methotrexate both in severe and highly active RA. METHODS: A lifetime deterministic Markov model was developed comparing two treatment sequences within two hypothetical cohorts of patients. Five to six treatment sequences were considered in each arm. Patients switched to the next sequence in case of lack of effectiveness or in case of severe adverse events. Patients’ health status was defined by the Health Assessment Questionnaire (HAQ), scale which demonstrated strong links with mortality and quality of life. Scores were updated at every six-month model cycles. Treatment failure occurred if the score did not improve by 0.35 point over the cycle. HAQ scores were converted into utility coefficients. Effectiveness data (HAQ progression, serious adverse events and mortality) were derived from TEMPO trial and literature. Only direct medical costs were considered. Resource use was estimated through published data and expert opinion. Costs were derived from French official sources. Sensitivity analyses were performed on main model parameters. RESULTS: The results showed that QALYs (Quality-Adjusted Life-Years) were increased respectively in severe and highly active RA by 0.98 (9.10±8.12) and 0.73 (10.52±9.78) in patients treated with etanercept as 1st line compared with etanercept as 2nd line. The lifetime costs per patient were respectively in severe and highly active RA €2,14,327 and €233,262 with etanercept as 1st line and €190,236 and €211,148 with etanercept as 2nd line agent. Incremental cost-effectiveness ratios (ICER) were respectively in severe and highly active RA: €24,655 and €30,199 per QALY. Ratios ranged from €10,784 to €83,174 per QALY in one-way sensitivity analyses. CONCLUSIONS: Treatment sequence including etanercept as 1st line may be cost-effective in the management of severe and highly active RA in France with ICER fallen within acceptable range.

PMS20

IMPACT OF MEDICATION NON-COMPLIANCE AND NON-PERSISTENCE ON PHARMACOECONOMIC EVALUATIONS IN OSTEOPOROSIS

Hilgmann M, Rabenda V, Gatton Hj, Ethgen O, Reginster JY
University of Liège, Liège, Belgium

OBJECTIVES: Poor compliance and failure to persist with drug therapy are of potential economic significance. The objective of this study is to assess the impact of medication non-compliance and non-persistence on economic evaluations in osteoporosis. METHODS: A Markov microsimulation model with a lifetime horizon and a societal perspective was used to analyse the impact of non-adherence to bisphosphonate therapy on costs (drug, disease and total), on outcomes (Quality-Adjusted Life Years and number of fractures saved) and on the cost-utility of bisphosphonate therapy versus no treatment. Analyses were performed for caucasian women aged 70 years with a diagnosis of osteoporosis (t-score ≤ –2.5). The relationship between compliance and fracture efficacy were taken from published sources and drug cost was proportionate to compliance level. To model persistence to therapy, we assumed that women can stop therapy after 3 months, 6 months, 1 year, 2 years or 3 years. RESULTS: Full adherence to therapy resulted in a QALY gain of 0.0397, a 7.6% reduction in the number of fractures and a higher cost of €383 compared to no treatment. Lower compliance was associated with a decrease in QALY gain, a reduction in the number of fractures saved and a higher disease cost compensated by a lower drug cost. The cost per QALY gained for bisphosphonate therapy versus no treatment increased progressively with decreasing compliance and was €9,653 €29,570 and €46,389 at 100%, 50% and 20% of compliance respectively. Realistic persistence assumption (with full compliance) resulted in a lower QALY gain (only 0.0165) and a higher cost per QALY gained (€12,479). CONCLUSIONS: This study indicated that non-compliance and non-persistence to osteoporotic therapy result not only in worsening health outcomes, but also in a significant change in cost-effectiveness. Therefore, the effects of non-compliance and non-persistence should be an integral part of economic evaluations in osteoporosis.

PMS21

COST-EFFECTIVENESS SIMULATION MODEL OF ABATACEPT VERSUS RITUXIMAB IN RHEUMATOID ARTHRITIS IN FRANCE

Gossec L1, Goupille P2, Sarau A3, Bregman B3, Boccard E1, Dupont D1, Beresniak A4
1Cochin Hospital, Paris, France, 2CHRUL de Tours—Université François Rabelais, Tours, France, 3Hôpital de la Cavale Blanche, Brest, France, 4Bristol-Myers Squibb, Rueil-Malmaison, France, 5Bristol-Myers Squibb International Corporation, Braine l’Alleud, Belgium, 6LIRAES, Descartes University, Paris, France and Data Mining International, Geneva, Switzerland

OBJECTIVES: New biologic therapies with distinct mechanisms of action offer alternatives to rheumatologists and hope to patients with moderate to severely active rheumatoid arthritis (RA) and an inadequate response to anti-TNF therapy. The objective of this study was to assess the cost-effectiveness of abatacept and rituximab in biological treatment sequences in patients with RA and an inadequate response to one anti-TNF agent. METHODS: An advanced simulation model was developed to assess the cost-effectiveness of two biologic strategies in etanercept inadequate-responders: Strategy A—abatacept followed by adalimumab (in case of an inadequate response to abatacept); Strategy B—rituximab followed by adalimumab (in case of an inadequate response to rituximab). Two clinically relevant effectiveness endpoints were used: low disease activity state (LDAS) (DAS28 <3.2) and remission (DAS28 <2.6). Effectiveness estimates for abatacept and rituximab were derived from published pivotal trials and long-term extension studies, assuming similar patient populations. Overall effectiveness was expressed in theoretical expected number of days (TEND) under remission or LDAS for each sequence after 2 years. French RA direct medical costs were derived from a costing model based on DAS28 categories. Using 4 × 6-month cycles, drug costs were estimated based on recommended dosing. Assuming a sustained response over 6-month cycles, the rituximab re-treatment interval was set at 6 months. Monte-Carlo simulations generated mean values and standard deviations of costs, effectiveness and mean cost-effectiveness over 2 years. Significance tests were performed to confirm differences. RESULTS: Using the LDAS endpoint, Strategy A (abatacept as second biologic agent) was significantly more efficacious over 2 years versus (vs) Strategy B (rituximab as second biologic agent), with 134 vs 107 TEND under LDAS (p < 0.01). Mean cost-effectiveness ratios showed significantly lower overall medical costs per TEND under LDAS with Strategy A vs Strategy B (€212 vs €234; p < 0.01). Using the remission endpoint, Strategy A (abatacept as second biologic agent) was significantly more efficacious over 2 years vs Strategy B (rituximab as second biologic agent), with 61 vs 37 TEND under remission (p < 0.01). Mean cost-effectiveness ratios showed significantly lower overall medical costs per TEND under remission with Strategy A vs Strategy B (€446 vs €642; p < 0.01). CONCLUSIONS: This innovative and robust model is the first to use LDAS and remission to compare biologic strategies in France, aligned with RA treatment goals. The results suggest that when used as the second biologic agent after an inadequate response to one anti-TNF agent, abatacept appears significantly more efficacious and cost-effective than rituximab. This innovative and robust model is the first to use LDAS.
and remission to compare biologic strategies in France, aligned with RA treatment goals. The results suggest that when used as the second biologic agent after an inadequate response to one anti-TNF agent, abatacept appears significantly more efficacious and cost-effective than rituximab.

**PM522**

**adalimumab, etanercept and infliximab in the treatment of ankylosing spondylitis: cost effectiveness analysis in Polish settings**

Macioch T, Niewada M, Wrona W, Golicki D, Hermanowski T
Medical University of Warsaw, Warsaw, Warsaw, Poland

**OBJECTIVES:** To evaluate cost-effectiveness of TNF-α inhibitors (adalimumab, etanercept and infliximab) in the treatment of ankylosing spondylitis (AS) in Polish settings.

**METHODS:** Markov model was adapted for two health states: response and non-response according to ASAS20 criteria and cycle time was 3 months. Analysis was performed from the perspective of public payer (National Heath Fund) in the 1 year and life-time horizons.

**RESULTS:** Costs analyzed: acquisition costs of drugs, drug administration and treatment monitoring costs, adverse events treatment costs, AS hospitalization costs, tuberculosis monitoring and treatment costs. Health outcomes included quality-adjusted life-year (QALY). Data from systematic review of published randomized clinical trials were used to evaluate transition probabilities during anti-TNF-α or a comparator (standard AS therapy—NSAID and/or DMARDs)’s treatment. Utility values were calculated from BASFI, BASDAI, sex and age data based on published algorithm. Costs and effects were discounted 5% annually. Univariate and probabilistic sensitivity analyses were performed. Values are presented in PLN (exchange rate: 1 Euro = 3.40 PLN).

**RESULTS:** In the case-base analysis QALY gains of 0.063 and 0.302 were estimated for patients treated with adalimumab, etanercept or infliximab in 1-year and life-time horizon, respectively. ICER/QALY in one year horizon was ≥397,455, ≥397,169 and ≥397,076 PLN/QALY for adalimumab, etanercept and infliximab, respectively. In life-time horizon ICER/QALY was ≥405,430, ≥405,233 and ≥471,707 PLN/QALY for adalimumab, etanercept and infliximab, respectively. **CONCLUSIONS:** Anti-TNF-alfa treatment is currently unattractive for all AS patients in Polish health care settings, thus further analysis are needed to identify subgroups of patients who benefit most to ensure effective resource allocation.

**PM570**

**Cost-effectiveness of etanercept vs. rituximab in the treatment of active rheumatoid arthritis in Colombia**

Gao X1, Hwang S2, Carpio KT1, Stephens JM1, Sato R2, Singh A1
1Pharmerit North America LLC, Bethesda, MD, USA; 2Wyeth Research, Collegeville, PA, USA

**OBJECTIVES:** To evaluate the cost-effectiveness of etanercept combination therapy with methotrexate (MTX) versus rituximab with MTX for rheumatoid arthritis (RA) from a payer’s perspective in Colombia.

**METHODS:** A literature-based decision analytic model was constructed with a one year time horizon to compare the cost-effectiveness of etanercept 25 mg twice-weekly + MTX versus rituximab 2 x 1000mg infusion + MTX in RA patients with an inadequate response to disease-modifying anti-rheumatic drugs. The primary measure of clinical effectiveness was based on remission (Disease Activity Score 28 joint count < 2.6). The model incorporated major and minor infectious events, discontinuation due to lack of efficacy or adverse event, and rituximab re-treatment within the one year time horizon. Drug costs were based on average wholesale price. Cost of managing adverse events and infusion costs were compiled based on queries to Colombian rheumatologists. Sensitivity analysis was conducted in the ±30% price range and efficacy parameters for etanercept and rituximab.

**RESULTS:** One year total treatment costs for rituximab were COL$37,442,828 and COL$39,825,456 for etanercept. The percent of patients achieving remission was 3% for rituximab and 27% for etanercept at the end of 1 year. The incremental cost-effectiveness ratio (ICER) was COL$9931,754 per additional patient achieving remission. The number needed to treat was 29 for rituximab and 5 for etanercept. Given a hypothetical budget of COL$1,000,000,000, the number of patients achieving remission was 7 for etanercept and 1 for rituximab. Sensitivity analysis showed that etanercept continued to have more patients achieving remission than rituximab even if the drug cost and efficacy was varied by ±30% given a defined budget. **CONCLUSIONS:** The results suggest that etanercept appears to be cost-effective compared to rituximab. Additionally, more patients can be successfully treated to remission with etanercept than rituximab given a defined budget. These findings were robust for plausible ranges of effectiveness and drug acquisition costs.