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A COST-EFFECTIVENESS ANALYSIS OF ETANERCEPT FOR THE TREATMENT OF MODERATE AND SEVERE PSORIASIS IN MEXICO

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OBJECTIVES: Biologic treatments had dramatically changed the therapeutics, outcomes and cost of management of psoriasis, a common chronic disease that strongly affects quality of life of patients. The aim of this study was to assess the cost-effectiveness of biologic alternatives currently available in Mexico for treatment of moderate to severe psoriasis from an institutional perspective. **METHODS:** A decision-tree model was developed to simulate the clinical course of patients treated with etanercept, adalimumab, infliximab or ustekinumab as first-line therapies, as well as treatment associated costs (2-year timeframe with a 5% annual discount rate). Effectiveness measures were the proportion of patients reaching 75% improvement in the Psoriasis Area and Severity Index (PASI-75) and quality adjusted life years gained (QALY's). Costs considered included: biologics drugs, concomitant medication, medical follow-up and side effects management. Clinical response of alternatives was extracted from published literature, while unit costs were collected from Instituto Mexicano del Seguro Social (IMSS) official databases. Probabilistic sensitivity analyses were completed. **RESULTS:** After two years, the proportions of patients reaching PASI-75 were 59%, 62.1%, 62.7%, and 64.5% for adalimumab, etanercept, infliximab and ustekinumab, respectively ($p=0.077$, Friedman test); QALY's associated to each alternative were: 1.5554, 1.5633, 1.5650 and 1.5695, respectively ($p=0.392$, Friedman test). Given that in the timeframe considered there are no differences between effectiveness of therapies, a cost-minimization rather than a cost-effectiveness analysis was performed. The expected mean costs per patient were: US\$27,281.95, US\$25,929.85, US\$31,542.76 and US\$38,050.59, respectively. Etanercept is US\$1,352.1 (-5.1%) less costly compared to adalimumab; US\$5,612.91 (-17.8%) compared to infliximab and US\$12,120.74 (-46.74%) compared to ustekinumab (the most costly alternative). **CONCLUSIONS:** Given that effectiveness of the biologic treatments analyzed is similar over the time-horizon used, etanercept treatment represents the less expensive alternative for the management of moderate and severe psoriasis at IMSS.

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COST-EFFECTIVENESS ANALYSIS OF FORMULARY MANAGEMENT STRATEGIES FOR FIRST-LINE AGENTS USED IN OPEN-ANGLE GLAUCOMA AND OCULAR HYPERTENSION

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OBJECTIVES: To determine which formulary management strategy of ophthalmic prostaglandins (PGs) is the most cost-effective from the perspective of a managed care organization (MCO) over one year. **METHODS:** This cost-effectiveness model contains eight unique arms, which reflect different formulary management strategies for the PGs (bimatoprost, latanoprost, travoprost). Three arms examine the cost-effectiveness of each PG as first-line therapy, with timolol added as second-line therapy for patients not reaching goal intraocular pressure (IOP). The next three arms examine first-line therapy with timolol, an alternative and less costly primary therapy, with a preferred PG as second-line therapy. An additional arm examines not selecting a preferred PG as first-line therapy with timolol as second-line therapy, and the final arm examines timolol as first-line therapy, but does not select a preferred PG as second-line. An effectively treated patient was defined as a patient achieving an IOP less than 18 mm Hg after three months of therapy. If patients were unable to reach goal IOP with secondary-line therapy, dorzolamide was added. Patients unable to tolerate therapy or achieve goal IOP required additional physician visits. Costs included prescription medications and physician visits in 2010 US dollars. **RESULTS:** The cost-effectiveness ratios (CER) for first-line therapy with a preferred PG were \$815.13, \$961.71, and \$889.13 per effectively treated patient for bimatoprost, latanoprost, and travoprost, respectively. The CERs for first-line therapy with timolol, followed by a preferred PG, were \$436.77, \$499.77, and \$462.21 for bimatoprost, latanoprost, and travoprost, respectively. If a preferred PG was not selected, the CERs were \$910.95 for first-line therapy and \$477.77 for second-line therapy. Sensitivity analyses showed that reducing the price of latanoprost by 9 percent and travoprost by 3 percent yields equivalent CERs as bimatoprost. **CONCLUSIONS:** Timolol followed by a bimatoprost is the most cost-effective of the eight treatment strategies examined in this model.

PSS12

A DISCRETE EVENT SIMULATION TO OPTIMISE THE ALLOCATION OF CONSTRAINED HOSPITAL RESOURCES FOR GLAUCOMA

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OBJECTIVES: A literature review identified that constrained resource models of service delivery and organisation do not include patient-based outcomes. The aim of this study is to develop an evidence-based framework representing costs and health benefits, to inform best use of constrained health care services in a routine clinical setting. **METHODS:** A discrete event simulation (DES) model was developed to represent the use of glaucoma services at the Royal Adelaide Hospital. The DES describes disease progression and pathways of care, where disease progression is influenced by the frequency and content of hospital visits, and vice versa. Individuals, who are competing for access to hospital services, are assigned characteris-

tics that represent relevant patient and disease characteristics. Across all individuals, these data inform the demand for services over time, which is combined with information on the supply of available resources within the system to analyze alternative approaches to the use of available resources. **RESULTS:** The base case model has been validated against hospital data representing both process and clinical measures over time. Analysis of the model shows variation in the total QALYs gained by cohorts of glaucoma patients over their remaining lifetime, according to alternative treatment decision algorithms (e.g. medication versus surgical intervention); surveillance and imaging algorithms (e.g. variation in relative follow-up schedules for high and low priority patients). **CONCLUSIONS:** The applied framework illustrates the potential value of DES in modelling the costs and health benefits of alternative approaches to organising scarce physical resources, providing estimates of health gains that can be achieved in the absence of the introduction of new technologies.

PSS13

INCREMENTAL COST-UTILITY ANALYSIS OF DEXAMETHASONE INTRAVITREAL IMPLANT FOR THE TREATMENT OF MACULAR EDEMA FOLLOWING RETINAL VEIN OCCLUSION

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OBJECTIVES: Macular edema (ME) following retinal vein occlusion (RVO) is a common cause of vision loss. The objective of this research was to assess the lifetime incremental cost-effectiveness of dexamethasone intravitreal implant 0.7mg (DEX) treatment versus observation for ME following central or branch RVO (CRVO or BRVO) from a US payer perspective. **METHODS:** An Excel-based Markov model with 6 health states based on visual acuity (VA) plus one absorbing (Death) state was developed. Transition matrices were derived using individual patient-level data pooled from two identical phase 3 studies. Enrolled study patients at baseline had mean age of 65 years and study-eye VA of 20/80. DEX patients were assumed to receive up to 6-treatments over 3 years. Direct medical costs included drug, procedure, maintenance care, and adverse events. Additional direct costs and mortality was assigned to patients who became legally blind ($\leq 20/200$ in BSE). Utility scores were directly calculated from study data via the Visual Function Questionnaire - Utility Index and health states differentially valued by whether the treated eye was the better- (BSE) or worse-seeing-eye (WSE). 90% of patients were assumed to have RVO in their WSE at model entry and a time-dependent risk of fellow eye occurrence (FEO) was incorporated. Costs and outcomes were discounted at 3%. Deterministic and probabilistic sensitivity analyses were conducted. **RESULTS:** Reference case ICERs were \$23,416 and \$20,597 per QALY for BRVO and CRVO (respectively); and sensitive to the percent of patients incurring the RVO in the BSE, risk of FEO, and cost of vision loss. Probabilistic sensitivity analyses demonstrated that the ICERs fall below a threshold of \$50,000 per QALY in 87% and 92% of simulations for BRVO and CRVO, respectively. **CONCLUSIONS:** Using a threshold of \$50,000, DEX treatment compared to observation is supported as a cost-effective treatment option for ME following BRVO or CRVO.

PSS14

COST-UTILITY ANALYSIS OF RANIBIZUMAB (LUCENTIS®) IN WET-AMD BASED ON REAL-LIFE DATA COLLECTED IN THE HELIOS STUDY AFTER RANIBIZUMAB REIMBURSEMENT IN BELGIUM

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OBJECTIVES: Assess cost-utility of ranibizumab (Lucentis®) in wet-AMD based on real-life evidence regarding quality of life, treatment patterns and effectiveness collected in the Belgian observational HELIOS study including 253 patients treated with ranibizumab after reimbursement approval. **METHODS:** An existing model, developed for clinical trial-based analyses, was extended to include a real-life ranibizumab arm. This 10-year MS-Excel Markov model with 5 visual acuity (VA) levels and 1 death state predicts VA in patients treated with ranibizumab, Visudyne® photodynamic therapy (PDT) or best supportive care (BSC). Transition probabilities and treatment frequency for ranibizumab (on average 5 injections during year 1) were provided by the HELIOS trial (1-year interim data). For comparators these data were obtained from several clinical trials (ANCHOR, MARINA, PIER and TAP). Baseline characteristics and utilities correlating with treated-eye VA were obtained from the HELIOS study. Two-year treatment duration was modelled, followed by BSC. Costs (2010) from the perspective of the health care payer + social services + patient were obtained from literature and expert opinion. Costs (3%) and outcomes (1.5%) were discounted. Sensitivity analyses covered variability in efficacy, costs, treatment frequency and utilities. **RESULTS:** Vision gain in real-life was in line with PRN clinical data but lower than observed in monthly-dosing clinical trials. Injection frequency and costs were lower in real-life than anticipated from ranibizumab clinical trials. Base-case analyses versus BSC (MARINA, PIER and TAP) consistently revealed cost-utility of ranibizumab, with results ranging from dominance to 8,367€/QALY. Base-case analyses versus PDT (PIER and TAP) suggested dominance of ranibizumab. Results were most sensitive to the cost of blindness and time horizon, but remained generally within acceptable limits. At an acceptability threshold of 35,000€/QALY, the probability that real-life ranibizumab is cost-effective ranged from 84% to 100%. **CONCLUSIONS:** Real-life use of ranibizumab in wet-AMD appeared highly cost-effective compared to BSC and PDT.