but these laws are neither universal nor consistent. This study estimates the hospital-wide prevalence, cost, and mortality of CLABSI-associated discharges for all US community hospitals. Hypotheses are that CLABSI prevalence and mortality are increasing and cost is unchanged. **METHODS:** Data for the study was extracted from the AHRQ HCUP National Inpatient Sample (NIS) database for 2002 and 2006. CLABSI was defined as a discharge with an ICD9-CM procedure code for a central line procedure (38.92, 38.93, and 38.95) and an ICD9-CM diagnosis code for a BSI (24 codes). SAS Proc Surveyreg was used to estimate (log of) cost, and Surveylogistic was used to estimate mortality and CLABSI prevalence. NIS weights were used to make national estimates, charges were adjusted using cost-to-charge ratios, and costs were adjusted to 2006 US dollars using the hospital service CPI. **RESULTS:** Average cost of a CLABSI-related hospitalization was $31,879 in 2006 dollars. Presence of CLABSI had a positive significant effect on cost (0.128, $p < 0.001$), as did the number of procedures (0.125, $p < 0.001$) and LOS (0.034, $p < 0.001$) while being female had a significant negative effect (–0.027, $p < 0.001$). The time variable was not significant (–0.056, $p = 0.052$). OR for CLABSI increased over time (1.196, $p < 0.001$) when controlling for gender, LOS, number of procedures, liver disease, and renal failure. For mortality significant ORs ($p < 0.001$) were time (0.761), female (0.875), LOS (0.982), age (1.026), number of procedures (1.204), liver disease (1.814), and CLABSI (2.348). **CONCLUSIONS:** CLABSI-related hospital mortality in the US is decreasing as is the cost of treatment. However, the prevalence of CLABSI is increasing.

PIN77

THOUGHTS ON THE LABORATORY CULTURES REIMBURSED BY THE SOCIAL SECURITY IN AUSTRIA (OUTPATIENT SECTOR IN PHYSICIANS' CARE AND INSTITUTES, BUT NOT HOSPITAL OUTPATIENT CARE)

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OBJECTIVES: If a patient shows an infection, the physician has to decide which kind of anti-infective substance has to be prescribed. One method to figure this out is to order laboratory cultures. We want to find out whether there is a correlation between the frequencies of cultures reimbursed and the number of prescriptions of anti-infective agents. **METHODS:** Claims data (2006) from physicians in free practice and institutes for laboratory medicine data for laboratory cultures were conducted out of different reimbursement catalogs in Austria. **RESULTS:** The rate of reimbursed cultures per prescription was 11% (for bacterial cultures and antibacterial medication J01, J04), 63% (for mycotic cultures and antimycotic medication J02), 24% for viral cultures and antiviral medication J05) and 25% (for parasitic cultures and antiparasitical medication P01,02,03). If just those infections verified by cultures had caused a prescription, the costs for anti-infective agents would have been 17% of the current number. If all prescriptions for anti-infective agents had been based on a culture, the prescription costs would have been 7,5 times higher. There are price differences for cultures due to various contract partners. If the lowest fee had been paid for each test we would have saved 33% of the current turnover for bacterial, 37% for mycotic, 38% for viral, and 6% for parasitic infections. If the highest price had been paid we would have paid 75% (bacterial), 46% (mycotic), 164% (viral) and 33% (parasitic) more than the current turnover. **CONCLUSIONS:** Our further research will focus on the different categories of prescription for anti-infective agents, testing and also the guideline conformity of its use.

PIN78

DIRECT MONTHLY HAART SUPPLY AT THE AIDS CENTER—A COST-EFFECTIVE MODE TO INCREASE ADHERENCE AND OUTCOME

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OBJECTIVES: To determine the cost effectiveness of direct monthly supply of HAART (Highly active anti retroviral therapy) medications at the AIDS center. **METHODS:** We analyzed 385 HIV patients, mostly (90%) immigrants from Africa (HIV subtype C) that were treated with HAART for more than one year prior to the initiation of the study. During the first two years of the study, all patients received HAART prescriptions and the medications were supplied by local pharmacies. Thereafter (next 2 years) all patients received their medications, monthly, by a nurse (on a part-time job basis) at our AIDS center. Compliance, immunological (CD4) and virological (VL) outcome between the two study periods (modes) were compared. **RESULTS:** The mean age of our patients, 48% males, at time of study initiation was 35 ± 13 (mean ± SD) years. The mean time from HIV diagnosis was 7.3 ± 4.1 years. Following the first 2 years, 75% of the patients attended more then 90% of scheduled visits with 57% treatment adherence (>90% of prescriptions). The mean CD4 count at the end of this period was 324.8 ± 220.9 cell/mcl (66.7% > 200 cells/mcl). Virological failure (VL > 40 copies/ml) was observed in 53% (mean VL 182,918 ± 834,916 copies/ml) of the treated patients. As a result of our intervention (two years of direct HAART supply), visits and treatment compliance increased, significantly ($p < 0.001$), to 90% and 84%, respectively. Concomitantly the CD4 cell counts increased to 470 ± 266 cell/mcl ($p = 0.24$ compared to the first study period) with 83.6% CD4 counts >200 cells/mcl ($p < 0.001$). A low rate of virological failures (28%; $p < 0.001$; mean VL 15,068 ± 73,382 copies/ml; $p < 0.001$) was observed. **CONCLUSIONS:** Direct monthly supply of HAART medications at the HIV center is a very low cost mode which significantly improves patient's adherence as well as immunological and virological outcome.

PIN79

SYSTEMATIC REVIEW OF THE COST-EFFECTIVENESS OF PALIVIZUMAB IN HIGH-RISK PATIENTS

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OBJECTIVES: Palivizumab has been shown to reduce the number of respiratory syncytial virus (VSR) related hospitalizations in preterm infants and patients with bronchopulmonary dysplasia or congestive heart disease. It is widely used but its high price raises concerns about its cost-effectiveness. The aim of this study was to systematically review economic evaluations (EE) of palivizumab in high-risk patients. **METHODS:** A comprehensive search for literature on the cost-effectiveness of palivizumab versus no prophylaxis was conducted. Bibliographic databases were searched from September 2001 to February 2008. Additional relevant studies were identified from manual searches. Only studies published in English and Spanish were included. Quality was assessed using the Drummond criteria for EE. Two independent reviewers scrutinized retrieved references and assessed the quality of the studies. **RESULTS:** Twenty references were included, representing a total of 32 EE: 20 cost-effectiveness analyses (CEA), 10 cost-utility analyses (CUA) and 2 cost-benefit analyses (CBA). Quality was variable. Populations varied widely with some studies including all high-risk patients and others focusing on specific subgroups. Results were reported as incremental cost-effectiveness ratios in terms of cost per hospitalization prevented, life-year gained or quality-adjusted life-year in all CEA and ACU and as cost-benefit ratios in CBA. Estimates of incremental ratios ranged from cost savings to incremental costs of a high order of magnitude. Assumptions on hospitalization rates in intensive care units, mortality and long-term consequences due to RSV infections, as well as acquisition cost of palivizumab seem to be related with more favourable ratios. A tendency for better results was also observed in studies receiving financial support from the manufacturer. **CONCLUSIONS:** A true determination of cost-effectiveness of palivizumab is difficult. However, costs of palivizumab seem to exceed potential cost-saving from reduced admission rates and might only prove to be cost-effective in a small subset of very high risk patients.

PIN80

THE ROLE OF ECONOMIC EVALUATION IN THE HEALTH TECHNOLOGY ASSESSMENT (HTA) OF VACCINES—LESSONS LEARNED FROM FINLAND

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OBJECTIVES: The aim of economic evaluation (EE) is to provide information to help decision makers maximize health benefits with given resources or advise how to attain given health targets efficiently in society. We examined the role and weight of EE in the HTA of vaccines in Finland and explored how EEs have and should have been conducted. **METHODS: The methods and perspective of national EEs related to** rotavirus and pneumococcal conjugate vaccination programs were evaluated. An official call for a rotavirus vaccination tender, competitive bidding process and tender decision-making criteria were explored. **RESULTS: EE can have a crucial role when** a new vaccine is considered for inclusion in a national vaccination program, which is necessary before a tender call for bids can be given. However, for tenders the predominant decision-making criterion seemed to be cost per vaccine. EE seemed to be conducted using a pair-wise comparison instead of multiple comparisons (i.e. different vaccines for a certain disease are compared only to no vaccination strategy). Advanced methods to characterize uncertainty, such as cost-effectiveness acceptability frontiers and value-of-information analyses, have not been applied. Also, no specific cost-effectiveness threshold for new vaccines has been set in Finland although international references and Finnish home dialysis and bypass surgery thresholds have been cited in the evaluation reports. However, the literature revealed that setting a threshold may be impossible. Thus, we present an ideal EE process that enables value-based threshold pricing for manufacturers and decisions that can lead to efficiency. **CONCLUSIONS:** There is a discrepancy between the scientific principles and objectives of EE and real life in terms of national EEs of vaccines and tender calls in Finland. The current practice does not necessarily lead to optimal decisions based on cost-effectiveness. Particularly, multiple comparisons with valid prices should be encouraged.

PIN81

MODELING AND SIMULATION OF EPIDEMIOLOGIC EFFECTS OF PENUMOCOCCAL CHILDREN VACCINATION IN AUSTRIA USING CLASSICAL MARKOVIAN METHODS AND DIFFERENTIAL EQUATIONS

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OBJECTIVES: The aim of the current work is to implement a Markovian-model and a Differential Equation Model for simulating the pneumococcal illnesses and estimate the possibility of preventing the disease by vaccination of infants with the 7-valent serum. Implementing the two models opens the possibility of comparison of both and offers better insights on the influence of non linear effects like herd immunity and serotype replacement. **METHODS:** To assess the epidemiological influence of pneumococcal infant vaccination using PCV7 in Austria a static Markovian-model and ordinary differential equation (ODE) modeling and simulation techniques are used. The Markovian model approach was classified as state of the art using a systematic literature review. (334 abstracts, 45 papers in detail) Implementing a model for serious diseases (meningitis, septicaemia and bacteraemic pneumonia) based on an infection

with penumococci, several boundaries and weaknesses in modeling occur: only steady state analysis possible; no dynamic implementation of herd immunity and replacement effects; and no influence of changing demographic structure over time Therefore a comparable ODE system was implemented and extended by population dynamics and splitting the pneumococcal serotypes in groups depending on their behavior depending on immunization. **RESULTS:** For standard immunization program implementation as advocated by EPAR/EMEA it was possible to reproduce the behaviour of the Markovian-Model with the ODE approach resulting in equivalent outcomes for validation. Using ODE approach extensions the influence of population dynamic effects with and without immunization is compared in detail. Using the mathematical theory for ODEs stability and uniqueness of the implemented approach was shown. **CONCLUSIONS:** The Markovian model can accurately describe the infection with pneumococcal bacteria if proper data exists and if there is no need to use dynamic effects or feedback-loops. The ODE model offers possibilities to implement additional dynamic methods, which is essential to gather the real world dynamics.

PIN82

THE APPLICATION OF HEALTH TECNOLOGY ASSESSMENT ON THE NEW PNEUMOCOCCAL NON-TYPEABLE HAEMOPHILUS INFLUENZAE PROTEIN D CONJUGATE VACCINE IN ITALY

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OBJECTIVES: The aim of this project is to generate an assessment for the new pneumococcal **non-typeable** *Haemophilus influenzae* protein-D conjugate vaccine (PHiD-CV) **in Italy. Currently, pneumococcal vaccination is not recommended nationally,** but many regions adopted **7-valent pneumococcal (PCV-7) vaccination. METHODS:** The project was performed using the Health Technology Assessment (HTA) methodology with a large input of multidisciplinary panel of experts with different backgrounds such as clinicians, epidemiologists and health economists. **RESULTS: Literature and** national database review revealed at least 300 pneumococcal meningitis and 4.000 pneumococcal bacteremia cases per year in Italy. The additional pneumococcal serotypes (ST) included in PHiD-CV (ST1, 5 and 7F) account for at least 10% of all Invasive Pneumococcal Disease (IPD) cases. The amount of pneumococcal and NTHi pneumonia cases was estimated at around 70.000 cases per year. More than one million infant episodes of otitis media (OM) are reported annually. Around 50% of these cases are caused by two bacteria, Streptococcus pneumonia and NTHi. The total annual direct medical cost related to pneumococcal and NTHi disease could exceed 110 million Euros in Italy. Modelling the impact of PHiD-CV vaccine with a cohort model populated with Italian data shows a huge health gain in IPD, pneumonia and OM. The new vaccine demonstrates superior clinical results and important cost-offsets compared with no vaccination. It dominates as well the current vaccination option of PCV-7, leading to significant cost savings. **CONCLUSIONS:** Pneumococcal vaccination emerges as an important public health improvement in Italy; at the same price, PHiD-CV appears the preferable choice for routine child immunization programs.

MUSCULAR-SKELETAL DISORDERS – Clinical Outcomes Studies

PMS1

RISK ASSESSMENT OF CARDIOVASCULAR THROMBOTIC EVENTS, OTHER CARDIAC EVENTS, AND MORTALITY AMONG VETERANS AFFAIRS PATIENTS WITH DIFFICULT TO MANAGE GOUT

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OBJECTIVES: Gout patients in the Department of Veterans Affairs (VA) are often difficult to manage (DTM) with multiple co-morbidities (diabetes, hypertension, renal disease) that are associated with cardiovascular thrombotic events (CVTE) and other cardiac events (OCE). Our objectives were to describe rates of CVTE and OCE among patients with gout and to determine if increased CVTE or OCE occurred in patients with DTM gout. **METHODS:** We used VA national databases to select all patients with gout diagnoses (ICD-9 = 274.xx) in an index year of 2004 with follow-up through 2006. We identified patients with ICD-9 codes for OCEs and CVTE diagnoses, based upon definitions from the Antiplatelet Trialists' Collaboration. ICD-9 codes for gout nephropathy or tophi were used to identify DTM patients. We calculated odds ratios with 95% confidence intervals (OR, CI) to compare risk of CVTE, OCE, and mortality among DTM versus other gout patients. **RESULTS:** Of 156,809 VA gout patients, 2534 (1.6%) had CVTE and 9759 (6.2%) had OCE in 2004. Rates were similar for 2005 and 2006: 1.6% and 1.3% for CVTE, 6.2% and 5.7% for OCE. DTM patients, defined as having diagnostic codes of gout nephropathy (ICD-9 of 274.1x, n = 1667) and/or tophi (ICD-9 of 274.8x, n = 1780), had similar rates of CVTE as other gout patients in 2004 (1.9% vs. 1.6%, OR = 1.16, CI = 0.90–1.50), but increased risk in 2005 (2.2% vs. 1.5%, OR = 1.41, CI = 1.13–1.77) and 2006 (2.0% vs. 1.3%, OR = 1.54, CI = 1.23–1.93). OCEs were significantly greater each year in DTM gout patients; 2004: 9.9% vs. 7.6%, OR = 1.33, CI = 1.19–1.50; 2005: 11.1% vs. 7.4%, OR = 1.57, CI = 1.41–1.74; 2006: 11.3% vs. 6.8%, OR = 1.75, CI = 1.58–1.94. Mortality was significantly greater in DTM gout patients; 2004: 3.3% vs. 4.0%, OR = 1.21, CI = 1.01–1.44; 2005: 3.3% vs. 4.8%, OR = 1.49, CI = 1.28–1.73; 2006: 3.2% vs. 4.6%, OR = 1.49, CI = 1.27–1.73. **CONCLUSIONS:** Patients with DTM gout have greater risks for CVTEs, OCEs, and mortality.

PMS2

SAFETY OF LEFLUNOMIDE, METHOTREXATE AND SULFASALAZINE: ANALYSIS OF DATA FROM WHO PROGRAMME FOR INTERNATIONAL DRUG MONITORING

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OBJECTIVES: Comparison of leflunomide, methotrexate and sulfasalazine safety based on data from WHO Programme for International Drug Monitoring. **METHODS:** The data from countries participating in the World Health Organization Programme for International Drug Monitoring are collected and maintained, on behalf of the WHO, by the Uppsala Monitoring Centre, in the Vigibase. An analysis of data on adverse events (AE) of leflunomide, methotrexate and sulfasalazine reported to Vigibase since 2000 up to 16th March 2009 (ref: ER18-2009), was performed. **RESULTS:** The total number of 16,311 individual case reports of leflunomide adverse events were registered in the Vigibase, compared to 32,945 and 5,011 for methotrexate and sulfasalazine, respectively. There were 108 death cases registered for leflunomide, 236 for methotrexate and 18 for sulfasalazine. Most frequent system-organ classes reported were: gastro-intestinal system disorders (13.2%) and skin and appendages disorders (9,8%) for leflunomide, respiratory system disorders (11.6%) and general disorders (10.8%) for methotrexate and skin and appendages disorders (17.7%) and general disorders (14.6%) for sulfasalazine. Most frequent AE reports for leflunomide were: diarrhoea (588 cases versus 303 and 58 for methotrexate and sulfasalazine, respectively), dyspnoea (310 vs. 563 vs. 53), hepatic function abnormal (304 vs. 262 vs. 78), nausea (272 vs. 401 vs. 90), rash (270 vs. 181 vs. 209), hypertension (265 vs. 138 vs. 6) and anaemia (242 vs. 383 vs. 55). Congenital abnormalities were reported in 26 leflunomide, 204 methotrexate and 15 sulfasalazine patients. **CONCLUSIONS:** WHO data indicates that leflunomide is at least as safe as methotrexate. All three disease modifying drugs have different spectrum of adverse events.

PMS3

PROPORTION OF PATIENTS WITH OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN PERFORMING A BONE MINERAL DENSITY DIAGNOSIS MEASUREMENT: THE PRESAGE STUDY

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OBJECTIVES: The primary objective was to estimate the proportion of patients suffering from osteoporosis among postmenopausal women who could benefit from therapeutic recommendations according to the French guidelines after performing a BMD diagnosis measurement. **METHODS:** Cross sectional observational study was performed of postmenopausal women, not treated for osteoporosis for at least one year and who could benefit from therapeutic recommendations according to the French guidelines after performing a BMD. **RESULTS:** A total of 647 postmenopausal women were enrolled (646 analyzed) by 78 rheumatologists performing BMD measurement between May 2007 and January 2008. The BMD measurement were prescribed by rheumatologists (42.6%), GPs (34.1%), Ob/Gynecologist (18.1%) or other physicians (5.1%). The mean age was 66 ± 9 years. According to the WHO definition, densitometry osteoporosis diagnosis was made in 57.6% patients ($IC_{95\%}$ 53.7; 61.4), osteopenia diagnosis in 38.7% patients ($IC_{95\%}$ 34.9; 42.6); and a normal BMD was established in 3.7% patients. A total of 39.7% of patients had at least a prevalent fracture and a treatment other than calcium and vitamin D supplementation was recommended in 93.0% cases of osteoporosis, in 44.8% in case of osteopenia and 8.3% in case of normal BMD. In a logistic regression model, the factors influencing therapeutic decision making in this population were the osteoporosis diagnosis versus osteopenia diagnosis OR = 21.0 ($IC_{95\%}$ 12.5; 35.3), past or current glucocorticoids use OR = 2.7 ($IC_{95\%}$ 1.3; 5.7). The fracture type was also important in decision making; existing vertebral fracture versus none OR = 17.2 ($IC_{95\%}$ 5.8; 51.4), existing non vertebral fracture versus none OR = 4.7 ($IC_{95\%}$ 2.7; 8.4). **CONCLUSIONS:** In a real setting, osteoporosis was diagnosed in approximately 60% of the women who underwent a BMD diagnosis and who complied with the French therapeutic guidelines. Therapeutic recommendations decision making was influenced mainly by BMD results, followed by prevalent fracture and fracture types and glucocorticoids use.

PMS4

EUROQOL-5 DIMENSION HEALTH STATUS QUESTIONNAIRE RESULTS FROM A RANDOMIZED, DOUBLE-BLIND, PLACEBO- AND ACTIVE-CONTROLLED PHASE 3 STUDY OF TAPENTADOL EXTENDED RELEASE (ER) FOR THE MANAGEMENT OF CHRONIC OSTEOARTHRITIS KNEE PAIN

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OBJECTIVES: To evaluate the efficacy and safety of the centrally acting analgesic, tapentadol ER, for the management of moderate to severe osteoarthritis knee pain; health status was evaluated using the EuroQol-5 Dimension (EQ-5D) questionnaire.