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

PMG60
GENERAL METHODOLOGICAL ISSUES IN COST-EFFECTIVENESS ANALYSIS INSPIRED BY THE ASSESSMENT OF DASATINIB, NILOTINIB AND IMATINIB FOR 1ST- LINE CHRONIC MYELOID LEUKAEMIA
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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 these agents within real world clinical practice, which influence 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 cytogenic response and major molecular response; 2) Cost-effectiveness of subsequent treatments: the cost-effectiveness of 1st-line drugs are substantially affected by the cost-effective-
ness of subsequent drugs. Method A: traditional method of modelling estimated costs and QALYs of subsequent drugs. Alternatively, minimize 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 costs and QALYs of subsequent treatments equal between treatment arms, or for 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 cytogenic response and major molecular response; 2) Cost-effectiveness of subsequent treatments: the cost-effectiveness of 1st-line drugs are substantially affected by the cost-effective-
ness of subsequent drugs. Method A: traditional method of modelling estimated costs and QALYs of subsequent drugs. Alternatively, minimize 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 costs and QALYs of subsequent treatments equal between treatment arms, or

PMG61
EXTERNAL VALIDATION OF A CARDIO-VASCULAR DISEASE MODEL
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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 ARKBEA, a tool for a better communication be-
tween physicians and patients and the patients. ARKBEA 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 comparison of our model with the existing model. METHODS: Our STMM was validated against the results from a US observational multi-cohort study (Berry et al., 2012). 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 results, 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 in-
creased our confidence in the microsimulation model. When comparable European data become available the validation will be repeated.

PMG62
TIME-DEPENDENCY FOR TREATMENT SEQUENCES: A CASE-EXAMPLE IN EPILEPSY
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OBJECTIVES: The memory-less feature of Markov models can be a limiting factor when treatment-sequencing needs to be modelled and the transition probability in second- and subsequent-line treatments are not constant. Although tunnel-states are commonly used to model time-dependency, they can become unruu. Hence, patient simulation models and/or sophisticated software packages such as R 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 in Excel and compared to the results from 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 dismantling the model by treatment type, then combining the net present values of each treatment into the treatment sequence by weighting proportional to the time spent in the sequence, last followed by further discounting to account for place-
ment in the sequence. Results obtained using the nested markov methods are validated by a closely published in 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-
cy is necessary. In particular, using 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).

PMG63
LONG-TERM BURDEN OF ASTHMA IN CHILDREN WITH ALLERGIC RHINITIS/ CONJUNCTIVITIS
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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 using data from different sources. RESULTS: The follow-up, where 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 de-
creases as the child reaches adolescence and adult age. Furthermore, allergic rhi-

nitis is a risk factor for childhood asthma to persist into middle age. The model analysis showed that in per one 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 Additional 23 respectively 43 QALYs are lost when analyzing on a 15 year horizon even when assuming no additional cases occur after year 10. CONCLUSIONS: Childhood allergic rhinitis is a risk factor for developing allergic asthma in childhood/ preadolescence. Allergic asthma in turn has a pro-
found effect on quality of life also when the patient reaches middle age. Taken together this suggests a large potential for specific immunotherapy with disease-modify-
ning properties to reduce the burden of allergy and allergic asthma.