individual born in 2005 returns a lifetime positive NPV to the government of £160,069 with a break-even point (ie. where the NPV becomes positive) at age 31. A child with similar characteristics, but conceived using IVF, has a lifetime NPV of £144,000 with a break-even point at age 33. Sensitivity analysis indicated that these results are sensitive to assumptions about the working age interval, inflation rate, discount rate, and increasing age related health costs. CONCLUSION: Despite modelling limitations, we conclude that under reasonable assumptions IVF costs are relatively insignificant vis-a-vis other costs and benefits to government. While the model does not forecast the full economic benefits associated with investment in IVF, it does demonstrate the potential long-term financial returns of improved access to IVF services.

COST-EFFECTIVENESS OF DARUNAVIR/R IN HIGHLY TREATMENT-EXPERIENCED HIV/AIDS PATIENTS IN DIFFERENT EUROPEAN HEALTH CARE SETTINGS

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OBJECTIVES: To determine whether the protease inhibitor (PI) darunavir boosted with low dose ritonavir (DRV/r) is cost-effective, compared to currently available PIs, as part of highly active anti-retroviral therapies (HAART), in highly pre-treated HIV-1-infected adults who failed ≥1 PI-containing regimen in European healthcare settings. This analysis included Belgium, Italy and Sweden and focused on the payer perspective.

METHODS: A Markov model was adapted which contains 6 health states defined by CD4+ T-cell count range (≤50, 51–100, 101–200, 201–350, 351–500 and >500 cells/mm3) and a state “death” (Mauskopf et al, 2006). Clinical trial (POWER1&2) data were used to model the composition of HAART regimens, patient characteristics and transition probabilities during DRV/r or comparator PI(r) treatment, both combined with optimised background regimen (OBR). After treatment failure, patients were assumed to switch to tipranavir(r)-containing regimens ([TPV/r]+OBR). Transition probabilities during TPV/r treatment were obtained from published clinical trials. Utility values and HIV-related mortality were obtained from published literature. Published relative risks of non-HIV mortality in HIV patients were applied to country-specific all-cause mortality statistics. Non-HAART-related costs in each model state were derived from observational studies in each country. Costs and effects were discounted according to local guidelines. The quality-adjusted lifetime incremental cost-effectiveness ratio (ICER) was calculated for the base-case. Univariate and probabilistic sensitivity analyses were applied. RESULTS: For Sweden, Italy and Belgium respectively, quality-adjusted life year (QALY) gains of 1.142, 1.171 and 1.397 were predicted for patients treated with DRV/r in the base-case analysis. The base-case ICER for DRV/r was £144,000/QALY, 16,668/QALY and 12,584/QALY respectively. The DRV/r ICER remained consistently below the often quoted threshold of 30,000/QALY throughout extensive sensitivity analyses. The probability of an ICER below 30,000/QALY was above 92% in all countries. CONCLUSION: DRV/r is predicted to be cost-effective versus currently available PIs in highly pre-treated HIV-1-infected adults in different European health care settings.

MODELLING THE COST-EFFECTIVENESS OF A NEW TREATMENT FOR MS (NALATIZUMAB) COMPARED TO CURRENT STANDARD PRACTICE IN SWEDEN

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OBJECTIVES: To estimate the cost-effectiveness of a new treatment (natalizumab) for multiple sclerosis (MS) compared to current standard therapy with disease-modifying drugs (DMDs) in Sweden. METHODS: A Markov model was constructed to illustrate disease progression based on functional disability (EDSS). Disease progression while on treatment with natalizumab was based on a two-year placebo-controlled clinical trial in 942 patients (AFFIRM). Progression while on treatment with current DMDs was estimated from a matched sample of 312
patients in the Swedish MS registry for the Stockholm County. Patients withdrawing from treatment in both arms were assumed to follow the disease course of 824 patients with relapsing-remitting disease at onset in the natural history cohort in Ontario, Canada. Costs and utilities by level of disease severity are based on a recent observational study in 1339 Swedish patients. All data sets were available at patient-level. Main results are presented for the societal perspective, over a 20-year time frame, in 2005 Euro (1€ = 9.25SEK) discounted at 3%.

**RESULTS:** In the base case, treatment with natalizumab was less expensive and more effective than treatment with current DMDs in Sweden, i.e. it dominated standard therapy. When only health care costs were considered, the cost per QALY gained with natalizumab was €38,145. Health effects are sensitive to the time horizon of the analysis, and assumptions about effectiveness of natalizumab beyond the trial.

**CONCLUSION:** This cost-effectiveness analysis used registry data, cohort and observational studies to extrapolate the efficacy findings of natalizumab from the AFFIRM clinical trial to measure effectiveness in clinical practice. The analysis results suggest that for the population considered, natalizumab provides an additional health benefit at a similar cost to current DMDs from a societal perspective.

**MODELING TREATING MULTIPLE SCLEROSIS WITH DISEASE MODIFYING DRUGS USING DISCRETE EVENT SIMULATION**

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**OBJECTIVES:** Markov modeling has been widely used to assess the cost-effectiveness of disease modifying drugs (DMDs) in patients with relapsing form of multiple sclerosis (RFMS). Its limitations, along with variations in disease progression, often lead to unrealistic clinical assumptions and oversimplification of the course of RFMS. This study assessed the reliability of modeling clinical outcomes for patients receiving interferon-beta-1a (IFNb1a) subcutaneously (SC) versus intramuscularly (IM) using discrete event simulation (DES).

**METHODS:** The model creates a cohort of individual patients by reading in actual patient profiles and “cloning” them—one receives IFNb1a SC, and the other IM. Patients may suffer relapses, develop new T2 lesions, experience adverse events, stop treatment, progress to secondary progressive MS or die. Time for each event is sampled from failure time distributions specified by the individual’s risk profile. When a relapse occurs, an actual relapse profile comprising severity and recovery status is assigned and processed accordingly. Model inputs were mostly derived from the EVidence of Interferon Dose-response European North American Comparative Efficacy (EVIDENCE) trial with a few from published literature. Results based on 100 replications of 10,000 patient pairs were validated against the trial results.

**RESULTS:** Predictions at 64 weeks, the mean follow-up of the EVIDENCE trial, were similar to the trial results: Fifty-four percent vs. 56% (model vs. trial) of SC and 46% vs. 48% of IM users remained relapse-free and the annual relapse rate was 0.51 vs. 0.54 with SC and 0.66 vs. 0.65 with IM use. Of relapses, 57% required no treatment, 36% an outpatient visit, and 7% a hospital stay, almost identical to the trial results with 57%, 36%, and 8%, respectively.

**CONCLUSION:** Use of DES permits realistic modeling of DMDs in RFMS, use of actual patient-level data, and avoided unrealistic assumptions, while closely predicting the clinical outcomes with efficiency, flexibility and transparency.

**COST-EFFECTIVENESS OF A LIDOCAINE PLASTER RELATIVE TO PREGABALIN IN THE TREATMENT OF POST-HERPETIC NEURALGIA IN SCOTLAND**

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**OBJECTIVES:** To assess the cost-effectiveness of the Versatis lidocaine 5% medicated plaster relative to 300 and 600 mg/day pregabalin in the treatment of post-herpetic neuralgia (PHN) from the perspective of the Scottish National Health Service.

**METHODS:** The costs and benefits of the three treatments were assessed over a six-month time horizon using a Markov model. The model structure allowed for differences in costs, utilities and transition probabilities between the initial 30-day run-in period and maintenance therapy and took account of add-in medication and drugs received by patients discontinuing therapy. Transition probabilities were based on clinical trials and Delphi panel estimates. Resource use and add-in/switch medications were obtained from 2 Delphi panels; cost data were from official price tariffs. Published utilities were adjusted for age and were supplemented/validated by a Delphi panel. Lidocaine-treated patients were assumed to receive 1.03 plasters/day based on US prescribing data. **RESULTS:** The average patient receiving the lidocaine plaster accrued 0.292 quality-adjusted life-years (QALYs) over six months—0.067 more than 300 mg pregabalin and 0.061 more than 600 mg pregabalin. The total treatment cost for patients receiving the lidocaine plaster (£681/patient) was very similar to that for 300 mg pregabalin (£636/patient) and 600 mg pregabalin (£655/patient). The lidocaine plaster cost £674/QALY (95% confidence interval [95% CI]: dominant, £4,780) relative to 300 mg/day pregabalin and £434/QALY (95% CI: dominant, £5,009) relative to 600 mg/day pregabalin. Probabilistic sensitivity analysis demonstrated that we can be 99.9% confident that the lidocaine plaster is cost-effective relative to 300 mg pregabalin and 99.8% confident that it is cost-effective relative to 600 mg pregabalin at a £20,000/QALY threshold. The lidocaine plaster cost £27 per additional month with sufficient pain relief and no intolerable side-effects relative to 300 mg pregabalin and £18/month relative to 600 mg pregabalin. **CONCLUSION:** The Versatis lidocaine 5% medicated plaster is a highly cost-effective alternative to pregabalin for the treatment of PHN in Scotland.

**A RETROSPECTIVE, OBSERVATIONAL STUDY COMPARING OUTCOMES OF ASTHMA TREATMENT WITH FIXED COMBINATIONS OF INHALED CORTICOSTEROID AND LONG-ACTING ß2-AGONIST (ICS/LABA) IN REAL-LIFE PRACTICE**

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**OBJECTIVES:** The currently available formulations budesonide/formoterol (BUD/FORM, Symbicort) and salmeterol/fluticasone (SAL/FLU, Seretide) have been shown to be effective in the treatment of asthma. This study compared outcomes with BUD/FORM and SAL/FLU in real-life practice. **METHODS:** Cohorts of asthma patients initiated on BUD/FORM or SAL/FLU between 2001 and 2006 were identified from IMS Disease Analyzer, a longitudinal UK database of physician records. Patients were followed 12 months before and after treatment initiation (T1). Treatment success was defined as no oral corticosteroid...