005. Interrupted time series analysis was used to investigate the effects of the introduction of decentralized responsibility on pharmaceutical costs in both total sales and sales of prescription drugs within total and within the PBS. This was investigated both on country level and with comparisons between county councils with different budget models for the decentralized responsibility. The investigation is continuing. RESULTS: Analyses show that there was no significant change in the cost trend associated with the introduction of decentralized responsibility for costs of outpatient prescription drugs. The county councils’ costs of prescribed drugs covered by the PBS were on three levels; €19.5/inhabitant in 2000 and €23.9/inhabitant in May 2005, the second €15.7/inhabitant in 2000 and €19.5/inhabitant in May 2005 and the third €3.6/inhabitant in 2000 and €6.0/inhabitant in May 2005. All county councils remained on the same level throughout the study period. The budget model for outpatient prescription drugs had no impact on the level of costs. When considering total drug expenditures including inpatient drug costs the three segments diminish and all county councils are gathered between €21.7–26.0/inhabitant in 2000 and €28.2–34.7/inhabitant in May 2005. CONCLUSIONS: Pharmaceutical costs increased despite the introduction of decentralized cost responsibility for drugs in outpatient care. The budget models had no clear impact on the cost trend.
A COMPARATIVE ANALYSIS OF THE FINANCING, PRICING AND REIMBURSEMENT SYSTEMS FOR PRESCRIPTION DRUGS IN THE NORDIC COUNTRIES
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OBJECTIVES: To elicit similarities and differences in the policies and practices for financing, pricing and reimbursing prescription drugs in the often perceived similar Nordic countries of Denmark (D), Finland (F), Norway (N) and Sweden (S).

METHODS: A review of the four countries’ authorities’ stated policies and practices on the matter were performed through a search of the literature and of the respective authorities’ homepages. The information was validated through interviews with key personnel of the reimbursement agencies in each country, and the final study reports for the respective countries were reviewed by the same persons. RESULTS: All countries have a national health care system financed by taxation. There are differences in the reliance upon patient co-payment (N 13%, others 22–37%) and whether financing is a county (S) or national (others) responsibility. All have regulated prices for reimbursed drugs; based either upon international comparisons (N, D) or country-specific decisions (S, F). The criteria used for deciding to reimburse a drug vary between the countries, and reimbursement is practiced differently in several other dimensions: mandatory requirement for pharmacoeconomic analysis (F, N, S), the existence of patient-specific reimbursement systems (D, F, N), product- (S) or indication-based (others) reimbursement, use of graded (F), conditional (N, S) or temporary (S) reimbursement, use of reimbursement contracts (N), and different processes for handling disagreement about decisions. CONCLUSION: The Nordic countries all have a national health care system financed by taxation and encompassing prescription drugs, but differ in a number of other dimensions with respect to financing, pricing and reimbursing such drugs.

A SYSTEMATIC REVIEW OF THE EUROPEAN PHARMACEUTICAL MARKET AND THE IMPACT OF EUROPEAN UNION REGULATION AND JURISDICTION
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OBJECTIVES: To examine the impact of the increasing role of the European Union (EU) on the European pharmaceutical market, focusing on industry and national policies. To give a systematic overview of the current state of the European pharmaceutical market as a whole. METHODS: Systematic literature review for the years 1965–2005, including “grey” sources of information, online databases, European Commission documents and European Court of Justice rulings, relevant journals and systematically tracing back relevant references. RESULTS: The EU attempts to liberalise the pharmaceutical market and the realisation of a Single European Market (SEM) came to a standstill, after some considerable achievements (e.g. marketing authorisation). Instead, the EU seems to concentrate on coordination of results through the adoption of the so-called G10 recommendations. EU Member States successfully—and intentionally—kept control on the issues of pricing, reimbursement, pharmacies and prescribing. Over the last 25 years they adapted increasingly convergent measures to cope with rising pharmaceutical expenditures, without long-lasting cost containment effects. However, recent European case law might prove to have far reaching consequences on the provision of medicines. The European pharmaceutical industry—although profitable—is underperforming compared to the USA, which is blamed on restrictive regulatory frameworks in the Member States. CONCLUSIONS: The future of the actors in the European pharmaceutical market is not clear. Will it bring more European influence or a strengthening of national influence? In the short term, major change towards a SEM seems unlikely, but in the longer term European history showed that major change is possible. It seems clear that much depends on the attitude of Member States towards the new approach and the interpretation and influence of European case law. For the European industry, adoption and implementation of G10 recommendations is of great importance for future competition with US-based companies.

PHP25
USING AN ITALIAN POPULATION DATABASE TO PROFILE PREVALENCE AND COSTS OF CHRONIC CONDITIONS
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OBJECTIVE: Individuals with chronic medical illness may have multiple health problems, and are often costly and difficult to manage. This study identifies those with highly prevalent chronic conditions and assesses related health service use and costs in the population of Emilia Romagna (RER), a large northern Italian region. METHODS: Pharmaceutical, hospital, and demographic data from 2000 and 2001 have been assembled for the entire population of RER (4 million). Pharmaceutical and hospital tariffs were a proxy for costs. Pharmacy and hospital records were used to identify individual morbidity. Data included demographic and geographic information, encounter dates, diagnosis/procedure codes, pharmaceutical information, and health care costs. Individuals were classified as having a chronic condition in 2000, and we examined pharmacy and hospital use/costs in 2001. Descriptive analyses compared mean and total costs, as well as proportions within the population. RESULTS: We identified five highly prevalent chronic conditions: cardiovascular diseases (N = 824,190, 20.8% of the population); rheumatologic conditions (N = 172,402, 4.4%); gastric acid disorders (N = 142,191, 3.6%); chronic respiratory illnesses (N = 154,601, 3.9%); and psychiatric disorders (N = 94,140, 2.4%). 27.3% of the population had one or more of these five chronic conditions, and these individuals accounted for 72.8% of the pharmacy costs and 58.9% of the hospital costs in the following year. For persons with these five conditions, we also described use and costs by age and gender, residence, and income. CONCLUSIONS: Interestingly, one-fourth of the population with selected chronic conditions accounted for large proportions of cost and use of health services. The ability to identify those with chronic conditions would help planners and governmental agencies to address health care needs, increase quality of care, avoid unnecessary hospitalizations, and save costs. These types of data can be used to estimate health care financing and risk adjustment models, and profile specific clinical, demographic or geographic sub-groups.

PHP26
ADHERENCE INDEX OF PERFORMANCE—A NEW METHOD AND TOOL FOR ONGOING EVALUATION OF MEDICATION ADHERENCE IMPROVEMENT INITIATIVES
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OBJECTIVES: To develop a standardized means for measuring the impact of medication adherence improvement initiatives in disparate pharmacy claims databases over sequentially overlapping periods of time. METHODS: The Adherence Index of
Performance (AIP) tool was developed by combining Microsoft Visual Basic 6.0 with a series of SQL statements that transform pharmacy databases into a standardized format. Once standardized, a second series of SQL statements were applied to allow tracking of prescription activity levels compared to expected activity levels over sequentially overlapping periods of time. RESULTS: AIP detects trends in medication adherence relatively early after the initiation of adherence improvement activities. This represents a significant improvement over traditional methods for studying the impact of patient interventions on medication adherence and provides opportunities for early modification of adherence improvement activities that do not achieve their intended goals. CONCLUSIONS: AIP allows targeting of specific patients for adherence interventions based on persistence. Through use of dynamic filters, AIP can also identify health care providers and institutions where adherence improvement initiatives are most needed. Additionally, user-defined therapeutic groupings and intent to treat categorization allows AIP to generate accurate medication adherence information when patients are initiated on one medication in a therapeutic class but ultimately maintained on another medication within a defined therapeutic class. The Adherence Index of Performance provides a unique means for monitoring the impact of medication adherence improvement initiatives through analysis of pharmacy claims databases. AIP converts claims databases into a standardized format upon which a series of pre-defined analytical processes can be applied. This allows tracking of prescription activity levels for both new and continuing patients compared to expected activity levels over sequentially overlapping periods of time. It has been successfully used by a number of health care providers to monitor the impact of adherence interventions on patients' medication-taking behaviors.

**PHP27**

**PREDICTIVE VALUE OF PHARMACEUTICAL TREATMENT (PT) COST AND LENGTH OF STAY (LOS) ON TOTAL HOSPITAL (TH) COST USING THE MINIMUM BASIC DATA SET (MBDS)**

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**OBJECTIVES:** Estimates of fixed funding budgets can only be accurate if all pathology related insurance costs are considered. In this work we analysed the predictive value of LOS and PT cost on TH insurance cost as surrogates for total budget estimation. These predictors may already be available prior to the various other cost elements and act as management indicators.

**METHODS:** Belgian hospitals register admission data in MBDS; the Health Authorities make annual data freely available via the web (https://ctt.fgov.be/ectt/) on insurance costs (medicines, medical or surgical procedures, laboratory requests, others) relating to hospital stays per All Patients Refined Diagnosis Related Groups (APRDRG) and per stay severity. Data from the year 2000 were analyzed in SPSSWIN12.0 using multiple forward stepwise linear regression. For each variable the median value was used. Data transformations were used if appropriate.

**RESULTS:** On APRDRG-level median TH-cost was significantly correlated to HS-cost ($r = 0.858$, $p < 0.0001$) and PT-cost ($r = 0.709$, $p < 0.0001$). Median TH-cost increased with stay severity (minor 1728 Euro, extreme 8984 Euro). The linear regression model considered the inclusion of the factors LOS, PT-cost, mean patient age and stay severity on TH-cost; the selected model had an adjusted $R^2 = 0.767$ and included LOS (change in $R^2 = 0.691$), PT-cost (change in $R^2 = 0.038$) and minor to moderate severity (all factors with $p < 0.001$). The model fitted the data of $>340$ APRDRGs; liver transplantation, major cardio-vascular surgery, threatened abortion and alcohol abuse may benefit from specific modeling. **CONCLUSIONS:** LOS and pharmaceutical treatment cost allow explaining $>70\%$ of the variance of the total hospital-cost as measured in real life MBDS-data; these predictors may be useful as budget management indicators for a majority of APRDRGs before detailed financial data become available.

**PHP28**

**ECONOMIC EVALUATION OF NEW TECHNOLOGIES IN THE HOSPITAL SETTING: THE EXPERIENCE OF THE AZIENDA OSPEDALIERA DI VERONA, ITALY**

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**OBJECTIVE:** To evaluate the opportunity of introducing new technologies in the medical device formulary of the Azienda Ospedaliera di Verona. As an example, kyphoplasty evaluation is described. **METHODS:** In order to control the medical devices purchasing process, at the Azienda Ospedaliera di Verona (two hospitals, one teaching and one general, accounting for about 2000 beds) a multidisciplinary Medical Devices Formulary Committee (MDFC) was established. The tasks of the MDFC are: to evaluate the introduction of new medical devices in the hospital formulary; to monitor the appropriate use of medical devices after their introduction. The committee approves the introduction into the formulary of new medical devices with innovative features, based on documented efficacy and a favourable cost/benefit ratio. For kyphoplasty, efficacy data were collected from published literature. Cost information was computed taking into account: the cost of the device, the personnel, the operating room, length of stay, from the hospital perspective.

**RESULTS:** At the time of the evaluation, published evidence describing the efficacy of kyphoplasty consisted mostly of uncontrolled retrospective studies. Regarding cost, the overall cost of the procedure was calculated as follows: device €2250, medical and nursing staff €486, health materials and operating room €185, length of stay €2600, for a total of €5321. The DRG reimbursement associated with the use of kyphoplasty with no complications is €4200, which does not cover the overall cost of the procedure. **CONCLUSIONS:** Despite poor clinical data and unfavourable economic analysis, the MDFC approved the use of kyphoplasty only for 10 selected patients per year, requiring the physician to report the outcomes of the treated patients, in order to re-evaluate the use in the future.

**PHP29**

**REIMBURSEMENT OF HIGH-PRICED NEW EMERGING MEDICAL TECHNOLOGIES IN A DRG-BASED HOSPITAL CARE SYSTEM**

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Newly developed, already licensed, high-priced medical devices for critically ill patients impose additional costs especially on the hospital sector. In countries with a DRG-based reimbursement system there are no economic incentives for hospitals to use the new technologies as long as the additional costs are not compensated. **OBJECTIVES:** The objective of this paper is to analyse the structures of the German health care system which are involved in the implementation of new high-priced medical technologies the hospital sector in the reimbursement system and to determine key factors of a successful implementation. **METHODS:** The institutions involved in the determination of the catalogue of reimbursed items based on the just newly introduced German DRG-system are described and examined. Illustrated by examples the launching of newly emerging medical devices for inpatient treatment is analysed. Investigated parameters were the number and quality of studies published, the
involvement of health technology assessment institutions, the adjustment of the reimbursement system in a time frame allowing the survival of the company, and the dissemination of the technology. RESULTS: Involvement of objective institutions like the Federal Committee (GmbA) or the Institute for Reimbursement in the hospital sector (INEK) is necessary to prevent implementation of new technologies without adequate medical efficacy and economic effectiveness. For positive recommendations a critical mass of clinical and health economic studies is prerequisite. But in time adjustment of the reimbursement catalogue, e.g. as new DRG or additional payment to existing DRGs, seem to be crucial for implementation of a new costly technology. CONCLUSION: Slow decisions processes can delay if not prevent the use of useful new therapeutic technologies. Although according to the German law cost effectiveness should be considered in reimbursement decisions, so far it did not play a relevant role in reimbursement decisions in the hospital sector.

**PHP30**

**PRESCRIBING PATTERNS AND ASSOCIATED COSTS OF PSYCHOTROPIC DRUGS IN A MAJOR HEALTH CARE SYSTEM IN SAUDI ARABIA**

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OBJECTIVES: Recognizing the prescribing pattern and associated costs of psychotropic medications and the factors associated with such prescribing is crucial and may play an important role in improving the health care services provided to patients on such medications. The objective of this study was to assess current trends and factors influencing the prescribing of psychotropic medications. The study also estimated the direct cost associated with these medications. METHODS: This is a retrospective study of (N = 71,136) prescription events of psychotropic medications identified from outpatient pharmacy records of a major health care system in Riyadh, Saudi Arabia for years 2002, 2003, and 2004. Patient characteristics, psychotropic medications use and the associated costs over the three years period were determined. Logistic regression was used to evaluate the influence of physician specialty and other relevant factors on prescribing of different psychotropic medications. RESULTS: Over the three years period the use of high cost agents have sharply increased to account for around 8% of the total outpatient spending on pharmaceuticals in 2004. Prescriptions by General Practitioners (GPs) accounted for 35% of the total psychotropic medications prescribed. However, patients on these medications were more likely to receive a high cost drug from a psychiatrist than from any other specialty. CONCLUSIONS: The results of the study indicate that psychotropic medications are mainly prescribed by GPs and that the likelihood of being prescribed a psychotropic medication, which may be of high cost, is greater when patients see a psychiatrist. In Saudi Arabia, health care systems should closely monitor prescribing patterns for psychotropic medications to avoid unnecessary cost and consequently, the potential for inappropriate use of such agents.

**PHP31**

**CHARGES FOR HOSPITAL ADMISSIONS ATTRIBUTABLE TO HEALTH DISPARITIES FOR AFRICAN AMERICAN PATIENTS IN SOUTH CAROLINA DURING 1998–2002**

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OBJECTIVE: To estimate the financial effect of racial disparities as reflected in differences in hospital admission rates each of the 25 Major Diagnostic Categories (MDCs) in the state of South Carolina. METHODS: Estimates were calculated for total submitted charges within each MDC that were attributed to higher admission rates for African Americans than for Caucasians in South Carolina, based on age-adjusted annual admission rates. Each of the 25 MDCs was evaluated to reveal which component Diagnostic Related Groups (DRGs) were the largest admission “drivers” or contributors to the observed differences in admission rates. South Carolina hospital discharge data for 1998–2002 was used for the analysis. The database includes all-payer billing data for inpatient hospital admissions as received on the UB-92 billing file for the covered episode. Charges were inflation-adjusted to 2002 constant dollars. RESULTS: Between 1998 and 2002, there were an estimated $1.6 billion in total charges for hospital admissions in South Carolina that were attributed to higher age-adjusted admission rates for African-American patients. In addition, African Americans had consistently higher hospital admission rates for disease categories that are often associated with a failure to obtain ambulatory and preventive care. CONCLUSION: Our analysis reveals that age-adjusted hospital admission rates for African Americans in South Carolina are higher than for Caucasians, and that the gap appears to be widening over time. Given the magnitude of the financial implication, interventions with even a small impact on the conditions underlying the racial disparities in hospital admissions are likely to be cost-effective.

**PHP32**

**COMBINING PHARMACY AND HOSPITAL DATA IN A RISK ADJUSTMENT MODEL**

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OBJECTIVE: Health districts have been established as part of the decentralization of responsibility within the Italian National Health Service. A major challenge is to assure that appropriate financing is provided to meet the needs of the population. Risk adjustment models are being developed that can be used for districts’ resource allocation, planning and evaluation activities. METHODS: Pharmaceutical, hospital, and demographic data from 2000 and 2001 have been assembled for the entire population of Emilia Romagna, a large northern Italian region (4 million). Pharmaceutical and hospital tariffs were a proxy for costs. Morbidity indicators based upon pharmacy and hospital data were developed for risk adjustment. Prospective risk adjustment models were fit. We tested several models of increasing complexity, taking advantage of the predictive power of pharmacy- and hospital-based diagnostic groups. Our final adjuster was based upon a combination of the pharmacy and hospital groupings. We considered fairness across administrative units, as equity was a key policy goal. RESULTS: The pharmacy cost model predicts 25.8% of the variation in pharmacy costs. Our hospital cost model predicts 10.1% of variation in prospective hospital costs. Predictive accuracy for pharmacy cost models were improved by information from the hospital data; and were more stable for those who used health services in year 1, and better for those who used hospital and pharmacy services compared to those who did not have any service use. For the pharmacy model predictive accuracy by district ranged from 0.91 to 1.10; for the hospital cost model, predictive accuracy by district ranged from 0.93 to 1.13. CONCLUSIONS: We demonstrate that risk adjustment models using pharmacy data to identify individual morbidity are good predictors of future year costs. Regional and district health managers can use these models for...
planning specific interventions and for evaluating patterns of pharmaceutical and hospital use.

**PHP33**

USE OF PHARMAECO ECONOMICS FOR CREATION OF THE STATE FORMULARY IN UKRAINE

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OBJECTIVES: In Ukraine forms insurance medicine and formulary system. Annually state select more than 3% from a gross national product. The limited tool on pharmaceuticals is insufficient. METHODS: We in the commission of Health Ministry of Ukraine have developed regulations about the National list of the essential medicines with use the pharmacoeconomic analysis for carrying out of the state purchases. The analysis “cost-minimization” dominates, the analysis “cost-effectiveness” will carry out seldom in connection with complexity of searching of the data about effectiveness of drugs. We have developed techniques the pharmacoeconomic analysis for creation of the formulary. RESULTS: We have created «The Program of pharmacoeconomical evaluation of drugs in Ukraine», which includes the education of the pharmacists on pharmacoeconomics and organization of pharmacoeconomical researches. We have developed recommendations on the pharmacoeconomic analysis for carrying out in Ukraine in view of its economic, demographic features. At the present stage in Ukraine the State formulary of medicines is developed. The government is hesitant to apply pharmacoeconomics widely in pricing and reimbursement. There is a system of gathering of pharmacoepidemiological data. Little experience exists in quality of life, measurement and cost-utility techniques. On the basis of materials of ISPOR we prepare the textbook “Pharmacoeconomics” by Ukrainian. More than 4000 practical pharmacists are acquainted with pharmacoeconomical analysis. The original educational program on the data about effectiveness of drugs. We have developed techniques the pharmacoeconomic analysis for creation of the formulary. The pharmacoeconomics is necessary for creation of the State Formulary in Ukraine. CONCLUSIONS: The education of the doctors and pharmacists on pharmacoeconomics for the clinical pharmacists is created. More than 4000 practical pharmacists are acquainted with pharmacoeconomical analysis. The original educational program on the data about effectiveness of drugs. We have developed techniques the pharmacoeconomic analysis for creation of the formulary. The pharmacoeconomics is necessary for creation of the State Formulary in Ukraine.

**PHP35**

AGE AND GENDER IN PHARMACEUTICAL EXPENDITURE: A TOOL FOR RISK CALCULATION

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OBJECTIVES: To highlight the importance of considering both age and gender of users (population (pop) with any prescription) if analyzing pharmaceutical expenditure. METHODS: All primary health care prescriptions (2003) have been considered (95 million prescriptions; 4.2 million users; 1237 million €). Indicators analyzed: prescriptions per user (P/U), cost per prescription (C/P) and cost per user (C/U), all from administration viewpoint. Risk of consuming (U/Pop) has been also calculated according to age and gender. RESULTS: Global: C/U: €291.9; P/U: 22.4; C/P: €13.0. Men present prescriptions more expensive (+€1.5), but women are more expensive (€305.6 vs. €275.4) because on average they demand 4.8 prescriptions more than men P/U grows exponentially (R² = 0.929) until 89 y.o.,(63.4). Min: 4.3(10 y.o.). C/P varies considerably until 28 y.o. (avg: €10.0; Pearson v.c.:32.1). Prescriptions of growth hormone increase the C/P a 83% among 12–16 y.o. Since 29 y.o. C/P stabilizes (avg: €12.9; Pearson v.c.:8.6) presenting an upward trend at ages close to retirement age (chronic illnesses and copayment). C/U behaves exponentially until 88 y.o. (R² = 0.962). At 88 y.o. C/U is 3 times higher than global average and 28.5 higher than at 5 y.o. Since 17 y.o., women consume more medicines than men, but men present prescriptions more expensive than women so there are alternations in C/U. U/Pop at 70 y.o. is 1.84 times higher than at 30 y.o.(prob.0.90 vs. 0.49), and the difference in C/U is €569. For equal ages, there are also differences in U/Pop between primary health care teams (PHCTs) because of, for example, other socio-economic and geographical variables. CONCLUSIONS: It’s important to include age and gender of users in comparative analysis between PHCTs in order to consider differences in the population pyramid and in utilization levels. Benchmarking activity between PHCTs is being carried out monthly with these three standardized indicators. These reports allow to locate inefficiency with more accuracy and to apply measures more effective.
OBJECTIVES: Health professionals hold both professional and personal health beliefs, and it is likely that this has an impact on both which information they communicate and how. The importance of beliefs in relation to adherence to treatment has been stressed, but is not yet fully appreciated by health professionals. A larger project will analyse and compare beliefs about medicines among health professionals and patients. The aim of this study was to describe beliefs about medicines among pharmacy employees. METHODS: The study was performed among pharmacy employees at 24 community pharmacies in Göteborg, Sweden. The participating pharmacies had a total of 372 employees (pharmacists, dispensing pharmacists, pharmacy technicians). Data collection was at the weekly pharmacy information meetings with a questionnaire comprising background questions (age, professional category, working experience and medication use) and the general part of Beliefs about Medicines Questionnaire (BMQ). RESULTS: A majority of the 292 respondents were dispensing pharmacists. More than half of the respondents were aged 45 years or older and had worked in a pharmacy for 20 years or more. A higher proportion of dispensing pharmacists stated current use of traditional medicines compared to the other professional categories. The respondents had a high mean value for General Benefit and a low mean value for General Harm. Compared to dispensing pharmacists, pharmacy technicians viewed medicines as more harmful (p = 0.001); and compared to pharmacy technicians, dispensing pharmacists regarded medicines as more beneficial (p = 0.001). When controlling for background characteristics, no confounders were detected for any of the three subscales. CONCLUSIONS: The reason for the difference between dispensing pharmacists and technicians remain unclear. Nevertheless, the positive beliefs among pharmacy personnel may have an impact on the communication with clients and, eventually, adherence.

PUBLIC FUNDING OF DRUGS FOR ORPHAN DISEASES

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The EU regulation on orphan medicinal products aims to promote the research and development of treatments for rare diseases. Approval by licensing authorities, however, does not necessitate that health services reimburse such treatments. OBJECTIVES: To assess whether cost-effectiveness analysis, as conventionally applied, is appropriate for orphan drugs by considering whether availability of patients in the case of “ultra-orphan” drugs is sufficient for adequate statistical powering. METHODS: Simulations of sample size for cost-effectiveness analysis, based on Briggs & Tambour (1998) using the net-benefit approach, were conducted. Different values for costs and benefits (QALYs) for treatment and control groups, together with their respective variances and co-variances were imputed. For different values of threshold willingness to pay per additional QALY, the relationship between sample size and statistical power were determined. RESULTS: For a willingness to pay threshold of £30,000 per additional QALY, a difference in costs ΔC = £20,000, difference in benefit ΔB = 1 QALY, variance in treatment and control benefit σ²(B) = 10 QALYs, variance in treatment and control cost σ²(C) = £10⁶ and covariance of ΔC and ΔB set as zero, statistical power ranged from 8% for sample sizes of 50 per arm to 65% for sample sizes of 1000 per arm. CONCLUSIONS: Certain diseases are sufficiently rare that even if all patients were included in a clinical trial, adequate statistical power for cost-effectiveness of treatments may never be achieved. Further, trials for orphan drugs are often non-comparative which also detracts from the reliance that may be placed on inferences on clinical and/or cost-effectiveness. For
rare diseases, consideration of alternative acceptance criteria for public reimbursement/health service provision may be required.

THE IMPACT ON DECISION-MAKING OF CHANGING COST-EFFECTIVENESS OF HEALTH TECHNOLOGIES OVER TIME

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OBJECTIVES: Estimation of cost-effectiveness of health technologies tends to focus on the time period at or around launch, to fulfill the growing requirements of reimbursement or market access agencies. This study reviews the factors which influence cost-effectiveness over time and demonstrates the temporal impact on cost-effectiveness using a number of case-studies. The implications for decision making and market access are discussed.

METHODS: A review of the factors that may influence cost-effectiveness over time and methodological approaches used to address these was conducted. Earlier analytical frameworks of studies from the 1990s in the fields of motor airbags, implantable cardiac defibrillators, statins, renal dialysis and hearing aids were revisited to re-estimate the cost-effectiveness. For example, parameters of an economic evaluation conducted in 1990 for erythropoetin were updated to 2004 values using a recent systematic review of clinical evidence together with revised unit costs and expert clinical opinion for resource utilisation.

RESULTS: For the majority of case-studies examined, there was a trend for the reduction in cost-effectiveness ratios over time—e.g. for erythropoetin, the base-case cost per QALY decreased ten-fold over a 14 year period (£216,906 to £21,547). Significant factors included unit costs, dosage, utility gains and revised discounted rates.

CONCLUSIONS: The timing of economic evaluation is critical in the estimation of cost-effectiveness. Production of this evidence may often be the first time that the conceptual framework of economic analysis has been applied to the technology, despite suggestions that economic evaluation should be used iteratively throughout the product life-cycle. This study has demonstrated that whilst there is a need for economic evaluation results to be timely to aid decision-making (i.e. at or around launch), it is important that the analysis is updated and reviewed periodically to assess whether cost-effectiveness has changed sufficiently to justify modifying the original decision.

EXAMINING THE QUALITY OF HEALTH ECONOMIC ANALYSES SUBMITTED TO THE REIMBURSEMENT AGENCIES IN SWEDEN AND FINLAND—A CROSS COUNTRY COMPARISON

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OBJECTIVES: To compare the quality of the health economic material submitted to the Swedish Pharmaceutical Benefits Board and the Finnish Pharmaceuticals Pricing Board as part of the application for reimbursement for new pharmaceuticals.

METHODS: The health economic evaluations were reviewed in each country against two checklists, marking each question Yes/No/Not Applicable. The checklists used were: 1) the respective national Guidelines transformed into yes or no questions, and 2) the QHES check list, a validated instrument, was also used to provide a common comparator. The central estimate of cost effectiveness was collected (cost per QALY) as well as whether the application was accepted or rejected in each country.

RESULTS: The Swedish scores range from 0.24 to 0.87 and on the QHES from 0.09 to 1, with a mean quality of 0.61 and 0.67 respectively. The Finnish scores range from 0.58 to 0.96 and on the QHES from 0.28 to 0.84, with a mean quality of 0.76 and 0.62 respectively. The correlation between the respective national guidelines and the QHES scores is modest (approx. 0.7 both in Sweden and in Finland). This is mostly due to country specific criteria. There was a low observed correlation between quality score and acceptance in Sweden and also in Finland. Likewise, the correlation between cost per QALY and decision to accept/reject is low to medium.

CONCLUSIONS: Health economic material as part of applications to reimbursement agencies varies widely in quality. There are differences even for the same product in the two countries. Secondly, due to the relatively small number of applications studied and the even fewer rejections, it is difficult to draw firm conclusions regarding the value the pricing authorities studied place on a QALY.
OBJECTIVES: To explore the trends in physicians’ prescribing of promotional targeted drugs (PTD) in two categories—Statins and COX-2 inhibitors, before and after implementing pharmaceutical policies which included the National Essential Drug List (NEDL), the health benefit schemes, and the regulation of the hospital Pharmacy & Therapeutic Committee (PTC).

METHODS: Electronic outpatient prescription records of the PTDs and the established drugs in the same category at a teaching hospital were compared. Data on how and when the PTD got approved by the PTC including the prescribing restrictions were also assembled. A time series analysis of prescription data for each drug was constructed and marked for any known phenomena during 1998–2004.

RESULTS: The highly promoted drugs in both groups showed significant increases in drug uses after the implementation of pharmaceutical policies especially if the drug was listed in the NEDL. The majority of the drug costs were acquired by cash payment and the price for expensive drugs varied between 5–10 times that of the alternatives in the same category. While the sales shares for expensive drugs increased enormously, the trend decreased drastically for the alternative drugs. Among the health schemes, the Civil Servants Medical Benefit Scheme beneficiaries were likely get expensive drugs than others.

CONCLUSIONS: This exploratory study reveals the different types of pharmaceutical policies that can have an impact on the trend of physicians’ PTD prescribing. The findings call for further in-depth investigation of critical factors influencing physician prescribing behavior of PTDs in order to curb the escalating drug cost and promote rational drug use in the country.

COST AVOIDANCE OF CLINICAL PHARMACIST INTERVENTIONS AT A UNIVERSITY TEACHING HOSPITAL
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OBJECTIVE: The purpose of this evaluation was to identify the types of interventions made by clinical pharmacists, determine the cost avoidance of pharmacist interventions and incorporate the information into a new system at Grady Health System.

METHODS: Two phases were required to characterize the type, cost avoidance and total number of daily documented interventions made by clinical pharmacists from April 1998 to July 2003. A third phase was used to evaluate interventions made from June 2004–May 2005. Interventions were classified by the intervention type, assigned cost avoidance and the assigned a probability of likely occurrence of an event without intervention. Data was collected in phase two of the evaluation to determine the average documented daily interventions per clinical pharmacist and the total cost avoidance of clinical pharmacist interventions for the department.

RESULTS: A total of 1,871 (29.6%) of 6,311 documented interventions were reviewed. There was an average of 4.9 interventions per adjusted workday documented. The average cost avoidance of a documented intervention was $28.88. The daily adjusted work day cost avoidance was $1411.20 or an annual cost avoidance of $338,688 for the 64 month time period. If extrapolated to the entire data set, the cost avoidance would be $1,798,567. In the second phase of the project, the average number of daily interventions documented by a clinical pharmacist was 5.5 (SD ± 1.2) resulting in an extrapolated annual cost avoidance of $380,160 per clinical pharmacist. In the final phase of the project, the average number of interventions increased to 26.2/day or a total of 9,552 pharmacist interventions. The cost to the health system is $128,941 in pharmacist salary dollars with cost avoidance savings of $2,037,863.

CONCLUSION: The return on investment of the system was $16 for every dollar spent on clinical pharmacy services. Each intervention saves $213 for the health system.

APPRAISAL OF FIVE NEW OUT-OF-HOURS (OOH) PRIMARY CARE CENTRES IN THE PARISIAN REGION: “MAISONS MÉDICALES DE GARDE (MMG)”
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French GPs are increasing reluctant to dispense medical services in OOH because of security concerns and lack of economic incentives. In order to motivate GPs to participate to OOH care, experimental MMGs have been set up. A medical office is shared by GPs on duty to provide medical services in predetermined time schedules. Referrals to MMG are determined by emergency dispatching centres (C15) and/or hospital emergency departments (HED). GPs receive a forfeit, adjusted with effectively dispensed visits. Facilities are secured. OBJECTIVE: To assess the 5 MMG activity in comparison to HED, C15 and other home cares and patients and professionals satisfaction.

METHODS: “Before-after” assessment month 2 to 6 after MMGs were set up and reproduced at month 14 to 18. Quantitative data were collected from MMGs, “C15”, HED and health insurance. Questionnaires were submitted to patients (visiting/calling HED, “C15”, GPs practices or MMG, n = 537), and professionals (GPs involved in MMGs, HED and C15 professionals n = 389).

RESULTS: Half of the practitioners in MMGs area participated. Most patients (95%) were in need of primary care. On weekend days, number of visits to MMG were approximately equivalent or superior to an office based GP (22), but on weekdays (8pm–12pm) average number of visits was low (<4). Patients and GPs were satisfied with services. MMGs however can not meet all OOH needs, particularly home visits. Although they differ in organisation, there is room for optimization for all MMGs. Professionals are unable to define precisely OOH primary care, and communication to patients, highly desirable, is not yet harmonized. CONCLUSION: MMG should be encouraged but provide only partial response, as a global approach including home visits is needed.

DEFINING COMPLIANCE/ADHERENCE AND PERSISTENCE:
ISPOR SPECIAL INTEREST WORKING GROUP
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OBJECTIVE: To propose a definition of compliance/adherence and persistence which would be widely agreed and useful in providing consistency for clinical, health policy and clinical practice research.

METHODS: The “Issues and Definitions Working Group” of the Medication Compliance Special Interest Group undertook to review definitions that could be used for medication compliance/adherence and persistence. Broad definitions were presented at an ISPOR workshop in 2003 and revised accordingly. These definitions were then placed on the ISPOR website and all members were given an opportunity to comment and vote on definitions in December 2004. Although consensus was reached for the compliance and persistence definitions, many key issues related to these definitions required resolution. At the Annual Meeting 2005, a workshop was held to discuss the issues
EVALUATION OF THE RELATIONSHIP BETWEEN PHARMACEUTICAL PRODUCT PRICE AND HEALTH-RELATED QUALITY OF LIFE USING WHOLESALE ACQUISITION COST AND AVERAGE EFFECT SIZE

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OBJECTIVES: The objective of this study was to evaluate the relationship between pharmaceutical product price and its ability to improve patient health related quality of life (HRQoL). METHODS: Comprehensive review of the literature was conducted to identify all HRQoL studies of pharmaceutical products that utilized a test-retest experimental approach. Effect sizes were calculated from data available for 31 products, representing a brand range of therapeutic areas. Wholesale acquisition cost (WAC), number of months on market, and number of products in therapeutic class was collected for each product. Cost per day of therapy was calculated using recommended starting dose in the labeling. Multivariate linear regression models were constructed where either WAC or cost per day of therapy at recommended starting dose was the dependent variable and effect size, number of months on market, and number of products in therapeutic class were independent variables. Diagnostics were performed to verify model assumptions. RESULTS: Using multivariate linear regression, average effect size, number of products in therapeutic class were independent variables. Diagnostics revealed no violations of model assumptions. CONCLUSIONS: There is sufficient evidence to suggest that there is a direct relationship between a pharmaceutical product’s ability to cause improvement in HRQoL and the price of the product, measured using average effect size and WAC, respectively. In addition, the number of products within a therapeutic class and their length of time on the market were influential of drug price. Further research should be conducted to evaluate the impact of prescription medications on HRQoL, and, to identify and characterize the effects of drug and marketplace variables on drug prices.

A SURVEY OF PATIENT REPORTED OUTCOME (PRO) CLAIMS IN PHARMACEUTICAL ADVERTISING

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OBJECTIVE: To investigate the quantity and quality of Patient Reported Outcome (PRO) claims in pharmaceutical advertisements in 2 Thai medical journals. METHOD: A retrospective review of all pharmaceutical advertisements in the 2004 issues of 2 Thai medical journals (Clinic and Pharmatime) was performed by 3 trained pharmacists. Two reviewers independently reviewed the advertisements. If the reviewers disagreed the final decision was made by the third reviewer. All distinctive pharmaceutical advertisements were classified into claim advertisement or reminder advertisement. PRO claims and economic claims were also identified. Then, the advertisements were categorized according to their reference statuses. Finally, the reviewers evaluated whether the cited references provided substantial evidence to support the claims. RESULTS: From 183 advertisements reviewed, there were 48 distinctive advertisements. Forty-five (0.94%) and three (0.06%) of the advertisements were classified as claim advertisement and reminder advertisement, respectively. Nineteen (0.42%) of the claim advertisements contained PRO claims while two (0.04%) of the claim advertisements contained economic claims. The result indicated that only 16 (0.36%) of the claim advertisements cited at least one published article retrievable from Medline as references, while the remaining 29 (0.64%) contained no reference or cited package inserted or non-published data on file as references. When looking closely at PRO claims, it was found that 12 (0.63%) of the PRO claims were misleading because the outcomes stated in the claims was not supported by the given references. In addition, there was not sufficient evidence to support all 2 economic claims. CONCLUSION: More than half of the PRO claims were misleading. Practitioners should be cautious in assessment of PRO claim advertisements in medical journal. There is also a substantial need for more rigorous regulation of PRO claims.

COST EFFECTIVENESS OF ESCITALOPRAM IN THE TREATMENT OF GENERALIZED ANXIETY DISORDER (GAD)

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OBJECTIVE: To determine the cost-effectiveness of escitalopram in the treatment of Generalized Anxiety Disorder (GAD) in Canada. GAD places a significant burden on primary care resources, exhibiting an 8% prevalence rate among patients seen by primary care clinicians. METHODS: A 24-week decision tree analytic model was constructed using Tree Age Data® Pro Suite. Patients received treatment for GAD with either escitalopram or generic paroxetine. Clinical rates were determined from a review of the literature; expert opinion guided model development in establishing decision pathways. Tolerance/intolerance to the initial drug was incorporated into the model, which included augmenting, titrating or switching comparators. Psychotherapy was used for patients not responding to either drug, or to the combination of either drug augmented with a benzodiazepine. Costs were measured in undiscounted 2005 Canadian dollars (CAD). Resources were valued using standard Canadian sources. Effectiveness was measured in Symptom Free Days (SFDs). Analyses were performed from two perspectives: the Ontario Ministry of Health and Long Term Care (MoH—included all direct costs: drugs, physicians visits), and societal (SOC—included direct plus indirect costs weighted using the average industrial wage). Extensive sensitivity analyses (1-way and probabilistic) were conducted. RESULTS: Results shown are preliminary. Base case analyses (MoH perspective) yielded an incremental cost of $24 for escitalopram (expected cost = $713 for 85 SFDs) over...
resulting costs for escitalopram and paroxetine (expected cost = $688 for 76 SFDs), for an incremental cost effectiveness ratio of $2.79/SFD ($1004/Symptom-free year). Paroxetine was dominated under the SOC perspective. Total expected cost from the SOC perspective was $3676 and $3529 for paroxetine and escitalopram, respectively. Sensitivity analysis was conducted on upper and lower efficacy boundaries, yielding similar incremental cost-effectiveness results. CONCLUSION: Escitalopram is cost-saving in the treatment of GAD under the SOC perspective in Canada, and appears to be cost-effective under the MoH perspective.

**CONCLUSIONS:** Escitalopram is cost-saving in the treatment of GAD in adults included depressive episodes (F32: prevalence 30.3%; relative risk [RR] 7.1*** [p < 0.001]), recurrent depressive disorder (F33: 14.3%, RR 12.9***), persistent mood disorders (F34: 7.0%, RR 11.0***), anxiety disorders (F41: 15.7%, RR 5.8***), adjustment disorders (F43: 18.9%; RR 6.6***), other neurotic disorders (F48: 8.6%, RR 6.8***), specific personality disorders (F60: 14.1%; RR 22.3***), other behavioral/emotional disorders with onset in childhood/adolescence (F98: 9.0%; RR 57.0***), mental/behavioral disorders due to substance use (F19: 4.9%; RR 7.8***), or due to use of alcohol (F10: 4.6%; RR 5.8**), and eating disorders (F50: 4.3%, RR 13.5***). Non-psychiatric conditions associated with ADHD included obesity, metabolic, infectious and allergic disorders, including asthma bronchiale, and diseases of the ear and hearing loss but not disorders of the eye and visual disturbances. Detailed analyses by age and gender will be presented. CONCLUSIONS: These data point to significant comorbidity associated with ADHD in grown-ups, thus underscoring the clinical relevance of the condition. They provide a basis for further epidemiological research and for analyses of the cost associated with ADHD in adult patients.
Abstracts

A MODELED ECONOMIC EVALUATION OF ATOMOXETINE (STRATTERA) FOR THE TREATMENT OF THREE PATIENT GROUPS WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER

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OBJECTIVE: To estimate the cost-effectiveness of atomoxetine for the treatment of children and adolescents with Attention Deficit/Hyperactivity Disorder (ADHD) in Norway.

METHODS: A modeled economic evaluation calculated the incremental cost per quality-adjusted life years (QALYs) gained of atomoxetine compared to two stimulant therapies and "no medication". Treatment algorithms with and without atomoxetine were compared in patient subgroups stratified by prior treatment history and whether stimulant medication was appropriate. A Markov process incorporated fourteen health states representing hypothetical treatment outcomes for which utility values were sought from parents of patients through survey. Aspects of effectiveness and safety of each medication were based on a review of controlled clinical trials and other clinical literature.

Monte-Carlo simulation was run over a one-year duration from the perspective of the Norwegian health care system. RESULTS: In stimulant-naive patients, the incremental cost per QALY of atomoxetine compared to two stimulant therapies and "no medication". Treatment algorithms with and without atomoxetine were compared in patient subgroups stratified by prior treatment history and whether stimulant medication was appropriate.
higher probability of parental productivity losses (OR = 4.7; 95% CI: 2.3–9.7, p < 0.001) parental job switching (OR = 4.8; 95% CI: 1.2–19.4, p = 0.006) and need of a dedicated caregiver (OR = 3.3; 95% CI: 1.7–6.4, p = 0.006). The average yearly management cost of ADHD vs. controls is respectively €1404 vs. €896 in the perspective of the NHS; €1485 vs. €509 in the family perspective; and €5287 vs. €1671 in the societal perspective. Main cost drivers are hospitalisations, parental work-loss and remedial teacher. ADHD mostly impacts QoL in the ‘Risk avoidance’ and ‘Achievement’ domains. CONCLUSIONS: ADHD is a social disease whose effects and burden in terms of cost and QoL impact are mostly borne by the society and the families.

**PMH9**

**STIMULANT MEDICATION TREATMENT OF ATTENTION-DEFICIT HYPERACTIVITY DISORDER IS ASSOCIATED WITH DECREASED EMERGENCY DEPARTMENT COSTS AND UTILIZATION: POPULATION-BASED STUDY**

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OBJECTIVE: The association between treatment with stimulant medication and medical utilization/costs among youth with AD/HD is controversial. METHODS: We identified all individuals born between January 1, 1976 and December 31, 1982 in Rochester, MN, who met research criteria for AD/HD between age five years and emigration from the area. Research identified AD/HD cases were defined by a model using a combination of three categories of information (DSM-IV criteria, questionnaire results, and clinical diagnoses). The 313 who resided locally through age 17 years were followed for medication use, ED visits, ED costs, and medical costs from January 1, 1987 to 18th birthday or date last reviewed (mean follow-up = 10.2 ± 1.4 years). RESULTS: The 231 youth treated with stimulants (74%) were similar to the 82 untreated with respect to median annual rates for ED visits (0.5 vs. 0.5), ED costs ($72 vs. $82), and total medical costs ($661 vs. $741) (P > 0.05). Among the 231 treated youth, duration of treatment ranged from 14 days to 11.8 years. For analyzing the association between duration and outcomes, the 82 youth with no treatment were assigned a duration of zero. Duration of treatment (adjusted for age, sex, and psychiatric comorbidity) was associated with fewer ED visits (P = 0.02) but higher total medical costs (P < 0.001). The 231 who were treated experienced 853 periods of on vs. off treatment. On-treatment periods (adjusted for age, sex, and calendar year) were associated with lower ED visits and ED costs (P < 0.02) and moderately higher total medical costs (P < 0.001). CONCLUSION: Findings refute previous suggestions that, among youth with AD/HD, stimulant treatment is associated with two- to five-fold increases in ED and total medical costs.

**PMH10**

**A MODELED ECONOMIC EVALUATION COMPARING ATOMOXETINE WITH CURRENT THERAPIES FOR THE TREATMENT OF CHILDREN WITH ATTENTION DEFICIT/HYPERACTIVITY DISORDER (ADHD) IN THE NETHERLANDS**

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OBJECTIVES: To estimate the costs-effectiveness of atomoxetine, a new non-stimulant alternative for the treatment of childhood ADHD, compared to current medications. METHODS: A Markov model was developed to estimate the incremental cost per quality-adjusted life year (QALY) gained by atomoxetine compared to current practice for three patient populations: stimulant-naive (population-1); methylphenidate failure (population-2) and; stimulant-incompatible (population-3). In each population, algorithms were constructed to include either immediate/extended-release methylphenidate (IR- or XR-MPH) as first-line alternative where appropriate, followed by ‘off-label’ dexamphetamine (IR-DEX) which appropriate, followed by ‘off-label’ tricyclic antidepressants (TCA), then no medication. The Markov process incorporated twenty-two health states, representing the range of outcomes across all modeled treatment options. Utility values were derived from a survey of 83 parents of ADHD children. The effectiveness and safety aspects of all treatment options, based on a thorough review of controlled clinical trials and other clinical literature, were validated by clinical experts. Costs and outcomes were calculated over one year, with costs (both direct and indirect) estimated from the Dutch societal perspective. RESULTS: For population-1, atomoxetine was associated with additional costs of €495 and €448 per patient compared to IR-MPH and XR-MPH, respectively. The additional QALYs gained were 0.026 and 0.020 per patient, respectively. The incremental cost per QALY gained (ICER) with atomoxetine compared to IR-MPH as first-line alternative was €18,831, and €22,804 compared to XR-MPH. The ICER was €13,120 compared to IR-DEX in population-2. In population-3, atomoxetine dominated TCA. Sensitivity analysis showed results of the model to be robust to changes in most important variables, with the utility values being important indicators of the cost-effectiveness of atomoxetine. CONCLUSIONS: The incremental cost per QALY gained of atomoxetine compared to current treatment options calculated in this analysis suggests that atomoxetine offers good value-for-money in the treatment of children with ADHD in The Netherlands.
The Nordbaden Project for Health Care Utilization Research in Germany

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With a population of 82.5 m, Germany represents the largest health care market in Europe. Yet, research into epidemiology, resource utilization, and actual cost associated with specific disorders has been hampered by the fragmentation of the national health care system. OBJECTIVES: 1) To establish an integrated claims database in the German region of Nordbaden, allowing retrospective patient-based analyses; 2) to evaluate how representative the selected sample may be considered for Germany as a whole; and 3) to assess its potential by determining administrative prevalence rates of ADHD. METHODS: The complete claims database of the official physicians’ organization of Nordbaden (KVNBI) in South-Western Germany for the 4 quarters of 2003 was first coded to protect the privacy of patients and physicians, and subsequently integrated and restructured according to patient pseudonyms, as to allow patient and disease specific cross-sectional analyses. Sociodemographic and health care related characteristics of the sample population were compared with data for West Germany, East Germany, and Germany as a whole. One-year prevalence rates were determined for attention-deficit/hyperactivity disorder (ADHD). RESULTS: Claims data for 2.238 m persons insured by the SHI (82.2% of the regional population; cf. Germany: 70.4 m or 85.3% SHI insured) were available, representing—as judged by key sociodemographic and medical indicators (which will be presented)—the German SHI insured population. ADHD (hyperkinetic disorder: ICD-10, F90.0, F90.1) prevalence rates were: age 0–6: 1.26% (boys: 1.72%, girls: 0.77%), age 7–12: 4.97% (boys: 7.15%, girls: 2.66%), age 13–19: 1.31% (males: 1.91%, females: 0.60%), and adults: 0.04% (males: 0.04%, females: 0.03%). CONCLUSIONS: Especially when combined with data from regional hospitals and sick funds, databases like the “Nordbaden Project” will provide a valuable tool for studies of real-world health care utilization and direct medical costs associated with defined medical conditions. Specific findings on ADHD will be discussed in light of international epidemiological data.

Attention Deficit Hyperactivity Disorder (ADHD) in Adults: SF-6D Utilities from SF-36 Scores in a Randomised Trial of Atomoxetine

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OBJECTIVES: To derive utilities for adults with ADHD from a randomised trial of atomoxetine 40 mg BID versus 80 mg QD (Adler et al., 2004). These patients are largely untreated and there are few therapy alternatives. METHODS: Medical Outcome Study Short Form-36 (SF-36) scores are converted into a Quality Adjusted Life Year (QALY) value for key health states; responder and non-responders without/with adverse event (grouping defined as per clinical trial). The method for conversion is in accordance with that previously published (Brazier et al. 1998, 2004). A total of 218 clinical trial participants were followed for 13 weeks. Pre-treatment utility data of all patients is analysed to assess baseline utility values and is compared with end of trial period. Missing data were addressed according to five criteria. RESULTS: Mean and median results for utility values for responder and non-responder groups produced consistent and sensible results (mean results presented unless stated). Baseline utility was 0.634 and was consistent with non-responder score at end of trial (0.630), as per expectation. Responders had utility scores of 0.682 and 0.671, without/with adverse events, respectively. All responders (i.e. regardless of adverse event status) had a score of 0.678. The average gain in utility at end of trial comparing non-responders with all responders was 0.048. Median results increased the utility gain to 0.08. CONCLUSIONS: This analysis provided results that were rational and consistent with efficacy and safety findings with atomoxetine in the treatment of adults with ADHD. Improved utility can be expected with treatment (0.048 to 0.08) and these data can be used to populate an appropriate cost-utility analysis. Conversion of SF-36 data to SF-6D values was informative and consistent.

Dutch Adaption of the Cost-Effectiveness of Quetiapine in Combination Therapy in the Management of Acute Mania in Bipolar I Disorder

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OBJECTIVES: To estimate the cost-effectiveness of quetiapine in combination therapy compared to current combination therapies in the treatment of acute mania in bipolar I disorder using a discrete event model. METHODS: A discrete event simulation...
model was used. In this model a cohort of 10,000 bipolar I disorder patients was created using Dutch data on relevant patient characteristics. This cohort was then used for the comparison of the different treatment options. The treatment options compared in the model were: 1) quetiapine & lithium; 2) olanzapine & lithium; and 3) risperidone & lithium. For effectiveness four trials on quetiapine were used. The effect measure was the number of serious side effects. Serious side effects were: extra pyramidal symptoms and/or more than 7% weight gain. Included costs were: drug costs, hospital costs, hospital visits and laboratory tests (2003 price levels). RESULTS: For the combination therapy of quetiapine & lithium, the incremental net costs per serious side effect averted were €1203 compared to risperidone & lithium and €3481 compared to olanzapine & lithium. The effectiveness on hospital stay is comparable over the three combination therapies compared. CONCLUSIONS: Serious side effects may be averted with quetiapine & lithium therapy at incremental costs. Whether these costs are acceptable requires further research into the ‘willingness to pay’ to avert one serious side effect.

PMH15

GALANTAMINE REDUCES CAREGIVER BURDEN: RESULTS FROM A NATURALISTIC STUDY

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OBJECTIVES: To quantify the effect of galantamine on burden of caregivers of patients with Alzheimer’s Disease (AD) enrolled in INSPIRE (Investigation in a Naturalistic Setting of Patients Initiated on Reminyl). METHODS: INSPIRE is a prospective, observational study conducted across Canada in general practice and specialist sites, involving 471 patients 65 years or older with mild to moderate AD. Patient and caregiver demographics were recorded at baseline, with effectiveness measured by the Mini-Mental State Examination (MMSE) and Physician’s Clinical Global Impression—Disease Status (CGI) at both baseline visit and final visit at 3 months. Caregiver stress was assessed using the Zarit Burden Interview of Zarit (ZBI). Analysis was based on two-sided paired t-test. RESULTS: This preliminary analysis included 248 patients and caregivers, all of whom had completed the study at time of analysis. Of these patients, the mean age was 80.6 ± 6.5, 61% were female, 54% had a high school degree or less, and 74% lived with their spouse or partner. The mean age of caregivers was 61.4 ± 14.6. The caregiver sample was predominately female (75%), most lived with the patient (54%), and 42% employed on a full-time or part-time basis. At baseline, the mean caregiver ZBI score was 21.5 ± 12.6. Significant improvement in caregiver burden (mean change 1.5 ± 8.4, p = 0.006) was shown after three months of galantamine treatment. CONCLUSIONS: The efficacy and safety of galantamine has been demonstrated in multiple randomized, double-blind, placebo-controlled trials in patients with mild-to-moderate AD. This naturalistic study shows that galantamine significantly reduces burden among caregivers of patients with AD. Overall, galantamine has a broad ranging beneficial effect from both patient and caregiver perspectives.

PMH16

EFFECT OF BEHAVIOURAL AND PSYCHOLOGICAL SYMPTOMS OF DEMENTIA (BPSD) ON COST OF CARE IN THE CANADIAN OUTCOMES STUDY IN DEMENTIA

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OBJECTIVES: To determine the contribution of behavioural symptoms to the costs associated with caring for patients with dementia. METHODS: Data from the Canadian Outcomes Study in Dementia (COSID), a 3-year prospective study of community-dwelling dementia patients was examined. Cognition was assessed with the Mini-Mental State Examination (MMSE) and behaviour with the Neuropsychiatry Inventory (NPI). Resource utilization was evaluated monthly with caregiver-completed resource use (RU) questionnaires, which included frequency of community resource use (e.g., home care nurses, Meals-on-Wheels, etc.), hospitalization and respite care, outpatient visits and drug use (direct costs), as well as questions about time away from work or leisure activities for both patient and caregiver (indirect costs). Costs were calculated in 2000 Canadian dollars. RESULTS: Five hundred dementia patients and their caregivers who provided a minimum of 6 of 12 completed RU questionnaires were included in this 1-year preliminary analysis. At baseline, average age of patients was 76.3 (±6.3), 47% were male, and 82% were diagnosed with AD. Average MMSE was 22.4 (±4.5) and average NPI 8.8 (±11.1; range 0–69). Total costs were estimated at $1298 per month ($113 for medication costs, $237 for other direct costs, and $948 for indirect costs). An analysis of covariance model, that included NPI, MMSE, gender, age, marital status, dementia diagnosis, type of residence, region of Canada, and number of medical comorbidities, showed that greater cognitive impairment, i.e., lower MMSE (F = 12.77, p < 0.0004), female gender (F = 9.31, p = 0.0024) and non-AD dementia diagnosis (F = 6.27, p = 0.0126) were significant covariates. After accounting for the covariates, there was a significant association between cost and NPI (F = 22.46, p < 0.0001). The incremental cost of a one-point increase in NPI score was $32 per month (95% CI $18–$45). CONCLUSIONS: Behavioural and psychological symptoms of dementia (BPSD) contribute significantly to the total costs of caring for community dwelling dementia patients.

PMH17

HEALTH RELATED QUALITY OF LIFE (HRQOL) AND BURDEN OF FAMILY CAREGIVERS OF DIALYSIS PATIENTS

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OBJECTIVES: To evaluate the HRQoL and burden of family caregivers of dialysis patients and to analyze which variables were associated to it. METHODS: A sample of 221 patient-carer pairs, stratified by age and gender, was randomly selected from 14 dialysis units: 152 patients were on hemodialysis and 69 on peritoneal dialysis. Patients and carers answered the SF-36, obtaining Physical (PCS) and a Mental (MCS) Component Summary scores standardized by age and gender, and the Duke-UNK Functional Social Support (FSS). Carers also answered the Caregiver Burden Interview of Zarit (ZS). RESULTS: Mean PCS and MCS scores of carers were 48.4 ± 13.8 and 48.0 ± 11.3 respectively. Multiple regression analysis showed that the variables associated to lower PCS of the carer were: higher ZS and older patient age (R2 = 0.15; p < 0.001). Variables associated to lower MCS were: higher ZS and lower FSS of the carer, and lower MCS of the patient (R2 = 0.29; p < 0.001). Variables associated to a higher ZS of carers were: lower FSS and lower PCS and MCS scores of the carer and higher age and lower PCS and MCS scores of the patient (R2 = 0.49; p < 0.001). Carers with a MCS ≥ 42 points (cutoff point associated with depression) were 28.3% (95% CI = 22.4–34.8). Logistic regression analysis
showed that variables associated to having a MCS ≤ 42 points were: higher ZS and lower FSS of carer. CONCLUSIONS: The HRQoL of caregivers is slightly worse than that of the general population of the same age and gender. Physical health status is more damaged in those caregivers suffering greater burden and caring for older patients, and mental health status is more damaged in those suffering greater burden, feeling lower social support and caring for patients with worse mental health status. The burden experienced by family carers depends on perceived social support, age of patient and physical and mental health status of carer and patient. A significant percentage of carers have depression which is associated to greater burden and lower social support perceived.

TRANSLATION, GREEK ADAPTATION AND STANDARDIZATION OF THE VERONA SERVICE SATISFACTION SCALE (VSSS-54): AN INSTRUMENT

**OBJECTIVES:** To describe the process of the adaptation and standardization of the VSSS-54 (Verona Service Satisfaction Scale) in Greece. **METHODS:** The methodology followed was identical with that of the EPSILON study of schizophrenia. The Italian Version of the VSSS-54 was first translated into Greek, by two bilingual translators. The resulting translation was then back-translated into Italian by a professional translator. The back-translation was checked by the authors of the VSSS and compared with the original version. The content and the language of the final Greek translation were discussed in focus groups, carried out in the Department of Psychiatry of the University General Hospital of Ioannina. The analysis of results of the first group (patients-relatives) as well as the second group (professionals), allowed us to retrieve useful information related to the adaptation of the Italian questionnaire VSSS into the Greek language. The research was carried out in two outpatient psychiatric services in Athens and in Ioannina. A total of 150 patients were selected (87 women, 63 men), whose age ranged from 18 to 65 (M = 43.7, SD = 11.45). Among them 64 (43%) had diagnosis of schizophrenia or other psychosis, 74 (49%) affective disorder and 10 (6.6%) anxious disorders. The reliability analyses are based on classical test theory. Reliability measures used were Cronbach’s α, Cohen’s weighted κ, and the intra-class correlation coefficient. **RESULTS:** The α coefficient for the VSSS total score was 0.917 (95% Cl 0.878–0.948). Test-retest reliability was proven to be good. **CONCLUSIONS:** The psychometric properties of the Greek version of the VSSS are reliable instrument to use in the Greek context.

RELATION BETWEEN SYMPTOMS IN SCHIZOPHRENIA AND RISK OF HARM TO SELF AND OTHERS

**OBJECTIVE:** Investigate the association between Positive and Negative Symptom Scale (PANSS) and risk of harming self/others as measured by Camberwell Assessment of Need (CAN) score was assessed using logistic regression (N = 171). Standard statistical tests were applied to evaluate the significance of relationship between total PANSS, sub-scores (negative, positive, general psychopathology) and all 30 items, and risk of harming self/others. Receiver Operating Characteristic (ROC)-curves were used to assess discrimination. Calibration was quantified by the slope of the prognostic index. Model parameters were internally validated by bootstrapping. **RESULTS:** PANSS is significantly associated with risk of harming self/others with an area under the curve (AUC) of ROC of 0.763. Patients with total PANSS of 70 and 80 have a 6.8% (95% CI 3.6%–12.4%) and 9.8% (95% CI 5.1%–17.8%) risk of harming self and/or others respectively. The models including PANSS negative sub-score or PANSS blunted affect item had an AUC of ROC of 0.784 and 0.786 respectively for patients’ risk of harming self and/or others. Discussion: Reducing (negative) symptoms, especially blunted affect, may reduce patient’s risk of over 5-years. **METHODS:** This was a retrospective analysis of elderly (≥65 years) patients admitted to a psychiatric hospital from fiscal year (FY) 2000–2004. All NAs prescribed during each patient admission were identified from the pharmacy database. Patient demographics, length of stay, and diagnoses were collected for each patient admission. Descriptive statistics were performed as well as a multivariate logistic regression to determine factors that influenced NA prescribing. **RESULTS:** There were 2179 elderly patients admitted during the 5-year timeframe. The mean age was 78 years, 63% were female, and 83% were white. The average length of stay was 21 days and did not differ across FYs. The proportion of hospital admissions where NAs were prescribed in elderly patients increased significantly (p < 0.001) over the five-year period from 50% in FY 2000 to 63% in FY 2004. Prescribing increased the most for quetiapine: 13% in FY 2000 to 27% in FY 2004. Independent factors associated with NA prescribing were female sex (OR = 1.2, p = 0.05), Alzheimer’s disease/dementia diagnosis (OR = 1.9, p < 0.001), psychotic disorder diagnosis (OR = 4.7, p < 0.001) and increasing FY (OR = 1.2, p < 0.001). Black race (OR = 0.8) and depression diagnosis (OR = 0.5) were associated with a reduced odds of receiving a NA. **CONCLUSIONS:** NA prescribing in elderly inpatients has increased significantly in the last five years, with quetiapine use increasing the most. Diagnoses of Alzheimer’s Disease/dementia and psychotic disorders were independent predictors of NA use.
harming others and/or themselves. Therefore the importance of preventing deterioration in a patient's condition as measured by PANSS is not only beneficial to the patient but also to society. Given the difficulties in this patient population about maintaining treatment compliance, it may be worthwhile to allocate funds aimed at reducing symptoms directly or indirectly by improving compliance.

**PMH21**

**TREATMENT PERSISTENCE: A COMPARISON AMONG PATIENTS WITH SCHIZOPHRENIA WHO WERE INITIATED ON ATYPICAL ANTIHYPSCHOTIC AGENTS**

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**OBJECTIVES:** Clinical trials have demonstrated the efficacy of atypical antipsychotic agents in reducing symptoms of schizophrenia. However, the likelihood of sustaining control of schizophrenic symptoms may depend on treatment persistence. In this study, we compared treatment persistence between patients who were initiated on risperidone or olanzapine, the two most widely prescribed atypical antipsychotic agents. **METHODS:** We identified patients with schizophrenia by ICD-9-CM codes (>1 inpatient or ≥2 outpatient ICD-9-CM codes >7 days apart) between July 1, 1998 and June 30, 1999. We further selected those who were prescribed the target drug during April 1, 1999 through March 31, 2000 provided that they were not on any antipsychotic agents during the prior six months. Using event history analysis, we compared treatment persistence in terms of hazard ratio between olanzapine and risperidone initiators, adjusting for patient sociodemographic and clinical characteristics. **RESULTS:** Following the initiation of the target drug, more patients switched from risperidone to olanzapine than visa versa. Olanzapine initiators had decreased hazards of discontinuation by 14% (unadjusted; \( p < 0.001 \)) and 12% (adjusted; \( p = 0.002 \)), respectively, than risperidone initiators. **CONCLUSIONS:** Compared with risperidone, olanzapine seems to be better tolerated by patients as indicated by better treatment persistence. The initiation of olanzapine may thus increase the likelihood of sustaining control of symptoms of schizophrenia. Future research needs to provide a more comprehensive assessment of treatment persistence by considering other factors, such as formulary decision, and other antipsychotic agents in the study and developing models to assess treatment persistence and switching as two interdependent competing risks.

**PMH22**

**HOSPITALIZATION AND MEDICATION USE IN SCHIZOPHRENIA PATIENTS RECEIVING RISPERIDONE LONG-ACTING INJECTABLE OR ORAL ATYPICAL ANTIHYPSCHOTIC MEDICATION**

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**OBJECTIVE:** To compare time to first psychiatric-related hospitalization and time to first medication switch in schizophrenia patients receiving risperidone long-acting injectable (RLAI) or a new oral atypical antipsychotic. **METHODS:** Study sites participating in RLAI clinical trials in Canada carried out a retrospective chart review of hospitalization and medication use in schizophrenia patients initiated on RLAI between June 1, 1999 and November 30, 2000. Identical parameters were assessed in similar patients initiated on a new oral atypical antipsychotic (control patients) over the same period. **RESULTS:** Sixty-three RLAI and 74 control charts were reviewed. Control patients were significantly younger than those in the RLAI group (39.1 years versus 45.3, \( p = 0.0073 \)) and received risperidone (48.6%), olanzapine (41.9%) and quetiapine (6.8%) as the oral atypical antipsychotic. Over the assessment periods, 56.8% of control patients were hospitalized versus 4.8% of RLAI patients (\( p < 0.0001 \)). For those patients hospitalized, time to first hospitalization was marginally but not significantly lower for RLAI patients at 13.8 months compared to 19.3 months for the control patients, respectively (\( p = 0.6365 \)). However, control patients had a significantly increased risk of hospitalization, as indicated by Kaplan Meier survival analysis (\( p < 0.0001 \) by log-rank test). There was no significant difference in the number of patients switching medication (47.6% and 39.5% for RLAI and controls respectively, \( p = 0.1742 \)) or in time to first medication switch (39.71 and 34.52 months, log-rank \( p = 0.2076 \)). However, time to relapse, defined as a hospitalization or a medication switch, was significantly different (\( p = 0.0004 \)) with 50% of controls reaching this endpoint at 18 months versus 60 months for RLAI patients. **CONCLUSIONS:** This study provides evidence that RLAI is superior to oral atypicals in reducing hospitalizations. Furthermore, by virtue of its bi-weekly administration, RLAI offers atypical therapy without the serious compliance issues associated with an oral medication, providing clinical and potential economic advantages.

**PMH23**

**IMPACT OF RISPERIDONE LONG-ACTING INJECTABLE ON HOSPITALIZATION AND MEDICATION USE IN PATIENTS WITH SCHIZOPHRENIA**

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**OBJECTIVE:** To compare psychiatric-related hospitalization and medication use in patients with schizophrenia, before and after initiation of risperidone long-acting injectable (RLAI) therapy. **METHODS:** Schizophrenia patients who participated in RLAI clinical trials in Canada were identified and their charts were retrospectively reviewed to assess hospitalization and medication use over identical periods before and after the initiation of RLAI therapy. **RESULTS:** Sixty-three charts were reviewed. The mean RLAI treatment period was 40.3 months with 52.4% of patients still receiving therapy at the time of the chart audit. The pre- and post-RLAI assessment periods were identical at 39.4 and 40.3 months, respectively (\( p = 0.8293 \)). There were statistically significant differences in hospitalization before and after the initiation of RLAI therapy. After initiation of RLAI therapy fewer patients were hospitalized (52.4% prior to RLAI versus 48.6% during RLAI treatment, Relative Risk = 10.9, \( p < 0.0001 \)), fewer patients had more than one hospitalization (24% versus 0%, \( p < 0.0001 \)), the total duration of hospitalization days decreased by 99% (1538 versus 23, \( p < 0.0001 \)), the number of hospitalizations per patient decreased by 89% (0.9 versus 0.1, \( p < 0.0001 \)) and duration of hospitalization decreased by 98% (24.7 days per patient versus 0.4, \( p < 0.0001 \)). Furthermore, anticholinergic and anxiolytic use decreased from 81% of patients at 13.8 months compared to 19.3 months for the control patients. CONCLUSIONS: RLAI had a significantly increased risk of hospitalization, as indicated by Kaplan Meier survival analysis (\( p < 0.0001 \) by log-rank test). There was no significant difference in the number of patients switching medication (47.6% and 39.5% for RLAI and controls respectively, \( p = 0.1742 \)) or in time to first medication switch (39.71 and 34.52 months, log-rank \( p = 0.2076 \)). However, time to relapse, defined as a hospitalization or a medication switch, was significantly different (\( p = 0.0004 \)) with 50% of controls reaching this endpoint at 18 months versus 60 months for RLAI patients. **CONCLUSIONS:** This study provides evidence that RLAI is superior to oral atypicals in reducing hospitalizations. Furthermore, by virtue of its bi-weekly administration, RLAI offers atypical therapy without the serious compliance issues associated with an oral medication, providing clinical and potential economic advantages.
with RLAI offers the potential for substantial cost savings in the care of these patients.

PMH24

GEO OBSERVATIONAL STUDY: 24 MONTHS
CHARACTERISTICS OF SOCIOECONOMIC AND CLINICAL
STATUS IN SCHIZOPHRENIA PATIENTS TREATED WITH
OLANZAPINE AND HALOPERIDOL IN GERMANY

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OBJECTIVES: To describe real life disease characteristics, clinical and socioeconomics for schizophrenia in- and outpatients treated with olanzapine or haloperidol over 24 months.

METHODS: GEO is a two-year prospective naturalistic study in Germany. Quarterly observations were made for 308 patients under olanzapine treatment and 188 patients under haloperidol treatment. RESULTS: Compared to haloperidol patients, more patients included into the study under olanzapine lived at home without care (59% vs. 39%), were employed (35% vs. 17%), and fewer were in early retirement (30% vs. 51%). During the observational period, olanzapine and haloperidol treatment was stable (olanzapine: 94% retention vs. haloperidol: 92%; dosage changes occurred in 64% vs. 47%, respectively). Concomitant medication related to schizophrenia was prescribed less frequently for olanzapine patients (52% vs. 68%). Mean disease severity, negative and cognitive symptoms as assessed by CGI (scales from no symptoms (one) to very severe (seven)) ranged between three and four. Positive and depressive symptom values were lower (mean value between two and three). During the course of the study disease severity improved for all symptoms with slightly more improvement in olanzapine patients (mean change in disease severity: olanzapine 0.95; haloperidol 0.76). Throughout the 24-month period, olanzapine patients had lower average EPS, parkinsonism, retardation, dyskinesia and akathisia symptom scores (none (1) to severe (6)) than haloperidol patients (mean EPS: olanzapine 1.3; haloperidol 2.0). Weight gain, depression and other symptoms were reported more frequently for olanzapine (<28% vs. <11%). Nevertheless, olanzapine patients showed a lower mean Body Mass Index (BMI) than haloperidol patients throughout the 24-month study period.

CONCLUSIONS: Schizophrenia patients under olanzapine treatment showed a higher degree of integration into social and occupational environment. For olanzapine patients, all schizophrenia symptoms improved over time. Throughout the study, olanzapine patients exhibited less EPS and had a lower BMI.

PMH25

EFFECTIVENESS AND TOLERABILITY OUTCOMES OF
RISPERIDONE LONG-ACTING INJECTION COMPARED TO
CONVENTIONAL DEPOT ANTI-PSYCHOTICS IN A LARGE
CANADIAN PSYCHIATRIC HOSPITAL

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OBJECTIVE: To compare effectiveness and tolerability outcomes of patients with schizophrenia treated with risperidone long-acting injection and patients treated with conventional depot antipsychotics.

METHODS: Patients initiated on risperdone long-acting injection during a four-month index period were compared to patients initiated on a conventional depot antipsychotic during the same time period. Patient demographics including age, gender, diagnosis, number of previous psychiatric admissions and in-patient program were evaluated. The effectiveness outcomes of antipsychotic polypharmacy, discharge and readmission rates were compared. Neurological tolerability was assessed as measured by the prescribing of regularly scheduled anticholinergic rescue medications.

RESULTS: Forty patients initiated on risperidone long-acting injection were compared to 49 patients initiated on a conventional depot antipsy- chotic. The two patient groups were demographically very similar. The risperidone long-acting injection group was 75% male with an average age of 41-years and 6.0 previous psychiatric admissions. The conventional depot group was 67% male with an average age of 47.5 years and 5.9 previous psychiatric admissions. Antipsychotic polypharmacy was reduced from 63% to 31% in the risperidone long-acting injection group but increased from 29% to 73% in the conventional depot group. The use of anticholinergic rescue medications decreased from 47% to 12% in the risperidone long-acting injection group but increased from 31% to 73% in the conventional depot group. After 12-months of observation, 83% of the risperidone long-acting injection patients had been discharged and none had been readmitted, whereas 58% of the conventional depot group had been discharged and, of those, 26% had already been readmitted. CONCLUSION: In this difficult-to-treat population of patients, risperidone long-acting injection conferred significant advantages over conventional depot antipsychotics in terms of effectiveness and tolerability. As well, the substantial differences in discharge and readmission rates infer considerable pharmacoeconomic advantages in favor of risperidone long-acting injection.

PMH26

USING CLAIMS DATA TO ESTIMATE THE ANNUAL
PREVALENCE OF SCHIZOPHRENIA IN THE UNITED
STATES, 2002

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OBJECTIVES: This study estimates the annual prevalence of schizophrenia in the U.S. based on administrative claims data analyses and a comprehensive literature review.

METHODS: The 2002 annual prevalence rate of schizophrenia in the U.S. was estimated separately for privately insured, government insured (Medicare, Medicaid), and uninsured populations. The 2002 annual prevalence for privately insured individuals was calculated based on a de-identified administrative claims database of approximately 3.0 million privately insured beneficiaries covering the period from 1999 to 2003. The 2002 prevalence of Medicaid enrollees was calculated from Medi-Cal claims covering the period from 2000–2002. The 2002 schizophrenia prevalence in Medicare population was calculated as a weighted average of the prevalence rates of Medicaid/Medicare dual eligibles and private insurance program enrollees over 65. Published statistics were used to estimate the prevalence of schizophrenia in the uninsured population and to weight prevalence rates in different populations to estimate the 2002 annual schizophrenia prevalence in the general U.S. population.

RESULTS: The annual prevalence rate of schizophrenia in the U.S. in 2002 was estimated at 0.5%. The Medicaid population was identified as having the highest schizophrenia prevalence rate in the U.S. (1.7% for non Medicare dual eligible enrollees), whereas annual schizophrenia prevalence rates in Medicare and privately insured population were 0.7% and 0.1%, respectively. The disease was also more prevalent in the uninsured population (1.1%). Prevalence rates for women were highest in an older age group (56–65 years), whereas men’s prevalence rates peaked somewhat earlier (46–55 years).

CONCLUSIONS: The results suggest that schizophrenia may be more prevalent in the U.S. general population than previously estimated in some epidemiology survey studies, especially given the fact that claims database analyses usually...
provide lower bounds of prevalence estimates. Schizophrenia is most prevalent in the low income and uninsured populations than in the privately insured or Medicare populations.

12-MONTH COST-EFFECTIVENESS ANALYSIS OF ORAL ANTIPSYCHOTIC TREATMENTS IN PATIENTS WITH SCHIZOPHRENIA IN THE PAN-EUROPEAN SOHO (SCHIZOPHRENIA OUTPATIENT HEALTH OUTCOMES) STUDY

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OBJECTIVE: To determine the incremental cost-effectiveness for treating schizophrenia patients with olanzapine versus risperidone, quetiapine, amisulpride, or oral typical antipsychotics. METHODS: European SOHO is a 3-year, prospective, outpatient, observational study associated with antipsychotic treatment in 10 European countries. Health care resource use and clinical effectiveness data were collected at baseline, 3, 6, and 12 months. Clinical effectiveness was assessed using the Clinical Global Impression (CGI) scale. UK health care costs were applied to resource use data for the 10 countries. Pair-wise incremental costs and effectiveness were estimated between olanzapine-treated patients and patients treated with each of the other oral antipsychotics. Incremental cost-effectiveness ratios (ICERs) were presented as the additional cost per CGI unit gained. RESULTS: A total of 10,972 patients were enrolled at baseline, 80% were eligible for analyses at 12 months. Pair-wise cost-effectiveness comparisons, over 12 months, showed treatment with olanzapine is more effective and less costly than quetiapine and amisulpride. Treatment with olanzapine is more effective compared to treatment with risperidone and marginally more costly: £226 per patient over 12 months. The incremental cost-effectiveness ratio was £1299 per additional decrease in CGI unit gained. Treatment with olanzapine is more effective than oral typical antipsychotics and marginally more costly: £849 per patient over 12 months. The incremental cost-effectiveness ratio for olanzapine versus oral typical treatment was £3166 per additional decrease in CGI unit gained. Treatment maintenance was 77% at 12 months with olanzapine, which was greater than that for the other treatments. CONCLUSIONS: Olanzapine was cost saving and more effective than treatment with quetiapine and amisulpride. The cost-effectiveness of olanzapine compared to risperidone and typical antipsychotics is substantial. The combination treatment group (2 antipsychotics/mood stabilizer) as well as a monotherapy group (one switch antipsychotic therapy) had the highest utilization and costs. We used claims data from Blue Shield of California during 2001–2004 to select all patients with ICD-9 diagnoses of schizophrenia. Data was available for utilization and costs of health care use, including mental health carve-out care. We used a 6 month run-in and ending period in case of incomplete claims data. Drug categories were typical and atypical antipsychotics and mood stabilizers. Drug patterns were monotherapy, combination therapy with and without mood stabilizers, and several switch patterns. We used chi-square tests and linear regression analysis to detect associations between utilization patterns and costs. RESULTS: The 799 schizophrenia patients had a mean age of 42.6 years (20.4–86.2) and 46.3% were males. Total annual direct costs of treatment were $6301/patient, 46% acute care services, and 45% prescription drugs. The combination treatment group (2 antipsychotics/mood stabilizer) as well as a monotherapy group (one switch antipsychotic therapy) had the highest utilization and costs. Our regression showed higher total costs correlated with males and patients with an average of 1.8 therapy switches while on otherwise single stable antipsychotic therapy. Older patients and those on a mood stabilizer contributed the least to cost. CONCLUSION: The total annual costs of these insured schizophrenic patients ($6301) were substantially lower than the $25,940 reported for Medicaid patients. Health care utilization and costs increased as...
treatment therapy became more complex according to the guidelines.

PMH30

FACTORS AFFECTING COST OF SCHIZOPHRENIA TREATMENT WITH ATYPICAL ANTIPSYCHOTIC AGENTS

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OBJECTIVE: Atypical antipsychotic agents are considered the first-line treatment of schizophrenia. Aim of present study was to identify factors affecting the cost of schizophrenia treatment with atypical antipsychotic agents.

METHODS: A retrospective database study was conducted in three public hospitals in Hong Kong. Patients initiated on atypical antipsychotic agents (amisulpride, olanzapine, quetiapine and risperidone) between March 2003 and September 2003 for treatment of schizophrenia for at least three months were recruited. Patient medical records were reviewed for up to 12 months before and after initiation date of antipsychotic agents to retrieve baseline demographic and clinical factors and health care resource utilization for schizophrenia. A multiple regression model was used to identify demographic, clinical factors and choice of atypical antipsychotic agents with significant association to health care resource utilization. RESULTS: Eighty-two patients were included in the analysis. Thirty-four (41%) patients were male and mean age was 43 ± 14 years. The mean cost per patient per month was USD 431 ± 914 (1USD = 7.8HKD). Three factors were associated with direct medical cost of health care resource utilized: 1). History of drug abuse (RR = 1.26; 95% CI = 1.05–1.52); 2). Prior use of depot antipsychotic (RR = 1.22; 95% CI = 1.05–1.42); and 3). Previous duration of hospitalization before initiation of atypical antipsychotic therapy (RR = 1.00; 95% CI = 1.00–1.01). CONCLUSION: History of drug abuse, prior use of depot antipsychotic, previous duration of hospitalization appeared to be influential to direct medical cost of atypical antipsychotic treatment. The choice of antipsychotic agents did not appear to affect the cost of treatment.

PMH31

12 MONTH COST-UTILITY ANALYSIS OF ORAL ANTIPSYCHOTIC TREATMENTS IN PATIENTS WITH SCHIZOPHRENIA IN THE PAN-EUROPEAN SOHO (SCHIZOPHRENIA OUTPATIENT HEALTH OUTCOMES) STUDY

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OBJECTIVE: To determine the cost-effectiveness (measured using an incremental cost-utility ratio) of treating schizophrenia patients with olanzapine versus risperidone, quetiapine, amisulpride, or oral typical antipsychotics. METHODS: European SOHO is a 3-year, prospective, outpatient, observational study associated with antipsychotic treatment in 10 European countries. Health care resource use and quality of life data (EuroQol EQ-5D and UK population utility values) were collected at baseline, 3, 6, and 12 months. UK health care costs were applied to the resource use data for the 10 countries. Pair-wise incremental costs and utilities were estimated between olanzapine-treated patients and patients treated with each of the other oral antipsychotics. Utility increments were used to estimate quality-adjusted life-years (QALYs) gained. Incremental cost-utility ratios were expressed as the additional cost per QALY gained. Bootstrap replications provided an estimate of uncertainty. RESULTS: A total of 10,972 patients were enrolled at baseline, 80% were eligible for analyses at 12 months. Treatment with olanzapine is more effective and less costly than quetiapine and amisulpride. Treatment with olanzapine is more effective compared to treatment with risperidone. The incremental cost is marginal. The incremental cost-utility ratio was £5156 per additional QALY gained. The bootstrap replications for the above comparisons showed 100% of the replications falling below a £30,000 per QALY threshold. Treatment with olanzapine is more effective compared to treatment with oral atypical antipsychotics. The additional cost is marginal. The incremental cost-utility ratio for olanzapine versus oral typical treatment was £15,696 per additional QALY gained. The bootstrap replications showed 97% of the replications below a £30,000 per QALY threshold. CONCLUSIONS: Among SOHO patients, if a funding threshold of £30,000 per QALY gained is assumed, olanzapine has a high probability of being the most cost-effective treatment compared with atypical and oral typical antipsychotic medications.

PMH32

NEUROLEPTIC TREATMENT OF SCHIZOPHRENIA IN AMBULATORY CARE IN GERMANY

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OBJECTIVES: To determine current neuroleptic drug utilization patterns of ambulatory care schizophrenic patients in Germany. METHODS: Analysis of routine prescription data for the years 2003/2004 of patients insured with the Techniker Krankenkasse sickness fund (covering approximately 6-million insured persons distributed across all German states) with a hospital diagnosis of schizophrenia F20 (ICD-10) in 2003. RESULTS: In 2004, 3397 patients with schizophrenia received 28,434 prescriptions for neuroleptic drugs. In total, 33.1% of prescriptions were for typical, 66.9% for atypical neuroleptics. In total, 51.2% of typical neuroleptics prescribed were high-potency, 48.8% low-potency drugs. Olanzapine was the most frequently prescribed atypical (26.5%), followed by Clozapine (21.1%), Risperidone (19.2%), Quetiapine (14.5%), Amisulpride (11.9%), Ziprasidone (6.2%), and Zotepine (0.6%). Analysing prescriptions on an individual patient level gave a similar picture. During a 12 month-period after their first hospital stay in 2003, 1490 patients (43.9%) were treated only with atypical neuroleptics, 555 patients (17.2%) were treated with an atypical plus a low-potency typical neuroleptic as adjuvant therapy. In total, 280 patients (8.7%) received typical neuroleptics only and 245 patients (7.6%) were prescribed both high-potency typical and atypical neuroleptics. The remaining patients received no ambulatory prescriptions for neuroleptics. Some of them may have received drugs from hospital pharmacies which are not recorded in the ambulatory prescription database. CONCLUSIONS: Reaching 61% in 2003/2004, the proportion of schizophrenic patients receiving atypical neuroleptic drugs as their main medication in our study population is much higher than previously thought and in the range of other western European countries. However, the share of Clozapine is also much higher than in most countries. Although this non-random sample is not representative of the German population, major differences in prescribing behaviour depending on a patient's sickness fund are
unlikely. Some bias due to above average socio-economic status of the insured population cannot be excluded.

**PMH33**

**FACTORS INFLUENCING ZIPRASIDONE PRESCRIBED DOSES AMONG MEDICAID PATIENTS WITH SCHIZOPHRENIA**

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**OBJECTIVE:** To describe factors which are associated with variations in the prescribed average daily dose of ziprasidone for the treatment of schizophrenia.

**METHODS:** We identified continuously enrolled patients with a diagnosis of schizophrenia (ICD-9 code 295.xx) between January 2001 and June 2003 from Maryland Medicaid. The average daily dose prescribed was defined as the total amount dispensed divided by the days of therapy. The effect of socio-demographic factors, recent hospitalization, psychiatric co-morbidities, and concurrent psychiatric medication on the average daily dose prescribed was estimated using ordinary least squares (OLS) regression.

**RESULTS:** In the sample of 1197 patients who met the inclusion criteria, the mean average dose prescribed was 92 mg per day (S.D.: 50 mg). Males were prescribed an 8 mg higher average daily dose as compared to females (p = 0.007). African Americans were prescribed 9 mg less as compared to Caucasians (p = 0.005). The average daily dose prescribed increased if the patient was concurrently treated with antidepressants by 8 mg (p = 0.018), with antipsychotics by 16 mg (p < 0.001), and with anticonvulsants by 12 mg (p = 0.001). Patients who had a psychiatric hospitalization during the 30 days prior to initiation of therapy were prescribed average daily doses that were 8 mg higher, but this increase was not statistically significant (p = 0.055). Patient age, the number of psychiatric co-morbidities, and concurrent treatment with antimanic and antianxiety medication were not found to statistically affect prescribing patterns.

**CONCLUSION:** Schizophrenia patients’ gender, race, and concurrent treatment medication significantly affect the decision makers prescribing patterns of ziprasidone in terms of the average daily dose.

**PMH34**

**LONG-TERM TREATMENT OF SCHIZOPHRENIA FOR RELAPSE PREVENTION (LASER): 6-MONTH OUTCOMES IN PATIENTS STARTED ON RISPERIDONE LONG-ACTING INJECTABLE IN GERMANY—DATA FROM THE E-STAR DATABASE**

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**OBJECTIVES:** To evaluate 6-month clinical and economic outcomes following initiation of long-acting injectable risperidone (LAIR) in patients with schizophrenia/schizoaffective disorder.

**METHODS:** Data are collected via a secured web-based system, retrospectively for 12-months and prospectively for 2-years. Data are collected from a large sample of patients with schizophrenia/schizoaffective disorder. More than a quarter of our sample was employed and the rest of the population (70%) lived without occupations or in occupation-aided structure. Work absences occurred in 54% of managers with a median duration of 184 days; this rate is at 36% for white-collars with a median duration of 83 days; this rate is at 19% for blue-collars with a median duration of 30 days. The median costs over 1-year due to absenteeism at work were €7419, €3071, and €1100 for managers, white-collars and blue-collars respectively.

**RESULTS:** In our sample of 538 schizophrenic patients, 2% were managers, 15% were white-collars, 5% were blue-collars, 8% were unemployed and the rest of the population (70%) lived without occupations or in occupation-aided structure. Work absences occurred in 54% of managers with a median duration of 184 days; this rate is at 36% for white-collars with a median duration of 83 days; this rate is at 19% for blue-collars with a median duration of 30 days. The median costs over 1-year due to absenteeism at work were €7419, €3071, and €1100 for managers, white-collars and blue-collars respectively.

**CONCLUSIONS:** More than a quarter of our sample was employed and integrated into society. We found that managers seemed to generate highest work absences in terms of number, duration and costs; the position of managers and the level of related-stress might have an impact on the natural course of the disease. According to our findings, it is reasonable to estimate the indirect costs of schizophrenia more accurately in the future.

**PMH35**

**ARE INDIRECT COSTS MEASUREMENTS RELEVANT IN A SCHIZOPHRENIC PATIENTS POPULATION? AN OVERVIEW OF A LONGITUDINAL STUDY IN FRANCE**

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**OBJECTIVES:** From a longitudinal study, we observed the socio-economic profile and the occupational situation of a cohort of schizophrenic patients over 1 year and we made an estimate of the indirect costs in this population.

**METHODS:** Occupations, sources of income, health care and social situation were reported regularly over a 1-year period by a group of 538 schizophrenic outpatients. We specifically studied the population already integrated into the workplace. Number and duration of work absences were basic data for the calculation of indirect costs. In this subgroup, we adopted the perspective of the Sickness Fund (SF). The costing was performed by combining number and duration of work absences, patient income levels in 2002, annual number of workdays, SF rules for the coverage of workdays lost.

**RESULTS:** In our sample of 538 schizophrenic patients, 2% were managers, 15% were white-collars, 5% were blue-collars, 8% were unemployed and the rest of the population (70%) lived without occupations or in occupation-aided structure. Work absences occurred in 54% of managers with a median duration of 184 days; this rate is at 36% for white-collars with a median duration of 83 days; this rate is at 19% for blue-collars with a median duration of 30 days. The median costs over 1-year due to absenteeism at work were €7419, €3071, and €1100 for managers, white-collars and blue-collars respectively.

**CONCLUSIONS:** More than a quarter of our sample was employed and integrated into society. We found that managers seemed to generate highest work absences in terms of number, duration and costs; the position of managers and the level of related-stress might have an impact on the natural course of the disease. According to our findings, it is reasonable to estimate the indirect costs of schizophrenia more accurately in the future.

**PMH36**

**CASE STUDY OF PATTERN MIXTURE APPROACH FOR COMBINING COMPLETION RATES AND EFFICACY FOR CLINICALLY MEANINGLESS OUTCOMES IN SCHIZOPHRENIA DRUG TRIALS**

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The last observation carried forward (LOCF) analysis overlooks the meaningfulness of dropout in clinical trials. For antipsychotic medication dropout is an important outcome since long-term treatment is often required and dropout may relate to lack of drug tolerability. **OBJECTIVE:** The current analysis applies the “pattern mixture” approach (Shih & Quan, 1997) in which a composite hypothesis is tested that consists of the probability that there is a difference in completion rates (d) between two drugs and the probability that there is a difference in efficacy of complete cases (e) [p = p(d) × p(e) × (1 – ln(p(d)) × p(e))].

**METHODS:** The pattern-mixture approach was applied to data from a 53-week randomized, open-label non-inferiority efficacy trial of risperdone long-acting injectable (RLAI) vs. olanzapine tablets (OLA) in treating schizophrenia (n = 618) (data on file [NJ]). **RESULTS:** LOCF had found a significant difference (p = 0.04) on percent of patients in each group who attained clinical improvement (20% improvement on PANSS total) favoring RLAI and no significance on difference in the continuous measure of change in PANSS total (p = 0.83). Among complters there was a greater decline on change in PANSS total favoring RLAI (Ris = 23.6(±14.4); Ola = 21.9 (±18.0); 1-tailed p = 0.105).

76% of the RLAI treated patients completed the trial as compared to 70% of the OLA treated patients (one-tailed p = 0.087). Using the pattern mixture approach the probability for the combined hypothesis of a difference in efficacy in complete cases, and trial completion, was significant (p = 0.05). On clinical improvement, 66.1% of RLAI group both completed the trial and improved as compared to 53.7% of the olanzapine group (Overall Ratio [95% Confidence interval]: 1.84 [1.20:2.82]). **CONCLUSIONS:** LOCF may not capture real-life, clinically important differences which can be captured by other approaches.

**PMH37**

THE ECONOMIC BURDEN OF SCHIZOPHRENIA IN THE UNITED STATES IN 2002

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**OBJECTIVES:** This study quantifies excess annual costs associated with schizophrenia patients in the United States in 2002 from a societal perspective. **METHODS:** Annual direct medical costs associated with schizophrenia patients were estimated separately for privately (n = 1090) and publicly (Medicaid n = 14,074) insured patients based on administrative claims data, including a large private claims database and a State Medicaid database, and compared separately to demographically-geographically matched control samples (1 case: 3 controls). Medicare costs were imputed using the Medicare/Medi-Cal dual eligible patients (n = 1491) and published statistics. Excess annual direct non-health care costs were estimated for law enforcement, homeless shelters, and research/training related to schizophrenia. Excess annual indirect costs were estimated for four components of productivity loss: unemployment, reduced work place productivity, premature mortality from suicide, and family care giving using a human capital approach based on market wages. All costs were adjusted to 2002 dollars using the Consumer Price Index and were based on the reported prevalence in the National Comorbidity Survey Replication. **RESULTS:** The overall US 2002 cost of schizophrenia was estimated to be $62.7 billion, with $22.7 billion excess direct health care cost ($7.0 billion outpatient, $5.0 billion drugs, $2.7 billion inpatient, $8.0 billion long term care). The total direct non-health care excess costs, including living cost offsets, were estimated to be $7.6 billion. The total indirect excess costs were estimated to be $32.4 billion. **CONCLUSION:** Schizophrenia is a debilitating illness resulting in significant costs. The indirect excess cost due to unemployment is the largest component of overall schizophrenia excess annual costs.

**PMH38**

A DISCRETE EVENT SIMULATION (DES) MODEL TO DESCRIBE SCHIZOPHRENIA

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The prevalence of schizophrenia varies between 0.2–1% and the cost to treat patients is substantial. Modeling a schizophrenic population is demanding since schizophrenia is a life long disease during which patients go through many states and the transition from one state to another is dependent on the history of patients. A previously built 1st order Monte Carlo DES model was adapted to enable 2nd order Monte Carlo simulation. **OBJECTIVE:** This abstract describes why and how the model was upgraded from a 1st order Monte Carlo (MC) simulation to a 2nd order MC model. The abstract will describe the choices made in the design of the model, the internal validity and evaluation of its strengths and weaknesses. **METHODS:** Internal validity of the model has been explored using data from several patient databases, as well as literature on a list of variables, including PANSS, the proportion of patients institutionalized and costs. Pert, beta, lognormal and uniform distributions have been used to describe 2nd order uncertainty of relevant variables, such as PANSS, QALY, risk and costs. **RESULTS:** The model was programmed to reflect the PANSS at 0 year, 1 year, and 5 years for patients from the considered databases. The modeled annual cost per patient and the location distribution were similar to published data. Outcomes were expressed in terms of direct medical costs, number and duration of episodes, PANSS, QALY, GAF, CGI, SF36 and the SF6 mental component. The uncertainty surrounding the outcomes of costs and effect measures were assessed with acceptability curves and ellipses. **DISCUSSION:** The original DES model was vastly improved with the use of additional database analyses, additional correlation analyses and 2nd order Monte Carlo simulations. This has resulted in less emphasis on expert opinion, yielding a partially validated probabilistic model which can be adapted for numerous health care settings.

**PMH39**

ARE QALYS SUITABLE FOR SCHIZOPHRENIA TRIALS?

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**OBJECTIVES:** The utility of quality adjusted life years (QALYs) as an evaluative tool in clinical psychiatric research and drug trials relating to schizophrenia has rarely been tested due to the many limitations surrounding its use. The limitations include lack of comprehensive models of quality of life specific to schizophrenia, unavailability of appropriate measures sensitive enough to pick up small changes that are expected in the course of the illness, and lack of adequate information about the performance of available instruments. **METHODS:** This paper reviews currently available evidence on the use of QALYs in studies of people with schizophrenia examining the relationship
between QALY scores and scores on instruments regularly used in schizophrenia studies such as the PANSS or the CGI, in order to see if it is possible to construct reliable ‘crosswalks’ between such clinical measures and the QALY-generating scores.

RESULTS: The limited evidence in the field suggests that the calculation of QALYs to quantify the adverse effects of schizophrenia is difficult. Nevertheless, usefulness of such calculation for a proper estimation of the true burden of schizophrenia cannot be ignored. Data from a large observational study, following 600 people with schizophrenia over three years, are used to analyse the correlation between utility-generating scores from EQ-5D and schizophrenia specific measures of clinical circumstances such as the PANSS, the MADRS, the AIMS measure of side effects, the Simpson-Angus measure of side effects and the Barnes Akathisia Rating Scale to see if it is possible to construct reliable ‘crosswalks’ between QALY scores and scores on instruments regularly used in schizophrenia. CONCLUSIONS: Although the EQ-5D index does not capture the changes in quality of life associated with symptoms changes, it may be reasonably valid for calculating QALYs for patients with schizophrenia.

PMH40
LONG-TERM MAINTENANCE OF INITIAL HEALTH RELATED QUALITY OF LIFE (HRQL) IMPROVEMENTS GAINED THROUGH ANTIPSYCHOTIC TREATMENT: 24-MONTH RESULTS FROM THE SCHIZOPHRENIA HEALTH OUTCOMES (SOHO) STUDY
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OBJECTIVES: 1) To describe the long term evolution of HRQL of outpatients with schizophrenia, and 2) to analyse its association with antipsychotic use. METHODS: SOHO is an ongoing, 3-year, observational study of the treatment of schizophrenia in ten European countries. The primary objective of SOHO is to assess the costs and outcomes of treatment of schizophrenia using antipsychotics. Together with clinical measures, the EQ-5D (VAS score and tariffs) were administered at baseline, and 3, 6, 12, 18, and 24 months. The ‘panel analysis’ approach was used, since the outcomes were measured for the distinct post baseline epochs (0–6, 6–12, 12–18, and 18–24 months of treatment). Multivariate modeling was performed for each epoch, adjusting for baseline differences among patients. When using the second and subsequent episodes of patient treatment the baseline covariates were derived from the covariates collected when the patient switched treatment. RESULTS: A total of 8109 patients were included in this analysis (44% women; mean age: 40); 24-month retention was 78.47%. Overall, the EQ-5D score after each period of continuous treatment was: Baseline; mean 0.6 SD 0.32; (0–6 months); 0.76 SD 0.26; (6–12 months); 0.79 SD 0.24 (12–18 months); 0.81 SD 0.23; (18–24 months); 0.82 SD 0.23. Olanzapine-treated patients had statistically higher EQ-5D utility improvements during the first 6 months compared with risperidone (difference in mean change: 0.041; 95% CI: 0.023–0.059), quetiapine (0.032; 0.006–0.059), olanzapine (0.081; 0.057–0.105) and depot typicals (0.077; 0.049–0.105)-treated patients. No statistical separation was observed between olanzapine, clozapine and amisulpride groups. These differences remain during the 24-month follow-up. CONCLUSIONS: Antipsychotic treatment is associated with sustained improvement in HRQL. The improvements in EQ-5D scores during the first 6 months for the Olanzapine group were significantly higher than the improvement for other antipsychotics and remaining thereafter, with the exception of Amisulpride and Clozapine where no significant separation was found.
patients' scores decreased 67.7% on HAMD-17 and 69.5% on HAMD-7 (P < 0.05). Improvements in SNRI-treated patients were similar (64.6% and 63.2%, respectively, P < 0.05). There were no significant differences between groups in response rates (P = 0.045 for HAMD-17, 0.16 for HAMD-7). Per-protocol (PP) remission rates measured using HAMD-17 at week 8 were 58.3% for SSRI-treated patients (N = 72) and 48.4% for SNRI-treated patients (N = 64, P = 0.30). For the HAMD-7 group, PP remissions were 40.4% for SSRIs (N = 57) and 44.4% for SNRIs (N = 81, P = 0.73). Intent-to-treat (ITT) remission rates using HAMD-17 were 46.7% for SNRI-treated patients (N = 90) and 39.2% for SNRI-treated patients (N = 79, P = 0.41). HAMD-7 ITT remission rates were 33.3% for SSRIs (N = 69) and 36.4% for SNRIs (N = 99; P = 0.81). By 8 weeks, 18.5% dropped out in the SSRI group and 18.5% in the SNRI group (P = 0.95).

CONCLUSIONS: Large, randomized, controlled, primary care data are needed to adequately address the question of superiority between SNRIs and SSRIs. Our post-hoc analysis found no significant differences between these two therapeutic groups. Sufficiently powered studies comparing the effectiveness of antidepressant therapies in real-world settings are urgently needed.

PMH44

DULOXETINE AND VENLAFAXINE-XR IN THE TREATMENT OF MDD: A META-ANALYSIS OF RANDOMIZED CLINICAL TRIALS
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OBJECTIVES: To compare indirectly the efficacy and safety of duloxetine and venlafaxine-XR, the two currently available serotonin-norepinephrine reuptake inhibitors (SNRIs) in treating major depressive disorder. METHODS: Outcomes from published, randomized, placebo-controlled trials reporting on moderately-to-severely depressed patients [Hamilton Rating Scale for Depression (HAM-D) ≥ 15]. A systematic literature search was performed (1996–January 2005) on Cochrane, EMBASE and MEDLINE databases. Two independent reviewers judged the trials for acceptance. Last Observation Carried Forward (LOCF) data were extracted. Differences in remission (8-week HAM-D score ≤7), response (50% decrease on HAM-D), and dropout rates from lack of efficacy (LOE) and adverse events (AEs) were meta-analyzed using a random effects model. Each rate was contrasted from placebo. RESULTS: Data were acquired from 8 trials from 1754 patients for efficacy and 1791 patients for discontinuation/safety. Venlafaxine-XR rates were 17.8% (CI95%: 9.0%–26.5%) and 24.4% (CI95%: 15.0%–37.7%) greater than placebo for remission and response, compared to 14.2% (CI95%: 8.9%–26.5%) and 18.6% (CI95%: 13.0%–24.2%) for duloxetine. Although numerically higher for venlafaxine-XR, no statistically significant differences were found between drugs, however, both demonstrated overall remission and response rates significantly higher than placebo (p < 0.001). Dropout rates due to AEs were, contrasted with placebo, for venlafaxine-XR 6.1% (CI95%: 2.5%–9.7%) and for duloxetine 5.7% (CI95%: 1.5%–10.0%) greater than placebo. Dropout rates due to LOE were for venlafaxine—XR 10.7% (CI95%: 6.4%–15.1%) and for duloxetine 11.1% (CI95%: 6.3%–15.9%) less than placebo. Again, when the two drugs were compared, no statistically significant difference was found for both dropout rates. Reported adverse events were comparable between drugs. CONCLUSIONS: Venlafaxine-XR tends to have a favorable trend in remission and response rates compared to duloxetine, but for dropout rates and AE these agents did not differ. A direct comparison is warranted to confirm this tendency.

PMH45

COST EFFECTIVENESS OF DULOXETINE COMPARED WITH VENLAFAXINE-XR IN THE TREATMENT OF MAJOR DEPRESSIVE DISORDER
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OBJECTIVES: To determine the cost effectiveness of a new reuptake inhibitor, when compared with -XR in treating major depressive disorder. METHODS: A cost effectiveness analysis, using a decision tree modeled outpatient treatment over six months. Analytic perspectives were those of society (all direct and indirect costs) and the Ministry of Health of as payer for all direct costs. Rates of success and dropouts were obtained from a meta-analysis of placebo-controlled trials. Costs were taken from standard lists, adjusted to 2005 Canadian dollars; discounting was not applied. One-way sensitivity analyses were performed on monthly acquisition costs and success rates; Monte-Carlo analysis examined all parameters over 10,000 iterations. RESULTS: From both perspectives, outcomes all numerically-XR (Expected success = 53% and 57%, Symptom-free
OBJECTIVES: The economic burden of affective disorders (mood disorders) has become an important issue both for health care providers as well as society as a whole. This study aims at developing a model to estimating the cost of affective disorders to the European society. METHODS: A model was developed, based on the prevalence of the most prevalent affective disorders (depression and bipolar disorders) and the cost per patient for these disorders. The model served the following purposes: (1) transform and convert available economic data to a defined time period as well as currency (€2004) (2) adjust country specific economic data for purchasing power and relative size of economy (3) impute data for countries where no data were available (4) combine epidemiology and economic data to estimate the total cost of affective disorders. The model was based on published economic evidence in affective disorders in Europe, as well on epidemiologic evidence from literature and databases. National and international statistics for the model were retrieved from the Eurostat 2004 and OECD Health 2004 databases. The estimates were presented in Euro for 2004. RESULTS: The total number of adult people afflicted with affective disorders amounted to 20.9 million in Europe. The cost of affective disorders in Europe was estimated at €108.6 billion in 2004 prices. The cost of depression only amounted to €91 billion, and bipolar disorders to €31.6 billion. Indirect costs constituted 71% of the total cost of affective disorders. Drug costs made up €7.2 billion or 7% of the total cost. CONCLUSIONS: The cost of affective disorders poses a significant economic burden to European society. The cost estimation model gives a reliable estimate of the cost of illness in Europe based on the data and model algorithm used.

COST-EFFECTIVENESS ANALYSIS OF ESCITALOPRAM IN THE TREATMENT OF MAJOR DEPRESSIVE DISORDER IN GERMANY
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OBJECTIVES: To compare the cost-effectiveness of escitalopram with venlafaxine and generic citalopram and in the first-line treatment of Major Depressive Disorder (MDD) in Germany. METHODS: A two-path decision analytic model with a 6-month horizon was adapted to the German setting using local clinical guidelines and data. All patients (aged ≥18 years) started at the primary care path and were referred to specialist care in the secondary care path in case of insufficient response. Model inputs included drug-specific probabilities derived from a meta-analysis, clinical trials, published literature and expert opinion. Costs are calculated on the basis of German ex-pharmacy price for drugs, uniform remuneration scheme (EBM) for ambulatory care and diagnosis related groups (DRG: U63Z) for secondary care. Main outcome measures were success (Montgomery-Asberg Depression Rating Scale (MADRS) ≤12) and costs of treatment. The analysis was performed both from the German Statutory Health Insurance (GKV) and the societal perspective. The Human Capital approach was used to estimate the societal costs. RESULTS: From both perspectives, treatment with escitalopram yielded lower expected cost and greater success of treatment compared to generic citalopram. The expected success rate for escitalopram was higher (61.7%) compared to generic citalopram (57.7%). From the GKV perspective, the total expected cost per successfully treated patient was €149 (17.7%) lower for escitalopram (€694) compared to generic citalopram (€843). From the societal perspective, the difference was €463 between expected costs of €1,717 and €2,180, respectively. Escitalopram demonstrated a similar treatment success to that of venlafaxine at lower costs (€83 and €103, for GKV and societal perspective, respectively). Multivariate sensitivity analyses demonstrated the robustness of the results. In addition escitalopram shows a similar cost-effectiveness-ratio even at costs of £0 for generic citalopram (€694 vs. €691). CONCLUSION: Escitalopram is a cost-effective alternative compared to generic citalopram and venlafaxine in the first-line treatment of MDD in Germany.

QUALITY OF LIFE IN MAJOR DEPRESSION: RESULTS OF THE MC3 TRIAL
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OBJECTIVE: to assess quality of life and quality of life changes in subjects with major depression treated pharmacologically with S-adenosyl-methyonine or imipramine. METHODS: This quality of life assessment was a part of the MC3 trial, a short-term, multicentre, prospective, randomised, double blind, double placebo controlled study of the anti-depressant effect of 42 days course of oral SAMe 1600mg per day vs. oral imipramine 150mg per day in subjects during a major depression episode. We used the EuroQol instrument to evaluate QoL before (t0) and after treatment (day 42). RESULTS: The analysis considered 238 patients during a major depressive episode who completed the study (72% female; mean age 45 +/- 12 years). Subjects had extremely low comparable levels of overall QoL as measure through the EQ-VAS (35.1 +/- 15 on average), which increased comparably as an effect of treatment with either SAMe or imipramine (67 +/- 20). Several domains of QoL which where impaired before treatment, improved afterwards, mainly anxiety and depression, and ability to perform usual activities. EQ-VAS was only fairly correlated with physician administered depression scales at the start of treatment, while the correlation was good or very good at the end of treatment. Self administered depression scales showed a similar behavior as the EuroQol. CONCLUSION: Our estimates show that the level of perceived overall QoL in subjects with a major depressive episode is dramatically low. Pharmacological treatment with SAMe or imipramine has a similar, noticeable positive impact on QoL.
QUALITY OF LIFE IN MAJOR DEPRESSION: RESULTS OF THE MC4 TRIAL
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OBJECTIVE: To assess quality of life and quality of life changes in subjects with major depression treated pharmacologically with S-adenosyl-methionine vs. imipramine. METHODS: This quality of life assessment was a part of the MC4 trial, a short-term, multicentre, prospective, randomised, double blind, double placebo controlled study of the anti-depressant effect of 28 days course of intramuscular SAMe 400mg per day vs. oral imipramine 150mg per day in subjects during a major depression episode. We used the EuroQol instrument to evaluate QoL before (0) and after treatment (day 28). RESULTS: The analysis considered 257 patients during a major depressive episode that completed the study (63% female; mean age 49 + 13 years). Subjects had extremely low comparable levels of overall QoL, measured through the EQ-VAS (33.7 + 14 on average), which increased comparably as an effect of treatment with both SAMe and imipramine (63.1 + 20). Several domains of QoL which where impaired before treatment, improved afterwards, mainly anxiety and depression, and ability to perform usual activities. EQ-VAS was only fairly correlated with physician-administered depression scales at the start of treatment, while the correlation EQ-VAS was only fairly correlated with physician-administered anxiety and depression, and ability to perform usual activities.

CONCLUSION: The checklist is the first comprehensive description of symptoms of depression, including emotional, somatic and painful physical symptoms. This checklist will guide further instrument development for the diagnosis and outcomes assessment of depressed patients.

DEVELOPMENT OF A COMPREHENSIVE EMOTIONAL, SOMATIC AND PAINFUL PHYSICAL SYMPTOMS CHECKLIST IN DEPRESSION IN FIVE EUROPEAN COUNTRIES
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OBJECTIVES: Depression is a prevalent and debilitating disorder, often undiagnosed. Patients may present with a broad range of symptoms including mood, somatic and painful symptoms. Our aim was to create a comprehensive symptom checklist to guide questionnaire development for the diagnosis and outcomes assessment of depression. METHODS: A systematic literature review was conducted to list all emotional, somatic and painful physical symptoms from validated scales in depression. One hundred fifty semi-structured interviews were conducted with 50 clinicians, 50 patients with diagnosed depression (DEP) and 50 patients with physical symptoms of depression, referred to by physicians as masked depression (MD) and Somatoform disorders. The clinicians were asked to describe their patients’ symptoms, the profiles of DEP and MD patients, and to comment and rate the listed symptoms for DEP and MD patients. The patients were asked to describe their symptoms, to comment and rate the listed symptoms.

RESULTS: Twenty-two validated scales covering symptoms of depression were reviewed. Two lists of symptoms were created: one including medical terms for clinician interviews, and one including lay terms for patient interviews. Although clinicians tend to show differences between DEP and MD patients, the majority of symptoms were reported to exist in both groups. Moreover, patients’ reports showed fewer differences between DEP and MD than clinicians’ reports. Overall, the results were comparable between countries. The final checklist covers nine emotional symptoms and 37 somatic symptoms in nine groups (gastrointestinal, cardiopulmonary, neurological, neuropsychological, neuromuscular, urogenital, pain, sleep, autonomic system). CONCLUSIONS: The checklist is the first comprehensive description of symptoms of depression, including emotional, somatic and painful physical symptoms. This checklist will guide further instrument development for the diagnosis and outcomes assessment of depressed patients.
**PRS2**

**PRESCRIPTION PATTERNS IN COPD PATIENTS IN A GERMAN SICKNESS FUND POPULATION**

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**OBJECTIVES:** To investigate into the prescription patterns of COPD patients. **METHODS:** Rx claims data were analyzed for the period from 2001 to 2003. COPD patients were selected from claims data, if they were at least 45 years of age and had at least one diagnosis of COPD or emphysema (ICD-10 J43 and J44) and/or one Rx of a drug for obstructive airway diseases (ATC code R03) and had no indications of an allergic disease (e.g., Rx of antihistamines). The percentage of beneficiaries with defined Rx patterns (e.g., combination of bronchodilators) was analyzed per quarter starting with the quarter of inclusion of each beneficiary. **RESULTS:** 34,440 COPD patients were selected, of whom 28,769 received prescriptions of the predefined drug classes. Inhaled corticosteroids (ICS) and short acting beta agonists were prescribed to most of the beneficiaries (42.8 and 40.1%, resp., within three years). Regarding the prescription patterns in quarterly periods, ICS and long acting bronchodilators were identified as being the most often prescribed combination (up to 19% of the beneficiaries) followed by long acting bronchodilators (up to 11% of the beneficiaries). Strikingly, the percentage of beneficiaries without any Rx of a drug for obstructive airway diseases was very high. In patients selected by diagnosis, the percentage of beneficiaries without medication varied between 29 and 57%, whereas for those selected exclusively by drug Rx the percentage ranged from 45 to 71%. **CONCLUSION:** Our findings demonstrate that the beneficiaries receive prescriptions for long acting bronchodilators and ICS, either as mono or as combination therapy. In many cases of COPD, however, there is no long-term drug treatment. Further research should find out whether this means adequate treatment, regarding the different severity levels of the disease, or indicates insufficient therapy.

**PRS3**

**COST ANALYSIS OF FOUR TREATMENT STRATEGIES IN THE MANAGEMENT OF MODERATE-TO-SEVERE CHRONIC OBSTRUCTIVE PULMONARY DISEASE: AN APPLICATION ON NON-PARAMETRIC BOOTSTRAP**

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**OBJECTIVES:** To evaluate and compare direct health care costs associated with four alternative treatment strategies used in patients with moderate-to-severe chronic obstructive pulmonary disease in Italy. **METHODS:** Data on resource consumption were collected alongside 12-month, multinational, randomised, double-blind, placebo-controlled trail that compared four treatment strategies: budesonide/formoterol combination in a single inhaler, budesonide as a single therapy, formoterol as a single therapy and placebo. Economic analysis was conducted on patients from 6 European countries. The prospective was that of Italian NHS; national charges and prices were used to evaluate resource consumption. Average total cost per patient per year and its confidence intervals was assessed in each group with bootstrap percentile method. Differences between groups were tested with bootstrap-Z method. **RESULTS:** Overall sample included 272 patients (mean age = 65.3 years) equally distributed in four treatment groups. The patients treated with budesonide/formoterol combination in a single inhaler tended to consume less health care resources in terms of hospital days and emergency room visits than patients treated with single drugs. Average total cost per patient per year was €1763 in group treated with budesonide/formoterol combination in a single inhaler, €1436 in budesonide group and €2725 in the formoterol group. There was no statistically significant difference between the alternative treatment strategies. **CONCLUSION:** Present cost analysis suggests that its introduction in the management of patients with moderate-to-severe chronic obstructive disease doesn’t increment consumption of health care resources when compared to single drug alternatives.

**PRS4**

**INHALED CORTICOSTEROIDS AND BROCHODILATORS FOR SEVERE AND VERY SEVERE COPD PATIENTS: COST-EFFECTIVENESS AND HEALTH CARE BUDGET IMPACT IN ITALY**

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Current practice guidelines for the treatment of COPD recommend the use of combined inhaled corticosteroids and long-acting bronchodilators in severe and very severe patients (GOLD stages III and IV). **OBJECTIVES:** To analyze the economical and clinical impact of this recommendation, the affordability of its widespread application, as well as the relative pharmaco-economic performance of the available options for severe and very severe COPD in Italy. **METHODS:** Published data on the Italian COPD population were fitted in a disease progression model based on a Markov chain representing severity stages and death. Alternative therapeutic options (salmeterol/fluticasone—S/F—formoterol/budesonide—F/B—salmeterol alone—S—fluticasone alone—F—and control—C) were represented as competing arms in a decision tree. Efficacy data from international trials were expressed in terms of risk reduction. Clinical parameters used were number of exacerbations and symptom-free days. Direct and indirect costs were considered and valued according to current prices and tariffs. Analyses were conducted from Italian National Health Service, societal and patient perspectives with time horizons of 1, 5, and 10 years and life-long. **RESULTS:** The yearly total direct cost of treating COPD patients in Italy is estimated in approximately €7 billion, with a mean cost/patient/year around €2450. Mean survival of the cohort is 11.5 years. The C and F strategies are dominated (i.e. are associated with worse outcomes and higher costs) by all alternatives. S/F and F/B are the most effective strategies, with a slight clinical superiority of S/F, but they are also marginally more expensive than S. Incremental cost/effectiveness of S/F vs. S is €679.5/avoided exacerbation and 3.3 Euro/symptom-free day. **CONCLUSION:** The recommended use of combined inhaled corticosteroids and long-acting bronchodilators for severe and very severe COPD patients, as compared with current practice, has the potential of improving clinical outcomes without increasing health care costs.

**PRS5**

**PHARMACOECONOMIC EVALUATION OF TIOTROPIUM IN THE TREATMENT OF PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN SPAIN**

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**OBJECTIVES:** Chronic obstructive pulmonary disease (COPD) has a prevalence of 9.1% in Spain. Exacerbation is one of the
most important cost drivers in COPD. The purpose of this analysis was to assess the cost-effectiveness of tiotropium, a once daily inhaled anticholinergic. METHODS: A cost-effectiveness analysis has been performed, defining effectiveness as each exacerbation avoided. Effectiveness data of tiotropium and comparator have been obtained from a one-year clinical trial comparing tiotropium plus standard treatment (short-acting beta-adrenergic and/or inhaled/oral corticoids) with placebo plus standard treatment (defined as above), which showed that the group receiving tiotropium had less exacerbations per year (1.57 vs. 2.41; p < 0.01). Health care resources utilization has been taken from the same clinical trial, a systematic review of the literature, and a local expert panel. The analysis has only included direct medical costs from the perspective of the Spanish National Health System. Drug costs were taken from an official source and other costs from a Spanish health care cost database, both dated 2005. The time horizon selected was one year, the follow-up period of the aforementioned clinical trial. RESULTS: Total costs per patient in the tiotropium group was €1388 and in the placebo group €1119. Hospitalisation costs accounted for 44% and 84% in the tiotropium and placebo group, respectively. The incremental cost-effectiveness ratio was €320 to prevent one exacerbation in a COPD patient when using tiotropium instead of placebo. CONCLUSIONS: The use of tiotropium in addition to the standard treatment as defined in the clinical trial from which effectiveness data were derived is a cost-effective measure in the management of patients with COPD in Spain. MISTRAL study—Eur Resp J 2004;24(Suppl. 48):S513.

ECONOMIC EVALUATION OF TIOTROPIUM AND SALMETEROL IN THE TREATMENT OF COPD IN GREECE
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OBJECTIVE: To estimate the cost-effectiveness of Tiotropium compared with Salmeterol in Greece from the perspective of National Health System. METHODS: A Markov model was structured around disease states and exacerbations based on patient-level data derived from clinical trials comparing tiotropium (18ìg qd) with Salmeterol (50ìg bid) [1]. At the start of the model simulation, 20% of the patients were assumed to have moderate COPD, 50% severe and 30% very severe COPD according to the international GOLD classification. During each Markov cycle patients had a certain probability to experience a severe or non-severe exacerbation. An exacerbation was clinically defined as a complex of respiratory symptoms. Costs of exacerbations were divided into hospitalization and other costs. Total costs comprise of the costs for exacerbations and maintenance therapy. All costs are expressed in 2004 Euro. The time horizon of the analysis was one year. RESULTS: The mean number of exacerbations per patient in one year was 0.92 in the tiotropium arm, and 1.1 in the salmeterol arm, resulting in 0.18 exacerbations avoided per patient and year when using tiotropium instead of salmeterol. The total costs per patient in one year were €1.324 in the tiotropium arm, and €1.239 in the salmeterol arm, resulting in a cost difference of €85. The higher acquisition costs for tiotropium were almost offset by savings in hospitalisation costs. The incremental cost per exacerbation avoided was €472. CONCLUSION: Tiotropium appears to be a cost-effective treatment for the Greek health care system with acceptable costs per exacerbation avoided. [1] Oostenbrink J, Rutten-van Molken M, Monz B, FitzGerald J. Probabilistic Markov model to assess the cost-effectiveness of bronchodilator therapy in COPD patients in different countries. Value Health 2005;8:32–46.
RESULTS: The strategy based on initial treatment with fluticasone propionate nasal drops resulted with treatment cost of PLN 768, while early polypectomy resulted with cost of PLN 1251. When surgery was performed in outpatients’ settings the mean treatment costs were PLN 586 for initial fluticasone and PLN 751 for early polypectomy. Sensitivity analysis revealed that FPND is less costly therapy unless no computed tomography is performed prior to polypectomy and the cost of surgical procedure falls below PLN 170. CONCLUSIONS: Treatment strategy based on fluticasone propionate nasal drops is effective in bilateral nasal polyposis and results in short-term cost savings.

**PR9**

**COST OF COMMUNITY ACQUIRED PNEUMONIA (CAP) TREATMENT WITH KETEK (TELITHROMYCIN) VS CLARITHROMYCIN FROM PUBLIC PAYER PERSPECTIVE IN POLAND**

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OBJECTIVES: To assess the clinical effectiveness and economic consequences of telithromycin or clarithromycin in CAP treatment from public payer perspective in Poland. METHODS: Results of a systematic review of published clinical trials selected in accordance with EBM criteria were used to assess effectiveness and safety of the antibiotics in CAP treatment. The economic consequences for public payer for therapy of individual patient in case of clarithromycin replacement by Ketek (telithromycin) were calculated. In this analysis it was assumed that only pharmacotherapy costs and CAP hospitalization costs differed; other costs were assumed to be the same irrelevant to the antibiotic used. An assumption was made that level of pharmacotherapy reimbursement in case of treatment with both telithromycin and clarithromycin would be the same, public payer costs for DDD were calculated. Costs of CAP hospitalization varied on number of admissions during 1 month of follow-up period. RESULTS: Clinical effects of the two drugs were similar and no significant differences in effectiveness or safety were found in pooled data from two randomized clinical trials. Telithromycin treatment was associated with significantly fewer CAP-related hospitalizations compared with clarithromycin (1.6% vs 3.6% patients admitted, respectively). CAP-related hospital costs per patient were much lower for telithromycin treatment compared with clarithromycin (35.3 pln (8.45 €) vs. 79.2 pln (18.8 €) respectively). Taking into account reimbursement of pharmacotherapy and costs of hospitalization, public payer savings when using telithromycin in place of clarithromycin could be as high as 33 pln (7.8 €) - 50 pln (12 €) per patient (based on sensitivity analysis). This lead to high annual savings for public payer. CONCLUSIONS: Ketek (telithromycin) in place of clarithromycin lead to significant savings for public payer in CAP treatment in Poland.

**PRS10**

**PROJECTING THE FUTURE COSTS OF ASTHMA AND COPD IN THE NETHERLANDS**

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OBJECTIVE: This study aimed to project future costs of asthma and chronic obstructive pulmonary disease (COPD) in The Netherlands for the period 2000–2025. METHODS: Gender-, age- and (for COPD) disease-stage specific data on direct, medical costs per patient were obtained from a cost of illness study for the year 2000. Cost projections over the period 2000–2025 were based on two types of projections of the prevalence of asthma and COPD. Both prevalence projections were combined with two types of cost projections; first assuming constant costs per patient and second adding asthma and COPD-specific trends in costs for hospital care (asthma, -4.7% and COPD, -4.1% per year) and medication (+4.9% per year) and general trends in remaining cost categories. RESULTS: In 2000 the annual costs per asthma patient were €315, compared to €915 for a COPD patient. Assuming constant costs per patient, costs were projected to increase from €141 million in 2000 to amounts between €167 and €181 million for asthma and from €280 to €443–495 million for COPD. Severity stage specific COPD costs increased from 22.6 to 51.2 for mild COPD, from 104 to 148 for moderate, from 99.0 to 140 for severe and from 54.5 to €156 million for very severe COPD. Including trends costs categories resulted in estimates between 460 and 497 for asthma and 1023 and €1130 million for COPD. CONCLUSION: Projections of future costs show that the absolute and relative increase in costs over the period 2000–2025 is higher for COPD than for asthma.

**PRS11**

**MANAGEMENT OF COPD IN BELGIUM: A REAL LIFE COST OF ILLNESS STUDY**

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OBJECTIVES: To assess the cost of managing COPD (health care payers perspective) in a real life setting in Belgium. METHODS: A multi-centre observational study with data-collection in a retrospective way (one-year) was performed. A total of 38 GP’s and 15 pneumologists participated. Patients consulting the physicians in Q4 2004–Q1 2005 were eligible. Individual data-collection sheets per patient, evaluating the yearly medical resource use, were completed by each investigator. Diagnostic methods, COPD severity, as well as smoking habits were evaluated. RESULTS: A total of 460 patients were evaluated. Mean age was 66 years, males represented 68.70%. 40.43% of patients were smokers (average n pack-years 36.69, StErr 1.54), 50.22% ex-smokers. COPD diagnosis was made in about half of the patients by both clinical evaluation and spirometry. A total of 13% of the patients had mild COPD, 47% moderate, 30% severe and 10% very severe COPD according to clinical evaluation or spirometry (GOLD-guidelines). A total of 73% of the patients experienced at least 1 exacerbation during the 1-year study-period. Yearly number of exacerbations ranged between 0 and 12 (average n: 1.37, median: 1.00). In most cases (69.64%), no hospitalisation was needed. If hospitalized, average hospital stay per exacerbation was 13.30 days (StErr 1.03). Yearly COPD-maintenance-treatment cost ranged between 390 € (mild) to €1117 (very severe COPD). Maintenance-treatment included a wide range of medications. Management of COPD resulted in a total yearly cost of €1810 (StErr 139.55, range €537 (mild COPD)—€5888 (very severe COPD)), including maintenance-treatment (€670, StErr 26.67), hospitalisation (€1073, StErr 130.16) and treatment of exacerbations (€67, StErr 6.78). CONCLUSIONS: Management of COPD is costly, mainly due to the cost of hospitalisations. For very severe COPD patients, yearly management costs increase up to almost €6000.

**PRS12**

**THE BURDEN OF LUNG DISEASE (BOLD) ECONOMIC MODEL**

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OBJECTIVES: Chronic disease imparts significant disability, premature mortality and economic burden on countries. Chronic obstructive pulmonary disease (COPD) will be the fifth leading cause of disability-adjusted mortality in 2020. Causative exposures include tobacco smoke, biomass fuels, occupational and other environmental factors. The Burden of Obstructive Lung Disease (BOLD) project will estimate the prevalence and burden of COPD globally. Here, we on the design, development and application of a population simulation model to forecast country-specific economic burden of COPD. To show feasibility of the model, we report US burden data. METHODS: A publicly available population simulation model was developed to estimate annual and future mortality and costs. The model reflects changes in the size, composition and population demographics of the jurisdiction. Input data include disease prevalence from the BOLD COPD epidemiology studies, tobacco smoking and cessation rates, background mortality, disease attributable mortality, annual incidence of COPD, lung function progression data from the Framingham Heart Study and costs. Simulations are based on a starting cohort age 20 years and older in 2005. Five, 10 and 20-year projections are discounted at 3% per year. RESULTS: The model projects COPD prevalence to increase each year. In 2005, the projected cost of COPD in the US was $51.4 billion in medical expenses or $256 per capita. Cumulatively discounted 5, 10 and 20 year medical costs for COPD were $304.9 billion, $678.4 billion and $1415.3 billion. CONCLUSIONS: COPD is one of the world’s leading causes of disability and mortality. The economic consequences of tobacco use and occupational exposures leading to COPD are substantial. We developed this model as part of a global burden identification and reduction project. Here, we show its application for burden simulation with US data, but intend a larger global effort in conjunction with the BOLD project.

COST ANALYSIS OF HEALTH CARE RESOURCE UTILIZATION DURING TREATMENT FOR RESPIRATORY TRACK INFECTIONS (RTIS) WITH TELITHROMYCIN OR CLARITHROMYCIN OR AMOXICILLIN/CLAVULANIC ACID IN GREECE
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OBJECTIVES: To compare direct medical costs related to the management of community acquired pneumonia (CAP) and acute exacerbations of chronic bronchitis (AECB) between telithromycin (TEL) and clarithromycin (CLA) or amoxicillin/clavulanic acid (AMC), in both public and private sector in Greece. METHODS: A health outcomes model was developed from three Phase III multinational clinical studies comparing TEL with CLA in CAP, and with AMC in AECB. In each study patients were followed for 36 days and the primary endpoint was clinical efficacy at post therapy visit. Health care resources included in the model were additional non-protocol antibiotics, hospitalizations, laboratory tests and outpatient health care professional visits. Two cost analyses were performed; one from the perspective of Greek Health care System by using public sector unit costs and one from private sector perspective in Greece (including both reimbursable costs and out of pocket costs) in an effort to present a more realistic case for Greece. RESULTS: From the Greek Health care System perspective, the use of TEL instead of CLA in CAP resulted in cost savings of up to €49 per patient and up to €20 per patient when compared with AMC in AECB. For the Greek private sector, TEL cost differences were even greater, up to €71 when administered for CAP instead of CLA and up to €28 in AECB instead of AMC.

The cost savings resulted from TEL patients required fewer non-protocol additional health care resources (mainly a lower rate of hospitalization and shorter length of stay) than the patients in the comparator groups in both CAP and AECB. CONCLUSIONS: In Greece the use of telithromycin as a first line treatment option for CAP and AECB instead of clarithromycin or amoxicillin/clavulanic acid respectively, may significantly reduce health care costs in both public and private sector.

HEALTH CARE RESOURCES UTILIZATION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE ACCORDING TO THEIR SEVERITY IN SPAIN
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OBJECTIVE: Chronic obstructive pulmonary disease (COPD) accounts for about 10% of patient visits to a pneumologist, 7% of all hospital admissions, and 35% of permanent work disability. The aim of this study has been to assess health care resources utilization in Spain depending on the severity of the disease. METHODS: This analysis has been carried out through the design of a one-year retrospective naturalistic study performed through the whole Spanish territory, including both urban and rural areas. There have been included 9,045 COPD patients with a mean age of 67 ± 9.8 years. The severity of the disease was as follows: 33.8% mild (FEV1: 60–80% of predicted), 49.3% moderate (FEV1: 40–60% of predicted) and 16.8% severe (FEV1 < 40% of predicted). Health care resources collected were: added visits to the general practitioner (GP) and pneumologist, added visits to the emergency room, length of stay in the hospital and number of days off work. RESULTS: Severe COPD patients presented more added visits to the GP compared to moderate and mild COPD patients (5.83, 4.65 and 3.25 respectively, p < 0.001), likewise with regard to added visits to the pneumologist (1.55, 1.09 and 0.62 respectively, p < 0.01) and added visits to the emergency room (2.50, 1.62 and 0.9 respectively, p < 0.001). In addition, severe COPD patients showed a longer length of stay in the hospital than moderate and mild COPD patients (16.7 vs. 10.9 and 8.8 days respectively, p < 0.001) and less days off work (51.2, 29.4 and 18.9 respectively, p < 0.01). CONCLUSIONS: Severe COPD patients require higher health care resources utilization than moderate and mild patients. Therefore, it is necessary to elaborate programs and policies focused in diagnosing early COPD patients to try to avoid progression of mild patients to moderate and severe stages of the disease.

OUTCOMES, RESOURCE CONSUMPTION AND COSTS OF INTENSIVE CARE PATIENTS HOSPITALIZED WITH ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS) IN THE USA AND CANADA
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OBJECTIVES: To describe ARDS patients regarding survival, ventilation status, predisposing events, disease characteristics, length of hospital stay and duration of ventilation. METHODS: In a phase III clinical trial investigating treatment with Venticute (rSPC surfactant) compared to standard treatment in patients hospitalized for ARDS (NEJM 351, 884–892, 2004), patients were followed up for up to one year after randomization. This analysis is focused on the initial hospitalization and describes the pooled results from both treatment groups. Data were collected for 197 patients by means of a specific questionnaire covering
hospital mortality, length of stay, resource use and the TISS 28, a tool developed to assess workload of hospital staff for intensive care patients. Economic aspects were assessed using published average daily costs as approximation of item costs. 

RESULTS: A total of 62% of ARDS patients were male, median age of 55 years, and most patients with socioeconomic data were either working or in retirement. The main predisposing events for ARDS were sepsis (51%), pneumonia (35%) and trauma (28%). During the initial hospitalization 70 patients (36%) died. Overall length of hospital stay was 31 ± 41 (mean ± SD) days, with most days spent in the Intensive Care Unit (ICU; 20 ± 21 days) and General Ward (8 ± 22 days). On average patients were artificially ventilated for 16 ± 14 days and intubated for 16 ± 15 days. As assessed by the TISS 28, the average daily TISS score was 33 ± 10, which corresponds to a nursing time of 5.9 hours per day, and mainly related to basic activities daily TISS score was 33 ± 10, which corresponds to a nursing time of 5.9 hours per day, and mainly related to basic activities.

A multinomial regression model mapped the clinical utility units. ascertained by the proportion of predictions lying within 0.03 mate utility from predictor variables and goodness of fit was the 12-year period. Generalised linear models were used to esti-

function data (LFD) were also available on the same patients for George's Respiratory Questionnaire (StGRQ). Detailed lung Data Repository (HODaR), an ongoing survey of patients in a 

were 47%, 49% and 86%, respectively. 

COPD (based on the GOLD classification) 49%, 53% and 79% of predictions were within 0.03 units, respectively. For subjects with moderate to severe COPD (GOLD classification) 49%, 53% and 79% of predictions were within 0.03 units, respectively. The corre-

sponding figures for none or mild COPD (GOLD classification) were 47%, 49% and 86%, respectively. 

CONCLUSIONS: It was possible to reliably model the EQ5D index from the SF36 in respiratory disease; however, models that included the lung function data provided a marginal improvement, and the availability of the StGRQ conferred further improvement within the construction data set.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A COMPARISON OF ESTIMATES OF HEALTH-RELATED UTILITY (EQ5D) FROM SF36 DATA ALONE, THE SF36 PLUS LUNG FUNCTION DATA, AND THE SF36 PLUS THE ST. GEORGE'S RESPIRATORY QUESTIONNAIRE PLUS LUNG FUNCTION DATA

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OBJECTIVES: Chronic obstructive pulmonary disease (COPD) is a debilitating disease. The purpose of this study was to char-

acterise the association between various clinical and quality of life outcome parameters typically used to characterise respira-

tory illnesses, and utility, as measured by the EQ5D index.

METHODS: Data were abstracted from the Health Outcomes Data Repository (HODaR), an ongoing survey of patients in a UK region that included the EQ5D and the SF36 and the St. George's Respiratory Questionnaire (StGRQ). Detailed lung function data (LFD) were also available on the same patients for the 12-year period. Generalised linear models were used to estimate utility from predictor variables and goodness of fit was ascertained by the proportion of predictions lying within 0.03 utility units. 

RESULTS: Complete data were available on 444 subjects. A multinomial regression model mapped the clinical data from 315 (71%) of these subjects to EQ5D index, and the resulting model was then applied to an independent set of 129 (29%) subjects. In the 315 subjects, 40%, 41% and 52% of predictions were within 0.03 units when using i) the SF36 alone, ii) the SF36 with LFD and iii) the SF36 with LFD and St. George's data, respectively. The same models applied to the test data set resulted in 33%, 33% and 29% of predictions within 0.03 units, respectively. For subjects with moderate to severe COPD (based on the GOLD classification) 49%, 53% and 79% of predictions were within 0.03 units, respectively. The corre-

sponding figures for none or mild COPD (GOLD classification) were 47%, 49% and 86%, respectively. 

CONCLUSIONS: It was possible to reliably model the EQ5D index from the SF36 in respiratory disease; however, models that included the lung function data provided a marginal improvement, and the availability of the StGRQ conferred further improvement within the construction data set.

QUALITY OF LIFE IN COPD: HOW CAN WE MEASURE IT? 
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OBJECTIVES: The purpose of this study was to char-

acterise the association between various clinical and quality of life outcome parameters typically used to characterise respira-

tory illnesses, and utility, as measured by the EQ5D index.

METHODS: Data were abstracted from the Health Outcomes Data Repository (HODaR), an ongoing survey of patients in a UK region that included the EQ5D and the SF36 and the St. George's Respiratory Questionnaire (StGRQ). Detailed lung function data (LFD) were also available on the same patients for the 12-year period. Generalised linear models were used to estimate utility from predictor variables and goodness of fit was ascertained by the proportion of predictions lying within 0.03 utility units, respectively. For subjects with moderate to severe COPD (GOLD classification) 49%, 53% and 79% of predictions were within 0.03 units, respectively. For subjects with moderate to severe COPD (GOLD classification) 49%, 53% and 79% of predictions were within 0.03 units, respectively. The corre-

sponding figures for none or mild COPD (GOLD classification) were 47%, 49% and 86%, respectively. 

CONCLUSIONS: It was possible to reliably model the EQ5D index from the SF36 in respiratory disease; however, models that included the lung function data provided a marginal improvement, and the availability of the StGRQ conferred further improvement within the construction data set.

DOES QUALITY OF LIFE OF COPD PATIENTS AS MEASURED BY THE GENERIC EQ-SD DIFFERENTIATE BETWEEN COPD SEVERITY STAGES?
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OBJECTIVE: To assess the discriminative properties of the EQ-SD with respect to COPD severity according to GOLD in a large multinational study. 

METHODS: Baseline EQ-5D Visual Analogue Scale (VAS) scores, EQ-5D utilities and SGRQ scores were obtained from a subset of patients in the UPLIFT trial, a 4-yr placebo-controlled trial of tiotropium in COPD patients aged ≥ 40, FEV1% pred < 70, FEV1/FVC ≤ 70% and ≥10 pack years of smoking to assess the rate of decline in FEV1. 

RESULTS: 1,235 patients (mean post bronchodilator FEV1% pred 48.77) from 13 countries completed the EQ-5D. EQ-5D VAS and utility scores differed significantly between GOLD stages 2, 3 and 4, also after correction for age, sex, smoking, BMI and co-

morbidty (p < 0.001). Mean (SD) EQ-5D VAS scores in GOLD stages 2, 3 and 4 were 68 (16), 62 (17) and 58 (16), respectively. 

Mean (SD) utilities were 0.79 (0.20) in GOLD 2, 0.75 (0.21) in GOLD 3 and 0.65 (0.23) in GOLD 4. Effect sizes for the difference in utilities between GOLD 3 and 4 were more than twice as high as for the difference between 2 and 3. Gender, post-
Abstracts

**PRS19**

**IMPACT OF DYSPNOEA ON DAILY ACTIVITIES IN COPD PATIENTS—DEVELOPMENT AND TESTING OF A NEW QUESTIONNAIRE FOR CLINICAL PRACTICE AND CLINICAL TRIALS**

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OBJECTIVE: To develop and validate a self-reported questionnaire measuring the severity of dyspnoea and its impact on daily life. METHODS: A list of daily life activities was selected by the Scientific Committee (SC) after an extensive literature review. This selection was tested during five interviews with respiratory physicians, resulting in a modified list and a preliminary grading system assessing how dyspnoea impacts on activities. After in-depth interviews conducted with ten mild-to-severe COPD patients, a test questionnaire was developed. Six new patients completed the test questionnaire and commented its contents and format. Two response choice formats (multiple or exclusive response) were tested to describe the impact of dyspnoea on activities. In addition, four new clinicians completed a standard form evaluating the questionnaire after having used it in clinical practice with four of their patients. The questionnaire was revised according to all comments received. RESULTS: Five concepts (self-care, physiological activities, activities at home, activities outside, and sport) and 48 activities were first identified. After clinician and patient interviews, some activities were grouped, split, suppressed or added. The test questionnaire had 20 items. The recall period was set to a week. The descriptive criteria of the impact of dyspnoea on activities were: abandoned, slowed, need for pause, need for help, activities modified, avoided. After the cognitive debriefing and comments from both patients and clinicians, the final format was established as a mix of the two tested formats. CONCLUSION: This pilot questionnaire assessing the impact of dyspnoea on COPD patients activities in real life was well accepted by both patients and doctors. Further validation is needed to support its use and guide interpretation in clinical practice and clinical trials.

**PRS21**

**PATIENT SATISFACTION WITH TREATMENT FOR COPD**

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OBJECTIVES: Analyze the patient satisfaction with COPD treatment, and relation with different drugs. METHODS: Cross-sectional study of 377 patients with COPD controlled in three primary care settings. Non-random sample: patients were cited in the health centers and were asked to answer 10 questions about satisfaction with their treatment (positive scale 1–7). In this interview the investigators carried out a spirometry. Other variables measured were: age, sex, comorbidity, and prescribed treatment. RESULTS: 331 (87.8%) males, age (mean ± std) 67.7 ± 8.6 years, 53% had at least another comorbid condition; FEV1 58% ± 21%. In 63 patients (15%) we couldn’t find any prescribed treatment. 65% remaining received treatment with: β2agonist (35%), anticholinergic (30.8%), inhaled corticosteroids (35.3%), oral xantins (19.9%), oral corticosteroids (7.3%) mucolitics (21.7%) oxygen therapy (4.1%). Only 6.2% referred an adverse event with treatment. Patient satisfaction with treatment: 62% satisfied because low adverse events; 61% satisfied with drugs; 59.9% satisfied about daily life; 58.2% showed satisfaction with effects onset; 61.4% satisfied with sleep profile; 59.1% showed satisfaction with symptoms control; 60.2% satisfied with time of doses 44% preferred to take medications once a day, 39.8% thought it’s important number of times they had to take the drugs; 49.6% considered that the time to take medication in a day doesn’t make it more complicated. Males feel better symptoms control than females. Satisfaction was higher in β2 agonist (less adverse events, less importance on times of dosage), anticholinergic drug (less adverse events, less importance on times of dosage) and inhaled corticosteroids (less

**PRS20**

**PATIENT REPORTED IMPACT OF COUGH AND SPUTUM IN CHRONIC (OBSTRUCTIVE) BRONCHITIS—SIMULTANEOUS DEVELOPMENT OF THE SELF-ADMINISTERED CASA-Q**

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BACKGROUND: Cough and sputum are leading symptoms of chronic (obstructive) bronchitis. It is acknowledged that these symptoms impact patients’ lives, yet they have never been measured adequately. OBJECTIVE: To develop a self-administered questionnaire in five countries (seven languages) that captures concepts relevant to chronic (obstructive) bronchitis patients who suffer from cough and sputum. METHODS: After literature review and appraisal of existing instruments, a conceptual model was developed and then reviewed by clinical respiratory experts. Thirty extensive face-to-face concept elicitation interviews were conducted with patients in five countries (France, Germany, Japan, Spain, US). After transcription and domain-mapping of the interviews in each country, an international item generation meeting was conducted and a draft questionnaire was simultaneously created in five languages. After clinical expert review, testing for face and content validity was performed in cognitive debriefings in seven languages in six countries with 35 patients (English for US/UK, French, German, Japanese, and Spanish for US/Spain). RESULTS: The conceptual model addressed symptoms of cough and sputum and their respective impact. The resulting questionnaire, Cough and Sputum Assessment Questionnaire (CASA-Q), has 25 items with 6 items for symptoms (3 cough, 3 sputum) and 19 items for the impact of these symptoms (12 cough, 7 sputum). The response choices per item consist of five options from “never” to “always” or “not at all” to “extremely”, depending on the context of the item. Due to its simultaneous item generation in five languages and field testing in seven languages, item wording overall is following a simple sentence structure. The ease of understanding and relevance of each question was found acceptable across languages. CONCLUSION: The CASA-Q is a well-developed, patient-based questionnaire relevant to the assessment of chronic bronchitis. The CASA-Q, after completion of psychometric validation, may contribute to a comprehensive patient-centered assessment.
adverse events). In a multivariate analysis the variables associated with satisfaction were: f2 agonist (p = 0.071) and males (p = 0.051). CONCLUSIONS: Patient satisfaction with COPD treatment is high and is related with the low frequency of adverse events. Satisfaction is higher in males receiving treatment with f2 agonist.

SURGERY

THE SOCIETAL COST OF AUTOLOGOUS, ALLOGENEIC AND PERIOPERATIVE RBC TRANSFUSION—THE CASE OF SWEDEN
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OBJECTIVES: To estimate the cost of red blood cell (RBC) transfusion using three different techniques, i.e. allogeneic transfusion, autologous transfusion and perioperative auto-transfusion, from a societal perspective for Sweden. METHODS: Data concerning the sequence of procedures involved in the collection, preparation and transfusion of RBCs and perioperative autotransfusion was collected from the Swedish National Board of Health and Welfare, from other published sources and from interviews with staff at five large Swedish hospitals. Direct hospital costs were derived from the Southern Regional Health Care Board and from Haemonetics Scandinavia AB. Income data on hospital staff was derived from the Swedish federation of county councils. Data for estimating indirect costs have been obtained from Statistics Sweden and the National Tax Board of Sweden. RESULTS: The cost of a 2-unit transfusion was found to be SEK7 144 (£792) for filtered allogeneic RBCs and SEK3 394 (£394) per transfusion of autologous RBCs for surgery patients. Transfusion reactions accounted for more than 40 percent of the costs of allogeneic RBC transfusions. The administration cost was found to be much higher for autologous transfusions compared to allogeneic transfusions. The cost of intraoperative erythrocyte salvage was calculated to be SEK2567 (£285) per transfusion (>4 units). Of the three available techniques, allogeneic RBC transfusion is the most common method used in Sweden. More than 99% of all donated blood is allogeneic in the case of Sweden. CONCLUSIONS: Patients who suffer from anaemia have the option of treatment with blood transfusion or treatment with erythropoietic stimulating agents. From a societal perspective, allogeneic RBC transfusions are considerably more costly than the perceived cost at the hospitals. Allogeneic transfusion were found to be more costly than autologous transfusions concerning transfusion reactions but less costly with respect to administration at the blood centres.
hospital stay was higher in HOSP2 (11.3 vs. 14.5, p < 0.01). Significant differences were anyway confirmed only among non-infected patients. Our results were not confirmed with the bootstrap method. CONCLUSIONS: Cost of antibiotic therapy, its effects on the risk of infections and length of remission can be influenced by the therapeutic choices. Information on potential consequences is useful to implement optimal therapeutic approaches.

PSU4

TOTAL INSURANCE COST OF TREATMENT OF HIP FRACTURES ACCORDING TO THE LOAD STABILITY OF DIFFERENT SURGICAL METHODS
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OBJECTIVES: The aim of this study to calculate the health insurance cost of treatment of patients with peritrochanteric fracture of femur from the first hospital admission for 18 months follow up period according to most frequently used 4 different surgical methods (ender nailing, fix angled plate, gamma nailing and dynamic hip screw fixation (DHS)). METHODS: Recruitment criteria were: 1) all patients with a hip fracture in 2000 defined by the International Classification of Disease (ICD) as “S7210”; 2) working age between 18–65; 3) first admission to surgical unit, and had an operation because of monotonatramic peritrochanteric fracture of femur; and 4) without comorbidities. The cost analysis includes the cost of acute and chronic in-patient care, outpatient care and sick pay. RESULTS: The total number of patients having peritrochanteric fracture of the femur was 1154. Due to the inclusion criteria listed in the data and methods chapter altogether 186 patients were included into the study. The total costs were the highest in case of those types of operations with lower cost of prosthesis device and lower load stability: Ender nailing €2322, fix angled plate €2109 because of the higher sick-pay costs. The total costs were the lowest in case of those types of operations with higher cost of prosthesis device and higher load stability (Gamma nailing €2022, dynamic hip screw €1836) because of the lower sick-pay costs. The average days spent on sickness-pay varied according to the types of surgical methods. Gamma nailing-182 days, DHS fixation-212 days, Ender nailing—310 days, fix angled plate—269 days. CONCLUSION: In case of surgical methods with lower complication rate and quicker load stability (Gamma nailing, DHS fixation) the cost of primary treatment is higher but the total costs are lower because of lower additional costs (chronic care, sickness-pay).

PSU5

FACTORS ASSOCIATED WITH BLOOD TRANSFUSION COSTS DURING AND FOLLOWING SPINAL SURGERY IN THE UNITED STATES
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OBJECTIVE: The purpose of this study was to analyze blood transfusion patterns and associated costs by various spinal surgery subtypes in the US inpatient setting. METHODS: This study used Premier’s US Inpatient Comparative Database, containing approximately 5 million discharges annually, from over 500 hospitals. A total of 12,211 inpatient discharges with a primary procedure for hip (ICD-9 codes 81.51, 81.53; US projected total: 274,523 procedures) between July 2003 and June 2004 were selected and stratified into seven surgical subtypes based on the anatomic location of fused vertebrae and surgical technique. Blood management patterns were examined pre- and post-surgery. The association between spinal surgery subtypes and blood transfusion costs were examined using multivariate regression after controlling for various patient- (age, race, gender, severity), hospital- (location, teaching status, bedsize, region), and clinical-factors, inpatient mortality, payer type (Medicare, Medicaid, commercial/managed care), and physician specialty. RESULTS: Spinal fusion surgeries incurred average (maximum) blood transfusion costs of $149–$493 ($3,300–$13,120) per surgery, depending on subtype. As compared to cervical fusions, dorsal/dorsolumbar and lumbar/lumbosacral fusions as well as refusions were associated with significantly higher blood transfusion costs ($100–$195; p < 0.0001). Being operated by a neurosurgeon was associated with lower blood transfusion costs (p < 0.0001). Blood transfusion costs increased with increasing patient severity ($967), hospital bedsize ($100–$142), and urban/teaching status (p < 0.0001). Use of volume expanders and erythropoietic agents significantly increased blood transfusion costs by $184 and $294, respectively (p < 0.0001). Being male, discharged to home, and the use of topical sealants, were associated with lower total transfusion costs. CONCLUSIONS: This study demonstrates that the anatomical location, surgical approach, physician specialty, and hospital characteristics are all associated with blood transfusion costs. Newer technologies/medications may reduce blood transfusion use/costs, and this potential for reduction may be even greater in certain subgroups.

PSU6

DIFFERENCES IN BLOOD TRANSFUSION COSTS BY HIP AND KNEE REPLACEMENT AND REVISION SURGERY SUBTYPES
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OBJECTIVE: To analyze blood transfusion patterns and associated costs in hip/knee replacement and revision surgeries in the US inpatient setting. METHODS: This study used Premier’s US Inpatient Comparative Database, containing approximately 5 million discharges annually, from over 500 hospitals. A total of 12,211 inpatient discharges with a primary procedure for hip (ICD-9 codes 81.51, 81.53; US projected total: 274,523 procedures) and 17,805 for knee arthroplasty (ICD-9 codes 81.54, 81.55; US projected total: 494,629 procedures) between July 2003 and June 2004 were evaluated. Blood management patterns were examined pre- and post-surgery. The association between surgery subtypes and transfusion costs were examined using multivariate regression after controlling for various patient- (age, race, gender, severity), hospital- (location, teaching status, bedsize, region), and clinical-factors, inpatient mortality, payer type (Medicare, Medicaid, commercial/managed care), and physician specialty. RESULTS: Average (maximum) blood transfusion costs of $448 ($11,838), $720 ($27,957), $321 ($11,838), and $427 ($5182) were incurred for total hip replacement, hip revision, knee replacement, and knee revision, respectively. Multivariate analyses showed that hip and knee revision costs were $272 and $66 higher than hip replacement, respectively (p < 0.0001). Being operated on by an orthopedic surgeon was associated with slightly lower total transfusion costs (p < 0.0001). Blood transfusion costs increased with increasing severity ($1049; p < 0.001), comparing most severe to mild. Use of hypotensive anesthesia and topical sealants were associated with a $131 and $101 reduction, respectively, whereas the use of erythropoietic agents was associated with a $210 increase in total transfusion costs (p < 0.0001). Blood transfusion costs increased
with bedsize, and showed variations by region. CONCLUSIONS: This study demonstrated that orthopedic surgery type, physician specialty, patient severity, hospital characteristics, and use of pharmacological agents impact total blood transfusion costs. Newer medications/technologies may reduce blood transfusion costs in hip/knee surgeries, and this reduction may be even greater in certain subgroups.

**PSU7**

**“TECHNO-MARKERS” FOR THE ASSESSMENT OF HEALTH TECHNOLOGY UTILIZATION**

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OBJECTIVES: The actual extent of health technologies utilization is a fundamental criterion for health technology assessment and management. Although crucial, this information may not be accurately available due to incomplete clinical registries and other limitations. As this is a major hindrance we developed a model enabling indirect assessment of the technology utilization, by measuring techno-markers, which are specifically associated with the technology under study.

METHODS: During 2004 we evaluated the model by collecting data on techno-markers for cardiac surgery in one Israeli medical center. The Techno-markers chosen were compared to surgical registries and estimate error was calculated. Estimate error less than 5% indicates non-significant differences between techno-markers and surgical registries.

RESULTS: Total of 1040 cardiac surgeries was compared to utilization of 1064 (2.3%) surgical-drapes and 1224 (17.7%) bone-wax units. In addition, 832 cardiopulmonary bypass (CPB) surgeries were compared to utilization of 874 (5%) oxygenators, 854 (2.6%) cardioplegia-sets, 1029 (23.7%) control-valves, and 848 (1.9%) aortic-cannulas. Furthermore, utilization of 208 “off-pump” coronary artery bypass (OPCAB) were compared to 204 (2%) air-water blowers, and 241 (15.8%) stabilizers.

CONCLUSIONS: Techno-markers demonstrated an estimate error less than 5% (surgical-drapes for cardiac surgeries, oxygenators, cardioplegia-sets, and aortic-cannulas for CPB, and air-water blowers for OPCAB). Techno-markers can provide a new approach for estimating and supervising the extent of health technology utilization.

**PSU8**

**APPLICATION OF (PRO)SPECTIVE STUDY OF PATIENT SATISFACTION (PS) TO MONITOR QUALITY AND TO SUPPORT MANAGEMENT OF HEALTH CARE PROVIDER—AN EXAMPLE OF MEETING ISO 9001:2000 REQUIREMENTS BY THE CARDIOSURGICAL UNIT IN POLAND.**

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BACKGROUND: Patient Reported Outcomes (PRO) and particularly Patient Satisfaction (PS) are nowadays important measures of the overall quality of health care. ISO 9001:2001 requires regularly performed, patient surveys as quality monitoring tools. OBJECTIVES: To monitor the quality of health care provided by a cardiosurgical unit in Poland using PS evaluation and to apply the results to its administration.

METHODS: A 48-item questionnaire was designed that defines nine areas of medical care (reception, sanitation, staff, rehabilitation, medical care, food & diet, patient rights, hospital, suggestions). In 45 scaled questions a five-point Likert scale (very poor, poor, barely acceptable, good, very good) was used. There were 3 open-ended questions. A survey of 150 patients was conducted in 2004. All patients, who underwent cardiosurgical procedures were included during their 7-days post-operative stay in the intensive care unit. For the analysis, all questions were categorized into 3 dimensions: technical, functional and environmental (A. Donabedian, 1980).

RESULTS: A total of 128 questionnaires (87.5%) were returned of which 94 (73.5%) were from males. The majority (96.7%) were treated for the first time. Less than 1% were younger than 41 years, 52.8% were between 41 and 60 years. The majority 97.7% of answers were positive. Areas with relatively high share of negative assessment were identified as rehabilitation (4.6%), food & diet (5.0%) and patient rights (7.0%). Qualitative analyzes of food & diet area, illustrated main complaints: 52.2% eating hours, 13% taste, 8.7% diet needs. Additionally, functional and environmental dimensions were evaluated more positively then technical dimension.

CONCLUSION: Patients overall presented a high level of reported satisfaction on aspects of their care relating to function and environment, and a lower level of satisfaction in technical aspects of care. This study demonstrates a practical application of PRO surveys in monitoring the quality of health care unit. The results could be applied in enhancing local unit management and improving the efficient distribution of resources.