ESTIMATE PREVALENCE, INCIDENCE, AND MORTALITY EPILEPSY CASES IN MANAGED CARE ORGANIZATIONS AND EFFECTIVENESS MODEL FOR TRIPATANS (5-HT AGONISTS)

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OBJECTIVE: The primary objective of the analysis was to simultaneously account for and characterize the uncertainty in a cost-effectiveness model of current triptan (5-HT agonist) therapy for migraine headache. METHODS: Common components of cost and effect were identified as migraine incidence, overall market share for each triptan, migraine response rate at two hours per triptan [milligram] strength, migraine recurrence rate per triptan strength, and the percentage of patients on each triptan strength. Components specific to cost alone were the number of migraine attacks/patient/month and wholesale acquisition cost (WAC) per triptan strength. Effect was defined as a successfully treated migraine attack. Costs were determined for every triptan and not per triptan strength. Uncertainty in the cost-effectiveness ratio was modeled using Monte Carlo simulation techniques, specifically utilizing inverse transformation of the component cumulative distribution functions. One thousand random draws were taken from each of the assumed component distributions, and cost and effect were computed for each draw. Cost, effect, and their random components were log-10 transformed, and ordinary least squares regression was performed using cost/effect as the dependent variable and the components of cost and effect as independent variables. Distributional assumptions were logistic-normal for proportional components, Poisson for the attacks/patient/month component, and uniform for the WAC component. RESULTS: There was a 10% change in the cost-effectiveness ratio with a 10% change in attacks/patient/month and WAC, while the change in the ratio was less than 8% with a 10% change in the response and recurrence rates. All other components were insignificant in their effect. CONCLUSIONS: The cost-effectiveness model appears to be stable under the assumptions of its construction, since cost/effect did not change at a rate greater than the rate of change for any of the significant components of cost and effect.

DEVELOPING A COMPUTER ALGORITHM TO IDENTIFY EPILEPSY CASES IN MANAGED CARE ORGANIZATIONS AND ESTIMATE PREVALENCE, INCIDENCE, AND MORTALITY

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OBJECTIVE: The purpose of this study was to develop and apply computer algorithms to an administrative dataset to identify the prevalence and incidence of epilepsy, and epilepsy-related mortality within a managed care organization. METHODS: The study consisted of three phases: exploratory, confirmatory, and application of the algorithm to estimate prevalence, incidence, and mortality. Exploratory: Potential epilepsy patients were identified based on epilepsy-related codes in administrative data; a random sample of charts were reviewed to confirm epilepsy cases. An algorithm was developed utilizing combinations of epilepsy-related diagnoses, procedures, and medications based on chart review results. Confirmatory: The algorithm derived in the exploratory phase was then applied to a new dataset from the same MCO; a second confirmatory chart review was conducted. Further algorithm refinement was accomplished by applying logistic regression models to the combined chart review data from both phases. Application: The final models were applied to 1-, 3-, and 5-year datasets to identify prevalent and incident cases, which were then linked to a statewide death registry to derive mortality estimates. RESULTS: The best model used diagnoses and anti-epileptic drugs as predictors, had a positive predictive value of 84% (sensitivity, 82%; specificity, 94%), and correctly classified 90% of the cases. Prevalence rates of 7–10/1000 across the 1-, 3-, and 5-year datasets, depending on age, gender, and ethnicity, were obtained. Annualized incidence for members continuously enrolled for 3 years was 47/100,000 and 71/100,000 for members continuously enrolled for 5 years. Crude mortality rates were 2–2.5 times higher for epilepsy patients identified with the best model compared to controls. CONCLUSIONS: The algorithm developed in this project can be used to monitor trends in incidence, prevalence, and mortality to inform decisions critical to improving the health care and overall quality of life for epilepsy patients.

OSTEOPOROSIS

THE INFLUENCE OF BONE MINERAL DENSITY TESTING ON THE INITIATION OF AN OSTEOPOROSIS-RELATED PHARMACOTHERAPY: A POPULATION-BASED ANALYSIS

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OBJECTIVE: The influence of bone mineral density (BMD) assessment on a woman’s decision to initiate an osteoporosis-related pharmacotherapy has not been analyzed at the population-level through the use of administrative databases. Through linkage of a BMD database (containing the results of nearly all BMD measurements performed in the province of Manitoba since 1990), we measured the influence of such testing on the likelihood of initiating an osteoporosis-related pharmacotherapy (OSRx) in post-menopausal women. METHODS: Hospital, physician, pharmaceutical, clinical (bone mineral density results) and demographic data for women continuously residing in Manitoba from 1997 through 2002 were obtained from provincial administrative databases. Outcome variable: Initiation of an OSRx (including hormone replacement therapy [HRT], bisphosphonates, selective estrogen receptor modulators [SERM], and calcitonin). Women with a prescription claim for an OSRx between 1997–1998 were excluded to restrict the analysis to incident users. Explanatory variables: BMD test (yes/no), prior osteoporotic fracture (hip, spine, rib, or vertebral) after age 50, age, income quintile, and urban vs. rural residence. Likelihood of initiating an OSRx was analyzed using the Cox proportional hazards regression. RESULTS: A total of 112,464 women satisfied the inclusion criteria, of which, 7.5% received at least one BMD test and 12.5% (14,031 women) initiated at least one OSRx within the study period (39.8% HRT; 51.9% bisphosphonates; 5.8% SERM; and 2.5% calcitonin). Predictors of OSRx initiation included (but are not limited to): BMD test in the previous 6 months (RR 4.05 [95% CL, 3.88–4.22]); and an osteoporosis-related fracture after age 50 (RR 1.35 [95% CL, 1.29–1.42]). Women with BMD results indicating osteoporosis (T-score ≤ −2.5) were more likely to initiate an OSRx [RR = 7.72 (95% CL 6.77–8.79) and RR = 6.14 (95% CL 5.44–6.92) spine & hip, respectively]. CONCLUSIONS: Receipt of a BMD assessment increases the likelihood a woman will initiate an...
OSRx, particularly in those women diagnosed with osteopenia and/or osteoporosis according to their test results.

POS2
DIFFERENCES BETWEEN DOCTOR AND PATIENT RECALL OF EVENTS IN AND INVESTIGATIONS FOR OSTEOPOROSIS IN FIVE COUNTRIES

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OBJECTIVES: Patients and physicians are sometimes asked to fill in questionnaires concerning clinical events and resource utilisation such as tests and investigations. This study analyses differences in reporting of diagnostic tests and clinical events by a matched sample of doctors and patients in the management of osteoporosis in five countries. METHODS: The data are drawn from the Disease Specific Programme in Osteoporosis, which collected information about osteoporosis management from both doctors and patients. The study included 7349 patients (aged 50–80 with osteoporosis or suspected osteoporosis), treated by 709 doctors in France, UK, Germany, Italy, USA. For each doctor record, patients were asked to fill out a self-completion questionnaire. 2646 matched patient self-completion records were obtained. Key data items collected from both doctors and patients were X-rays, bone mineral density (BMD) scanning, and fractures. Differences between matched physician and patient responses were tested using the Fisher Exact test. RESULTS: Patients were significantly more likely to recall X-rays than doctors (41.2% vs. 33.8%, p < 0.01). This difference was significant in each country except Italy and Germany, although patients still reported higher levels of testing. No significant differences were found for BMD scanning other than the UK, where patients reported a higher level of testing (65.0% vs. 44.0%, p < 0.01). Patients were less likely to report fractures (30.0% vs. 36.4%, p < 0.01). Statistically significant differences were observed in all countries except the USA. CONCLUSIONS: This study demonstrates differences between physicians and patients in terms of both resource use and events. Patients reported more tests but less fractures than doctors. These findings have implications for economic evaluations. Evidence from patients must be treated with caution, due to potential problems of recall bias and/or misunderstanding of tests and events. The importance of using hard evidence for retrospective analysis cannot be overstated.

OSTEOPOROSIS

OSTEOPOROSIS—Cost Studies

POS3
HEALTH CARE UTILIZATION AND EXPENDITURES: A STUDY OF SEVERE OSTEOPOROSIS

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OBJECTIVE: More than 1.5 million fractures occur due to osteoporosis each year. This study examines the characteristics of osteoporosis patients who incur an osteoporosis-related fracture compared to osteoporosis patients who do not incur fracture and estimates the economic burden associated with the illness. METHODS: The study sample consisted of patients with an osteoporosis diagnosis (733.0x) between January 1, 1998 and December 31, 2000. Osteoporosis patients with both an osteoporosis diagnosis and a related fracture were classified as having severe osteoporosis, all other osteoporosis patients were classified as Non-Severe. Annual utilization and expenditures for the Severe cohort were compared to the Non-severe cohort, as well as to a group of patients without osteoporosis (Controls) matched 3:1 to the Severe osteoporosis cohort based on age, gender, region, health plan type, and length of enrollment. Patients with malignant neoplasm, carcinoma, or Paget’s disease of bone were excluded from all groups. Exponential conditional mean models were used to compute regression-adjusted total expenditures across the groups and the differences in adjusted expenditures were used to generate the economic burden of illness estimates. RESULTS: Patients with Severe osteoporosis incurred twice the amount of overall health care expenditures in the study period compared to Non-Severe osteoporosis patients and nearly three times that of the control group. Approximately 25% of the overall health care expenditures for the severe group were osteoporosis-related expenditures, leading to the conclusion that comorbid conditions in patients with severe osteoporosis contribute significantly to overall health care costs. Some of these comorbidity-related costs are likely due to pain-related disorders, which occurred significantly more frequently than in the Non-Severe and Control cohorts. CONCLUSIONS: Osteoporosis-related expenditures, particularly those related to fracture, were substantial. However, non-osteoporosis-related expenditures to treat comorbid conditions constituted 75% of the overall health care costs incurred in the year after an osteoporosis-related fracture and warrant further investigation.

POS4
COST-EFFECTIVENESS OF LONG-TERM HORMONE REPLACEMENT THERAPY (ESTROGEN PLUS PROGESTIN) IN HEALTHY POSTMENOPAUSAL WOMEN FOR OSTEOPOROSIS PREVENTION

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OBJECTIVES: To examine the cost and effectiveness of long-term hormone replacement therapy (HRT) in healthy postmenopausal women for preventing osteoporosis. Although HRT has been widely used for osteoporosis prevention, previous studies on its cost-effectiveness showed controversial results. Recently, the Women’s Health Initiative (WHI) study found significant clinical risks with HRT. METHODS: From a societal perspective, resource consumption, incidence rates and relative risks were collected for the following diseases in HRT-treated and HRT-naïve women: breast cancer, colorectal cancer, CHD, stroke, pulmonary embolism, dementia, and bone fractures. Besides the WHI results, cost, utility and other clinical data were from published literature, CDC vital statistics databases, and SEER cancer statistics. Using a 3% annual discount rate, projected lifetime costs and quality-adjusted life years (QALYs) were estimated by DEALE and backward induction methods and compared in women with HRT vs. without HRT for each age group at 5-year intervals. RESULTS: Under the base case assumptions, HRT increased average lifetime treatment costs ($20,753 for non-HRT group vs. $31,941 for HRT group), and yet reduced average discounted quality adjusted life expectancy (10.18 years for non-HRT group vs. 5.87 years for HRT group), indicating that HRT use is an inferior strategy. These negative results were largely attributed to the net increased risks in breast cancer and CHD due to HRT. As age increased from 50 to 90, the incremental costs increased from $2221 to $18,988, and loss in QALYs decreased from 10.8 to 0.44 years. The model results were relatively insensitive to reasonable parameter changes. CONCLUSIONS: For healthy postmenopausal women, long-term HRT to prevent osteoporosis raises overall treatment costs