for income was higher than that of health. In all cases, as often observed, hyperbolic discounting characterised by decreasing rate over increasing delay, was ob-

served.

PRM60 GENERAL METHODOLOGICAL ISSUES IN COST-EFFECTIVENESS ANALYSIS INSPIRED BY THE ASSESSMENT OF DASATINIB, NILOTINIB AND IMATINIB FOR 1ST- LINE CHRONIC MYELOID LEUKAEMIA Hayle M1, Farey T1, Ciani O2, Crabtree L1, Jones-Hughes T1, Cooper C1, Dispenzi L2, Venkatachalam Malli K1, Ukimoune O1, Garule R1, Anderson R1

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OBJECTIVES: In 2011-12, the cost-effectiveness of imatinib, dasatinib and nilotinib for 1st-line chronic myeloid leukaemia in the UK was evaluated by NICE. We discuss three methodological issues which strongly influence the estimated cost-effective-
ness of subsequent drugs. Method A: traditional method of modelling estimated costs and QALYs of subsequent drugs. Alternatively, minimise impact of cost-
effectiveness of subsequent treatments by either Method B: setting per patient costs and QALYs of subsequent treatments equal between treatment arms, or Method C: cap the cost-effectiveness ratio whilst on subsequent treatments at the willingness to pay threshold; 3) Future drug prices: This is an important issue given the uncertainty of the cost of the drug until patent expiration.

CONCLUSIONS: Which method to use depends on the cost-effectiveness of many other drugs and medical devices. METHODS: We discuss the pros and cons of the following competing methods: 1) Estimation of overall survival: Method A: estimated as the cumulative duration of 1st-, 2nd- and 3rd-lines of treatments. Method B: estimated from the surrogate responses: complete cytogenetic response and major molecular response; 2) Cost-effectiveness of subsequent treatments: the cost-effectiveness of 1st-line drugs are substantially affected by the cost-effectiveness of subsequent drugs. Method A: traditional method of modelling estimated costs and QALYs of subsequent drugs. Alternatively, minimise impact of cost-effectiveness of subsequent treatments by either Method B: setting per patient costs and QALYs of subsequent treatments equal between treatment arms, or Method C: cap the cost-effectiveness ratio whilst on subsequent treatments at the willingness to pay threshold; 3) Future drug prices: This is an important issue given that the patent for imatinib will expire soon, in 2016, after which its price may fall further.

PRM61 EXTERNAL VALIDATION OF A CARDIO-VASCULAR DISEASE MODEL Chargé P1,3, Conrads-Frank A2,4, Kuerwits S1, Jegan N3, Popert U4, Donner-Banzhoff N2, Siebert OD

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OBJECTIVES: Cardiovascular disease is the leading cause of death in Germany. For a better communication of the individual risk profile, a group of researchers of the University of Marburg developed ARRIBA, a tool for a better communication be-
tween practitioners and the patients. This study reports the individual 10-year probability of a cardiovascular event. To further enhance communication and to include lifetime risk and time-to-event estimates in this tool, we developed and validated a state-transition microsimulation model (STMM). The focus of this pre-
sentation is the validation and the comparison of our model with the results against the results from a US observational multi-cohort study (Berry et al., 2012)

RESULTS: This study included data from 18 cohort studies with a total of 257,384 subjects and estimated the lifetime risk of cardiovascular events. Our STMM was populated with 28 cohorts closely matching 7 risk profiles and 4 age groups of the observational study and was evaluated for the time period of data collection in the observational study. Projected outcomes were proportion experiencing myocardial infarction, stroke, cardiovascular death, or any cardiovascular event. These outcomes were compared to the observed outcomes. RESULTS: When comparing the lifetime risk of experiencing any cardiovascular event estimated by the model to the observed data, 15 and 14 of the 28 cohorts were within the 95% confidence intervals of the observed results for men and women, respectively. The other estimates were within two and a half times this range. Although the observational study was a useful source for validation, the validation process was challenging with respect to matching cohorts and outcomes. One issue is whether a validation to a US cohort study is suitable for a European model. CONCLUSIONS: External validation increased our confidence in the microsimulation model. When comparable European data become available the validation will be repeated.

PRM62 TIME-DEPENDENCY FOR TREATMENT SEQUENCES: A CASE-EXAMPLE IN EPILEPSY Shah D1, Khan N2, Hawkins N3, Briggs A3

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OBJECTIVES: The memory-less feature of Markov models can be a limiting factor when treatment-sequencing needs to be modeled and the transition probability in second- and subsequent-line treatments are not constant. Although funnel-states are commonly used to model time-dependency, they become untractable for patient simulation models and/or sophisticated software packages as they are required to model complex time dependency. An alternate method of using nested markov models was presented at a previous conference to model time-dependency in treatment sequences for a hypothetical model in Excel. This method is now applied to a published model to examine its performance with real data.

METHODS: The Wilby 2004 epilepsy model is used as a reference to derive model inputs and validate results. It is a probabilistic treatment sequencing decision model in epilepsy implemented using R. The nested markov model involves first discounting, then combining the net present values of each treatment into the treatment sequence by weighting proportional to the time spent in the sequence, lastly followed by further discounting to account for place-
ment in the sequence. Results obtained using the nested markov methods are validated against those published in Wilby 2004. RESULTS: Quality-adjusted life-years obtained with the nested Markov modeling approach were similar and were within the confidence intervals of results obtained by Wilby 2004. CONCLUSIONS: Nested markov models can be a simple alternative to model time-dependency if transpar-
cency and ease of use is required. A straightforward and intuitive approach to modeling a fixed treatment sequence, however, it may not be suitable if the position in a sequence is inter-changeable, and treatment effectiveness depends on the position in a sequence (e.g. cancer therapies where disease progression impacts treatment effectiveness).

PRM63 LONG-TERM BURDEN OF ASTHMA IN CHILDREN WITH ALLERGIC RHINITIS/ CONJUNCTIVITIS Langkilde LE1, Andersen L2, Nørgaard Andreaensen J3

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OBJECTIVES: To assess the long-term burden of asthma in children with allergic rhinitis/conjunctivitis. METHODS: We reviewed the literature on incidence of asthma in patients with allergy. Furthermore we estimated long-term outcomes associated with allergic rhinitis/conjunctivitis in children using a Markov health state model. RESULTS: Up to 42% of children using data from one longitudinal pro-

follow-up, which asthma status was recorded up to 10 years in patients receiving only symptomatic treatment for allergy and asthma symptoms. The model was used to explore the impact of key drivers of long-term patient outcomes. Burden to patient was measured as the difference between net present value of QALYs and life-years. RESULTS: Allergic rhinitis/conjunctivitis in childhood is associated with a risk of developing asthma. The asthma risk is highest at younger age and decreases as the child reaches adolescence and adult age. Furthermore, allergic rhinitis is a risk factor for childhood allergic asthma to persist into middle age. The model analysis showed that in one per hundred 10-year old patients with hay fever, but no previous asthma: 57 will develop asthma over a 10 years horizon, In total 55 QALYs are lost over a 10 years horizon of which 67% is attributable to allergic asthma, and 33% is attributable to QALYs. CONCLUSIONS: Childhood allergic rhinitis is a risk factor for developing allergic asthma in childhood/ preadolescence. Allergic asthma in turn has a profound effect on the long-term burden of allergic rhinitis/conjunctivitis. Literature suggests that childhood asthma may impact on quality of life also when the patient reaches middle age. Taken together this suggests a large potential for specific immunotherapy with disease-modifying properties to reduce the burden of allergy and allergic asthma.

PRM64 BAYESIAN MTC MODELS TO COMBINE EVIDENCE FROM DIFFERENT TRIAL DESIGNS Schmitz S1, Adams RC2, Barry M3, Walsh C1

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OBJECTIVES: Bayesian mixed treatment comparison models (MTCs) provide a powerful methodology to obtain estimates of relative efficacy between alternative treatments when head to head evidence is not available or not sufficient. Most evaluations only consider evidence from randomized controlled trials (RCTs), while information from other trial designs is ignored. In this work we propose 3 methods to extend MTC models to systematically include evidence from different trial designs using an application in Rheumatoid Arthritis (RA). METHODS: A sys-
tematic literature review identified 13 RCTs and 3 observational trials assessing the treatment effects of five anti-TNF agents currently licensed in Europe. Naive Pool-
ing does not differentiate between designs, one simply pools across all studies. It is not possible to down-weight designs of lesser quality or to adjust for bias. Alterna-
atively observational data can be analysed separately and the results used to inform the model. The aim of this work is to propose a framework that allows for bias adjustments and controlling the influence on the overall effect. In addition to that, a 3-level hierar-
chical model allows the direct comparison of estimates on study type level to overall level. The method accounts for between trial design heterogeneity; overall estimates then become more conservative when study type estimates differ. RESULTS: Including evidence from observational trials to estimate the relative effec-
tiveness between anti-TNF agents in RA has strengthened our belief in the effect estimates. Overall, the observational trial data found less difference between the agents than was observed by RCT evidence as a result when meta-analyses are validated using real data, results from observational trials can add more informative data. CONCLUSIONS: Fewer studies are available for many disease areas providing additional information on treatment effec-
tiveness. We think it is important for an informed decision making process to include all available evidence. The proposed techniques provide a framework for systematically including evidence from different trial designs in a MTC model.