side effects, which may be prevented with prophylactic prescription of misoprostol, omeprazole, or famotidine. Recently marketed COX-2 specific inhibitor (COX-2) affords protection against gastropathy. **OBJECTIVE:** To assess cost-effectiveness of NSAIDs vs COX-2 and NSAIDs with co-treatments to prevent GI toxicity in the treatment of RA. **METHODS:** Markov models were used to simulate a cohort of RA patients with approximately 2.5:1 male to female ratio and 50 years, taking disease modifying antirheumatic drugs and one of following strategies: NSAIDs without prophylaxis, COX-2, NSAIDs with misoprostol, omeprazole, or famotidine. Data on incidence, costs and consequences of adverse events from treatments were taken from the literature. Costs were measured in 1999 US dollars and health effects expressed as quality-adjusted life years (QALYs). Sensitivity analyses were performed. Costs and health outcomes were discounted at a rate of 3% per year. **RESULTS:** Among the strategies to prevent GI toxicity, COX-2 was the most cost-effective strategy and famotidine was the least cost-effective strategy. The incremental C/E (cost/effectiveness) ratio between no prophylaxis and COX-2 is 62,278 ($/QALY). Sensitivity analyses using incidence rates were robust. **CONCLUSIONS:** COX-2 is the best option among the strategies to prevent GI toxicity. However, the incremental C/E between no prophylaxis and COX-2 strategies is over 60,000 ($/QALY).

<table>
<thead>
<tr>
<th>Strategy</th>
<th>QALY</th>
<th>Costs ($)</th>
<th>ΔC/E ($/QALY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No prophylaxis</td>
<td>11.45</td>
<td>43,474</td>
<td>—</td>
</tr>
<tr>
<td>Misoprostol</td>
<td>11.53</td>
<td>52,817</td>
<td>Extended Dominated</td>
</tr>
<tr>
<td>COX-2</td>
<td>11.68</td>
<td>57,798</td>
<td>62,278</td>
</tr>
<tr>
<td>Famotidine</td>
<td>11.69</td>
<td>87,606</td>
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<tr>
<td>Omeprazole</td>
<td>11.71</td>
<td>63,911</td>
<td>203,766</td>
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</table>

**A COST-COST STUDY COMPARING ETANERCEPT WITH INFlixIMAB IN MODERATE TO SEVERE RHEUMATOID ARTHRITIS**

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**OBJECTIVE:** To compare the total costs associated with two different anti-TNF agents used in the treatment of moderate to severe rheumatoid arthritis: etanercept, which can be administered at home by a subcutaneous injection, versus infliximab, which requires an intravenous infusion in day-care. **METHODS:** An economic model was constructed to determine the costs of both treatments. The cost evaluation included direct medical, direct non-medical and indirect costs. The perspective was that of the Dutch society. The analysis was performed for the adult RA population eligible for treatment with both agents. The base case analysis compared a monotherapy with etanercept versus a combination therapy with infliximab-MTX. Data for the economic model came from published literature, expert opinion and official price and tariff lists. **RESULTS:** The analysis from the society perspective showed that the total annual drug costs per patient do not differ substantially between infliximab and etanercept, with costs of NLG 31,526 (EURO 14,306) and NLG 31,334 (EURO 14,219) respectively. However the other medical costs are substantially higher for infliximab, which is due to the additional costs associated with day-care and use of MTX (NLG 12,621; EURO 5,727). Overall treatment with infliximab is more expensive than treatment with etanercept with total costs of NLG 45,115 (EURO 20,472) and NLG 31,621 (EURO 14,349), respectively (43.7% increase). The sensitivity analysis showed that the results vary with dosing and dosing interval for infliximab. **CONCLUSION:** Based on the assumptions used in the model, we may conclude that the use of etanercept compares favourable with infliximab: the total costs are substantially lower, while the clinical outcomes of etanercept are at least equivalent to those of infliximab.

**DIRECT MEDICAL COST OF CHRONIC POLYARTHRITIS IN GERMANY**

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**OBJECTIVE:** To evaluate the total resource consumption and the costs for diagnostics and treatments per patient with severe chronic polyarthritis (cp) from the third party payers’ (TPP) perspective in Germany. **METHODS:** A retrospective cross-sectional cost of illness-study was performed. Patients (18 to 75 years) with acute disease activity of cp with a history of therapy failure with MTX over a minimum of 4 months or failure of more than one basic treatment were included. Hospital and practice data was abstracted from patient’s records. Statistical analysis and cost evaluation were performed by using the SAS package. Cost data was taken from published German tariff and price lists. **RESULTS:** The mean age of the patients was 56 years, 71.2% were females. The mean onset of the disease was 11.2 years ago. The total average costs of outpatient care (n = 191 patients) were approximately 3,445 DM (95% CI: 2,981–3,907 DM) and for inpatient care (n = 76 patients) 10,433 DM (95% CI: 8,800–12,067 DM) per year. Concerning outpatient care drug therapy could be identified as the most
relevant cost driver (69% of the total costs) followed by diagnostic procedures (10%). The duration of the stay in hospital is the decisive factor for the costs of inpatient care from TPP’s perspective in Germany. The average hospitalization length was 19.5 days. Assuming a hospitalization rate of 10% the direct medical costs per cp patient and year were 4,488 DM. CONCLUSION: It could be shown that treatment of chronic polyarthritis is as cost-intensive as other chronic diseases. Because of the growing interest in the development of new concepts of patient care (e.g. disease management), further cost and outcome data should be assessed to show the relative value for money (e.g. with cost-effectiveness analysis) in order to guarantee an appropriate allocation of resources.

**COX-II INHIBITORS AND NSAIDS: FINDINGS OF A NICE SUBMISSION**

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The National Institute of Clinical Excellence (NICE) is conducting an appraisal of the new COX-II specific inhibitors (celecoxib and rofecoxib). NICE asked the Primary Care Rheumatology (PCR) society to comment on the ‘real-life’ clinical and cost-effectiveness of the COX-II specific inhibitors against NSAIDs and the COX-II selective inhibitors (etodolac and meloxicam) in the treatment of arthritis. This paper summarises the findings of the PCR’s NICE submission. **OBJECTIVES:** To use evidence-based medicine to compare the ‘real-life’ clinical and cost-effectiveness of the COX-II specific versus NSAIDs and the COX-II selectives, in the treatment of arthritis and prevention of drug-related gastro-intestinal (GI) adverse events in primary-care. **METHODS:** Using PubMed, a literature review of NSAIDs, COX-II inhibitors (celecoxib, etodolac, meloxicam and rofecoxib) and ‘best-practice’ guidelines in the treatment of arthritis was undertaken. The review concentrated on the problems of NSAID-related GI adverse events, their associated treatment costs and whether COX-II inhibitors provide alternative, clinically and cost-effective methods of treating arthritis. **RESULTS:** NSAID-related GI risk rises significantly with patient age. In the UK, NSAID-related deaths average 2,600 patients annually. The mean, NHS cost of NSAID-related, GI adverse events is an extra £48 per NSAID patient per year. COX-II specifics have significantly better GI tolerability to NSAIDs. But COX-II specifics cost the NHS an extra £40.15 minimum annually for the average NSAID patient. COX-II selectives are cheaper than COX-II specifics and have significantly higher GI tolerability than NSAIDs. **CONCLUSIONS:** COX-II inhibitors represent a more clinically effective solution for treating arthritis and reducing GI adverse events in primary care than NSAIDs. There is a lack of ‘real-life evidence’ to determine for which at risk patients COX-II specifics are cost-effective over the COX-II selectives and NSAIDs. Best-practice guidelines support the view that there is a role for COX-II specifics, COX-II selectives and NSAIDs in treating arthritis in primary care.

**THE COSTS OF RHEUMATOID ARTHRITIS: IS THERE A NEED FOR STANDARDIZATION OF METHODS?**

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**OBJECTIVE:** To summarise the state of knowledge in terms of economic impact of rheumatoid arthritis (RA), to highlight the level of aggregation of categories of costs in different economic evaluations and to identify the burden of productivity costs in RA. **METHODS:** Several computerised databases (Medline, Embase, Econlit, OHE HEED, NHS EED) were searched to identify the relevant studies for the review. Among the hundreds of records found, 18 were selected for the analysis. The majority of them were cost of illness studies. At the first stage three main categories of costs were considered (medical direct costs, non-medical direct costs, productivity costs) and the economic impact of each category was quantified. Then subcategories of costs were investigated in order to assess the grade of homogeneity in the level of aggregation among different studies. **RESULTS:** Direct medical costs were included in every study. Total average direct medical costs were in the range of US$6000 per year (per patient). Among them, hospital costs constituted in general the largest amount (from 25 to 40%) followed by medications and arthritis professional visits. There was considerable lack of homogeneity in the assessment of cost categories. Many studies showed a skewed distribution of costs among patients in relation to their level of severity. Non-medical direct costs were in general not substantial. By contrast the economic impact of indirect costs has resulted extremely high, ranging from 1 to 3–4 times the direct costs. Productivity costs are likely to be underestimated given the difficulty of assessing the costs associated with premature mortality. **CONCLUSION:** The literature review indicated a strong need for a standardization in the assessment of relevant costs for RA. Although there were differences in the level of aggregation, all studies reported productivity costs to be the largest category. New drugs with the ability to reduce the long-term consequences of RA are likely to have a significant economic impact.

**BUDGETARY IMPACT ANALYSIS FOR USE IN REIMBURSEMENT PROCESS OF ETANERCEPT IN MODERATE TO SEVERE RHEUMATOID ARTHRITIS**

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