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—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...
and causes significantly greater risks than benefits. Even ignoring alternative treatments for osteoporosis, not using HRT is a dominant strategy in all age groups.

**POSS**

**ECONOMIC EVALUATION OF SHORT-TERM NON-VERTEBRAL FRACTURE-RELATED COSTS AMONG OSTEOPOROSIS TREATMENTS**

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**OBJECTIVES:** The objective was to estimate direct medical costs for non-vertebral fractures in the first year of therapy among risedronate, alendronate, and nasal calcitonin patients utilizing an integrated administrative, medical and pharmacy claims database. **METHODS:** A retrospective cohort study was conducted among 5024 women and men (aged 45+) with a new prescription for risedronate ($5/mg/day, or 30/mg/week), alendronate ($5/mg/day, 10/mg/day, 35/mg/week or 70/mg/week), or nasal calcitonin (200I.U./day) between July 1, 2000, and June 30, 2001. Non-vertebral fracture-related direct medical costs (inpatient and outpatient care) were assessed for a 12-month period following initiation of the bisphosphonate or nasal calcitonin therapy using 2003 Medicare fee schedule payments. Sites at which a patient had a clinical fracture in the 6 months prior to initiation of therapy were excluded from the analysis. **RESULTS:** During the capture period patients were treated with alendronate (74%), risedronate (13%), and nasal calcitonin (13%). There were no baseline differences in age, gender or number of concomitant medications between risedronate and alendronate patients. Nasal calcitonin patients, however, were significantly older and had higher concomitant medications use than both risedronate and alendronate patients. Alendronate patients incurred almost three times the fracture-related costs of risedronate patients ($124 vs. $45, p = 0.019). Nasal calcitonin patients incurred more than four times the fracture-related costs of risedronate patients ($198 vs. $45, p = 0.028) in an adjusted model. Alendronate patients did not have significantly different fracture-related costs than nasal calcitonin patients. **CONCLUSIONS:** Observed fracture-related costs among patients initiating risedronate therapy were lower than fracture-related costs among patients of similar characteristics who initiated alendronate therapy.

**POS6**

**TERIPARATIDE VERSUS BISPHOSPHONATES IN HIGH RISK OSTEOPOROSIS PATIENTS: A DECISION MODEL ANALYSIS**

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**OBJECTIVES:** Teriparatide has shown improved efficacy in increasing bone mineral density and decreasing nonvertebral fractures in comparison to alendronate. The cost-effectiveness of teriparatide over bisphosphonates has not been evaluated in the VA Health System. This decision model seeks to evaluate all relevant resource utilization and associated costs of osteoporosis treatment with teriparatide compared to bisphosphonates to determine the cost-effectiveness of each intervention in a high-risk population. **METHODS:** The study was performed from the government payer perspective. Resource utilization was ascertained from published literature and relevant VA databases. Outcomes data was reviewed and incorporated from published trials and FDA reviews of teriparatide, alendronate, and risedronate into an event targeted decision tree model. Pertinent utilization rates and costs were captured including: emergency services, hospitalization costs associated with fracture, osteoporosis drug therapy costs, additional medication costs associated with fracture, rehabilitation costs, outpatient visits, and nursing and home health care costs. Outcome measurements include annualized cost of treatment per vertebral and non-vertebral fractures over a 2-year period. The decision tree was built with TreeAge®. Crystal Ball® 2000 was used to perform the model analysis. **RESULTS:** Compared to bisphosphonates, teriparatide demonstrated fewer osteoporotic fractures and reduced total cost of treatment. Although the VA medication acquisition cost of teriparatide is greater than ten times the cost of bisphosphonates, this cost is offset by reduction in health care utilization costs. The primary cost drivers were medications, hospitalizations, rehabilitation, and nursing home costs. The total cost of treatment for teriparatide was US$1,363,868 versus US$1,776,412 for bisphosphonates, with corresponding fracture rates of 11.35 and 18.19 per 100 patients, respectively. **CONCLUSIONS:** This model suggests that teriparatide may be a cost effective therapy in the treatment of high-risk osteoporosis patients from the perspective of the VA. The advantage of teriparatide over bisphosphonates may be attributed to the substantial differences in fracture rates.

**POS7**

**COST-EFFECTIVENESS OF TERIPARATIDE (FORTEO) IN THE PREVENTION OF OSTEOPOROTIC FRACTURES AMONG MEN AND POSTMENOPAUSAL WOMEN IN AUSTRALIA**

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Antiresorptive therapies are used to prevent further fracture in men and women with osteoporosis. However, patients with severe osteoporosis may continue to fracture despite this therapy. New trials have shown that teriparatide (Forteo) is efficacious in preventing new vertebral and non-vertebral fractures in patients who have already experienced a vertebral fracture. **OBJECTIVES:** This study aimed to assess the cost-effectiveness of teriparatide in preventing osteoporotic fractures in this population. **METHODS:** A cost-utility model was developed to compare teriparatide with no therapy (placebo) in a population of osteoporotic patients with prior fracture. This model is a Markov process estimated using Monte Carlo simulation. Relative efficacy assumptions in the model are based solely on the results of randomised controlled trials (Neer et al., 2001), while the baseline probability of fracture is derived from Australian epidemiological data (Sanders et al., 1999). The cost-effectiveness of teriparatide was assessed in terms of its impact in preventing new vertebral and non-vertebral fractures in a cohort with at least one prior radiologically confirmed vertebral fracture and an average age of 70 years. The model was designed so that the risk of further vertebral fracture rises with each fracture. The model ran for a ten-year period. Teriparatide is provided for 18 months, after which patients have the choice of receiving a bisphosphonate or no additional therapy for a further 42 months. **RESULTS:** Over the 10-year period, teriparatide is associated with an increased cost of AUD$7337 ($US5503) and a gain of 0.4168 QALYs per patient compared with no treatment. Hence, the incremental cost per QALY gained with teriparatide compared with no treatment in this population was AUD$17,603 (US$13,202). Extensive sensitivity analyses indicated these results were robust. **CONCLUSIONS:** Teriparatide is a cost-effective therapy to reduce the risk of future fractures in men and women with prior osteoporotic vertebral fracture.