The Impact of Changes in Adalimumab, Etanercept, and Infliximab Doses on the Costs of Treating Rheumatoid Arthritis

LAWRENCE RW1, McElroy RP2, Johnson KJ1, Khondkar RK3, Singh A1

1 Complete Market Access, Macclesfield, UK; 2 Pfizer, Collegeville, PA, USA

OBJECTIVES: To review and analyze evidence on the changes in dose of adalimumab, etanercept and infliximab over time in adult patients with rheumatoid arthritis (RA) and the associated impact on treatment costs. METHODS: MEDLINE, EMBASE and NICE Preferred Drug Lists were systematically searched to identify relevant English language randomized controlled trials, cohort studies andobservational studies published between January 1993 and December 2009. Conference abstracts were also hand searched from EULAR (2002 onwards) and ACR (2006 onwards). Studies were selected using predefined criteria, using two independent reviewers. Data independent to dose change were then analyzed through pair-wise, random effects meta-analyses carried out in a frequentist framework with heterogeneity assessed using the I² statistic. Associated cost data were extracted and the impact of change in dose on cost was investigated.

RESULTS: Fourteen articles met the selection criteria with 23 containing complete dose data and 26 containing cost data. A significantly greater proportion of patients on infliximab had a dose escalation compared to those on etanercept (odds ratio 0.17 95% CI 0.07, 0.43; P < 0.001) or adalimumab (odds ratio 0.23 95% CI 0.02, 0.3; P < 0.001). On average, 43.3% of infliximab patients, 7.3% of etanercept patients and 10.9% of adalimumab patients had their dose increased. RA related costs were on average 36% higher in patients who had their infliximab dose increased compared to 4% in patients on etanercept. No suitable data for adalimumab were available.

CONCLUSIONS: A significantly greater proportion of infliximab patients required dose escalation compared to etanercept and adalimumab patients. There is some evidence to suggest that the escalation in dose required to maintain clinical benefit, results in substantially higher costs of treating RA.

Micro-Costing Analysis and Tariff Comparison: The InterSpinoUS Process Device Case

BARCELLINO G1, Corbò M1, Pantaleoni M1, Surace MP2

1 Medtronic SpA, Milan, Italy; 2 IMS Health S.p.A, Milan, Italy; 3 Ospedale di Circolo—Fondazione Macchi, Varese, Italy

OBJECTIVES: In Italy the recent update of the DRG system has led to evaluate the effect on the diffusion of new therapies. The InterSpinoUS Process Device (IPD) implantation represents an innovative strategy for different degenerative spinal pathologies with potential clinical and economic advantages. The aim of this study is to evaluate the hospitalization costs for IPD procedure according to a micro-costing approach and to compare it with current regional DRG tariffs. METHODS: The project, conducted from the hospital perspective, is performed in one pilot centre (Varese hospital); regional benchmark for this kind of procedure in which learning curve is considered completed. The cost analysis is based on the clinical pathway drawn up from the information provided by the medical team. Resource use including staff time, diagnostic tests, drugs, consumables and technology equipment utilization are collected from interviews to the team. Operating room costs, administrative and general costs and follow up hospital resource consumption are derived from hospital accounting data. Unit costs are collected either from hospital accounting or regional tariffs for medical devices and follow up hospital resource consumption are derived from hospital accounting data. Unit costs are collected either from hospital accounting or regional tariffs for medical devices and follow up hospital resource consumption are derived from hospital accounting data.

Cost-effectiveness of Tocilizumab for the Management of Patients with Active Rheumatoid Arthritis despite Previous DMARD Therapy in Mexico

CARNAUD E1, Aguirre A1, Pálsu-Bañett E1, Kavanagh DR2,3,4,5

1 Ro C. Salud Consultores S.A. de C.V., Mexico City, D.F., Mexico; 2 Ro C. Salud Consultores S.A. de C.V., Mexico City, D.F., Mexico; 3 Hospital General de México, Secretaría de Salud, Mexico City, D.F., Mexico

OBJECTIVES: Rheumatoid arthritis (RA) is a chronic, progressive, inflammatory disease that affects physical functioning and quality-of-life and is associated with premature mortality and substantial economic burden. We aimed to assess cost-effectiveness of tocilizumab added to disease-modifying antirheumatic drugs (DMARD) to RA patients with active disease despite DMARD therapy from the Mexican public health care system perspective. METHODS: Two models were designed to compare tocilizumab 8 mg/kg every 4 weeks; infliximab 3 mg/kg (weeks 0, 2, 4, 14 and 22); etanercept 25 mg twice a week and adalimumab 40 mg every other week. First model included only 6-month acquisition costs of drugs and infusion-related costs for infliximab and tocilizumab; the second was a Markov model with four states defined according to Disease Activity Score (DAS-28). Indirect comparison techniques were needed to adjust American College of Rheumatology (ACR) responses rates found in 10 clinical trials with biological agents. ACR-70 at week 24 and overall days spent in remission during 5 years were main outcomes. Unit costs of medications were gathered from public bids; an expert panel was constituted to estimate 3-month resource use by health state. All costs were expressed in 2009 US dollars. RESULTS: First six-month costs were lower with tocilizumab (USD$64418) than with etanercept (USD$6420) and adalimumab (USD$6421). Adjusted ACR70 response rate was higher for tocilizumab than for anti-tumor necrosis factor (TNF) agents: 26% vs. 19%, 18% and 12% for adalimumab, etanercept and infliximab, respectively. Markov model estimates show savings of USD$623 up to USD$681 per patient treated with tocilizumab instead of anti-TNF. Tocilizumab was also associated with mean gains of 9, 12 and 20 days in remission compared to adalimumab, etanercept and infliximab. CONCLUSIONS: When used instead of anti-TNF agents, add-on treatment with tocilizumab brings both health benefits and cost savings for RA patients with inadequate response to previous DMARD therapy.

Cost-effectiveness of Golimumab in Psoriatic Arthritis from the UK Payor Perspective

Cummins E1, Essbebiser C2, Prasad M3, Buchanan J4, Punukuri S5

1 McMaster Development Consultants Ltd, Glasgow, UK; 2 ESIOR Ltd, Kuopio, Finland; 3 Merck & Co, Kenilworth, NJ, USA; 4 Johnson & Johnson Pharmaceutical Services, LLC, Piscataway, NJ, USA; 5 Schering Plough, Malvern, PA, USA

OBJECTIVES: To estimate the cost-effectiveness of golimumab among patients with active PsA from the UK NHS perspective. METHODS: A decision analytic model was used to simulate progression of a hypothetical cohort of active PsA patients on golimumab and other TNF-α inhibitors as well as palliative care. The clinical evidence was derived from clinical trials of TNF-α inhibitors and compared using mixed treatment models. The primary outcome measure was quality adjusted life-years (QALYs) estimated based on change in Health Assessment Questionnaire (HAQ) and Psoriasis Area Severity Index (PASI) from baseline. The annual acquisition cost of golimumab was assumed to be identical to annual cost of other TNF agents. The resource use costs and outcomes were discounted at 3.5% over a period of 40 years. The uncertainty surrounding important variables was further explored using probabilistic sensitivity analyses (PSA). RESULTS: TNF-α inhibitors were significantly superior to palliative care but comparable to each other on Psoriatic Arthritis Response Criteria (PsARC), HAQ and PASI response. The incremental cost-effectiveness ratio (ICERs) for golimumab compared to palliative care was £16,811 for PsA patients and £16,245 for a subgroup of PsA patients with significant psoriasis. At an acceptability threshold of £30,000 per QALY, the probability of golimumab being cost-effective is 89%. CONCLUSIONS: Once monthly, golimumab is a cost-effective treatment alternative for patients with active PsA. With its patient focussed attributes, golimumab is likely to offer additional choice in PsA treatment.

Cost-effectiveness of Teriparatide in Patients with Glucocorticoid-induced Osteoporosis in Sweden

Smedle U1, Greger Z1, Barnett A2,3, Myran JK1, Töö A2

1 Medical Decision Modeling Inc, Indianapolis, IN, USA; 2 Eli Lilly & Company, Prague, Czech Republic; 3 Eli Lilly & Company Ltd., Windlesham, Surrey, UK; 4 Eli Lilly & Company, Windlesham, UK; 5 Eli Lilly Sweden AB, Solna, Sweden

OBJECTIVES: Glucocorticoid-induced osteoporosis is the most common cause of secondary osteoporosis. The objective of this study was to estimate the cost-effectiveness of teriparatide in patients with Glucocorticoid-induced Osteoporosis (GIO). A Monte Carlo simulation was used to model the cost and effects of a simulated cohort of 100,000 patients with GIO treated with teriparatide compared to no teriparatide treatment. The model simulated the course of events in 6-month cycles in individual patients over a lifetime horizon. During each cycle the patients were at risk of experiencing clinical