Bueno RLP4, Navarro J5, Matsui M6

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Cost-effectiveness analysis of zoledronic acid
versus risedronate for the prevention of
osteoporotic hip fracture in the private health care system in Brazil.
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Bueno RLP4, Navarro J5, Matsui M6

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OBJECTIVE: To assess cost-effectiveness of zoledronic acid compared to risedronate in the Brazilian private health care system, by health plan companies’ perspective. METHODS: Decision analytic model (Markov) to estimate the incremental cost effectiveness ratio of zoledronic acid compared to risedronate for the treatment of osteoporosis in Brazil in 2007. The target population was a hypothetic cohort of women with osteoporosis aged 65 years in a time horizon of 5 years. The epidemiological data related to osteoporosis and drug’s efficacy were obtained from critical appraisal of scientific literature. The costs were collected from electronic claims databases of patients enrolled in Brazilian health plans. The outcome analyzed was the cost per osteoporotic hip fracture avoided. Costs and clinical benefits related to the treatment were discounted at a rate of 3%. RESULTS: In the base case scenario, zoledronic acid reduced the incidence of fractures in comparison to risedronate (0.33 fractures against 0.46 fractures), with similar annual costs of osteoporosis treatment and its complications in both arms of the model (US$10,607.35 against US$10,606.22, incremental costs of US$1.13). CONCLUSION: The study demonstrated that the use of zoledronic acid compared to risedronate could prevent more hip fractures, with similar costs in the brazilian private health system. This study highlights the savings to health plan companies if an osteoporotic hip fracture can be avoided.

Cost-effectiveness analysis of biological agents for patients with moderate to severe rheumatoid arthritis following inadequate response to methotrexate.
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OBJECTIVE: To investigate the cost-effectiveness of biological response modifiers in patients with moderate to severe rheuma-
toid arthritis who have experienced an inadequate response to methotrexate METHODS: A decision analytic model was con-
structed to estimate the costs and effectiveness of adalimumab, anakinra, etanercept, and infliximab alone or in combination with methotrexate for 6 months. Effectiveness was measured by American College of Rheumatology response criteria (ACR20) as reported in published clinical trials. Costs included direct medical costs (including medication, monitoring, and adverse event costs) and indirect costs due to impaired work productivity. Extensive univariate and probabilistic sensitivity analyses were performed.
RESULTS: In the base case, costs for 6 months of therapy were
lowest for etanercept monotherapy ($22,487) and highest with the combination of infliximab and methotrexate ($24,807). For monotherapy and combination therapy regimens, etanercept was the least expensive option and most effective option compared to other treatments, although differences in cost and effectiveness across treatments were relatively small. After eliminating dominated options, etanercept + MTX therapy increased the probability of achieving an ACR 20 by 7% points and increased total costs by $199 over etanercept monotherapy agent, resulting in an incremental cost-effectiveness ratio of $2843 per additional response. The incremental cost-effectiveness of combination therapy compared to monotherapy was not markedly altered in sensitivity analyses. CONCLUSION: Findings from this study suggest that there are relatively small differences in cost and effectiveness across biological response modifiers. Combination therapy with biological response modifiers appears to provide an increase in response compared to methotrexate alone, but at a cost. Whether combination therapy can be considered cost-effective depends on the value attached to achieving ACR response. PMS15

COST-EFFECTIVENESS OF THE TREATMENT FOR EARLY RHEUMATOID ARTHRITIS IN MEXICO: INFliximab VS. ADALIMUMAB
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OBJECTIVE: Evaluate the cost-effectiveness of infliximab compared to adalimumab in early arthritis from an institutional perspective.

METHODS: To compare the cost and effectiveness, a decision tree model was structured with a temporary horizon of 54 weeks. Only costs per drug were considered for this analysis, as the rest of the costs are similar for institutional buyers. Comparators: 3 mg/kg i.v. infliximab + 15 mg oral methotrexate (MTX) weekly. Infliximab is administered at weeks 0, 2 and 6, and every 8 weeks thereafter. Adalimumab subcutaneous injections of 40 mg every two weeks + 15 mg weekly of methotrexate (oral). The effectiveness measures considered were the percentage of patients achieving the ACR 50 and 70 response levels and were obtained from international literature. Percentage of patients achieving the ACR 50 and 70 levels with each treatment: 78% and 67% for infliximab + methotrexate and 62% and 49% respectively for the combination of adalimumab plus methotrexate. Costs were estimated using prices of 2007 and are expressed in United States dollars (exchange rate of 10.93 pesos/1 USD).

RESULTS: The expected annual treatment cost is $15,720.80 for infliximab and $15,896.20 for adalimumab. The cost-effectiveness ratios for ACR 50 and 70 per drug type are: $20,154.80 and $23,463.90 respectively for infliximab; and $20,525.30 and $32,941.20 respectively for adalimumab. The incremental cost-effectiveness ratio for infliximab vs. adalimumab is $-1096.20 for ACR 50 and $974.40 for ACR 70. The sensitivity analysis showed that these results are sensitive to drug price variations. CONCLUSION: Infliximab is a cost-effective alternative compared to adalimumab for the treatment of early arthritis from an institutional perspective in Mexico. PMS16

ECONOMIC EVALUATION OF MONTHLY IBANDRONATE VS WEEKLY ALENDRONA TE TO PREVENT OSTEOPOROTIC HIP FRACTURES IN MEXICAN WOMEN AGED FIFTY AND OLDER
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OBJECTIVE: To evaluate from a Mexican public health care institution perspective, the efficiency for using monthly ibandronate for prevention of osteoporotic hip fractures in Mexican women aged fifty and older.

METHODS: A hypothetical intervention to compare ibandronate monthly versus alendronate weekly to prevent osteoporotic hip fractures in Mexican women aged fifty and older. The model considers both efficacy reported to each drug and the effectiveness for their massive use based on the adherence to the therapy reported. Taking into account both groups of women, those that completed treatment and those that abandoned it, the model estimates the total number of hip fractures possibly avoided for each alternative and the investment required, only in terms of direct cost. Considering that in Mexico there is not a defined cost-effectiveness threshold, the attention cost for hip fracture was proposed like this. RESULTS: The attention cost for a hip fracture in Mexico is reported at approximately USD$5100. Although the model estimated a higher total direct cost for using ibandronate (due to its higher rate of adherence) the estimated ICER was USD$4734; this means the cost for additional hip fracture avoided compared to alendronate. CONCLUSION: The use of monthly ibandronate to treat osteoporosis and prevent osteoporotic hip fractures is a cost-effective alternative. Although the public health care institutions could be spending a maximum amount near to actual cost for hip attention, it is possible to obtain additional savings if the indirect costs of hip fractures and their associated deaths are considered. PMS17

LONGITUDINAL ESTIMATES AND COST-EFFECTIVENESS ANALYSIS OF ANTI-RESORPTIVE AGENTS FOR GLUCOCORTICOID-INDUCED OSTEOPOROSIS AND FRACTURES BASED ON US NATIONAL SURVEYS
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OBJECTIVE: Long-term glucocorticoid use may lead to glucocorticoid-induced osteoporosis and fractures which require proper management. This study aims to aid decision-making on preventive use of anti-resorptive agents for female long-term oral glucocorticoid tablet users.

METHODS: A retrospective analysis of 1996–2004 Medical Expenditure Panel Survey data was conducted to evaluate “actual use” outcomes. Direct medical costs (in 2006 dollars) including selected adverse events related to anti-resorptive agents were evaluated. Logistic analysis was performed to estimate odds ratios of new fractures and osteoporosis in treatment groups compared to the control group. Markov modeling with second-order Monte Carlo simulations was used to yield long-term estimates of these outcomes and address parameter uncertainty.

RESULTS: Of 1692 qualified female long-term glucocorticoid users (representing 2.65% of the female non-institutionalized U.S. population; average age = 49.8 years; average prednisone-equivalent dose = 10.7 mg/day; average therapy length = 215 days; white = 85.6%), 29.9% reported use of any anti-resorptive agent; of those, 76.5% used hormone replacement therapy (HRT) only, 12.1% used bisphosphonates only, 2% used calcitonin only, 1.6% used raloxifene only and 7.8% used more than one anti-resorptive agent. Compared to the controls, the estimated 10-year/lifetime incremental cost-effectiveness ratios (ICERs; cost per fracture avoided) are $2,250/$7,776 for HRT, $10,149/$28,078 for bisphosphonates, $27,891/$46,102 for raloxifene and $60,862/$61,660 for calcitonin in hypothetical 50-year-old female glucocorticoid users. By using the cost-effectiveness acceptability curve, different decision makers may find the corresponding range of probabilities that remain cost-effective based on personalized willingness-to-pay.