come countries. METHODS: We systematically reviewed the literature on the application of CVD risk models in pharmacoeconomic studies. We assessed the quality of the models in these studies by evaluating the agreement of the population characteristics and the time horizon applied between the risk model and the pharmacoeconomic study, the appropriateness of the risk model for the population studied, and the incorporation of the uncertainty in the risk model in these studies. RESULTS: We identified 67 studies using published CVD risk models. The studies demonstrated the usefulness of projecting intermediate effectiveness endpoints to long term, health and cost related, benefits. However, our quality assessment highlighted the distance between the populations of the risk model and the studies reviewed, the disagreement between risk model and study time horizons, and the lack of consideration of all uncertainty surrounding risk predictions. CONCLUSIONS: Given that utilizing a risk model to project the effect of a pharmacological intervention to CVD events provides an estimate of the intervention’s clinical and economic impact, consideration should be paid on the agreement and disagreement between all survival of the general population, health-economic models use life tables to predict survival of the general population and may therefore also underestimate survival. Our study compares survival prediction methods and discusses implications for health economic models. METHODS: Period life expectancy at age 50 calculated from Dutch mortality rates published for 2009 was compared with life expectancy of a cohort aged 50 in 2009 calculated from projected mortality rates forecasted by the standard Lee-Carter approach. The Lee-Carter model forecasts the level and age pattern of mortality based on the combination of information from the period and cohort data sets by means of a decomposition of mortality rates and statistical time series methods. Mortality rates were taken from the Human Mortality Database. Projected rates were based on historical data between 1970 and 2009. RESULTS: Based on projected mortality, cohort life expectancy was 34.97 years whereas period life expectancy was only 32.37 years (−2.60 years). When life years were discounted at a 1.5% rate, the corresponding values were 25.31 and 26.60 years (−1.29 years). CONCLUSIONS: The analyses shows that taking into account the decrease in survival over time results in a difference of 7% in undiscounted and 4% in discounted life expectancy in the Netherlands. This difference can have a substantial impact on cost-effectiveness results, especially of curative interventions for diseases that are life threatening or of prevention programmes over a long time horizon. In these cases, sensitivity analysis should be carried out to investigate the impact of decreasing mortality.

PRM45
UTILITY ESTIMATION FOR VISUAL ACUITY HEALTH STATES: AN ORIGINAL AND MORE FLEXIBLE APPROACH TO TRANSLATE PUBLISHED EVIDENCE INTO A MORE FLEXIBLE ESTIMATION

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2Objective: In developed countries mortality in the general population has been declining for several decades and is anticipated to decrease further, especially among the elderly. Life tables based on national statistics reflect mortality conditions among the elderly. Life tables based on national statistics reflect mortality conditions among the elderly. When forecasting life expectancy was only 32.37 years (−2.60 years). When life years were discounted at a 1.5% rate, the corresponding values were 25.31 and 26.60 years (−1.29 years). CONCLUSIONS: The analyses shows that taking into account the decrease in survival over time results in a difference of 7% in undiscounted and 4% in discounted life expectancy in the Netherlands. This difference can have a substantial impact on cost-effectiveness results, especially of curative interventions for diseases that are life threatening or of prevention programmes over a long time horizon. In these cases, sensitivity analysis should be carried out to investigate the impact of decreasing mortality.

PRM46
DEVELOPMENT OF A FRAMEWORK FOR COST-EFFECTIVENESS ANALYSIS COHORT SIMULATION USING AN ORDINARY DIFFERENTIAL EQUATION SOLVER ALGORITHM IN R

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OBJECTIVES: Dynamical processes in cost-effectiveness analysis (CEA) are typically described using Markov models that account for the full stochastic nature of the process, or alternatively using systems of ordinary differential equations (ODEs). In CEA, ODEs are useful for defining dynamical systems with complex, time-varying properties that often need to be considered, and are difficult to implement as Markov models. However, in the field of CEA, fixed step sizes (‘cycle lengths’) are used for solving systems of ODEs, which may result in bias if the step size is too large in relation to the magnitude of change. The aim of this project was to implement and demonstrate the use of a well established dynamical ODE solver algorithm (LSODA) for CEA in the statistical scripting language R, and to quantify bias in outcome caused by use of a fixed-size step cycle simulation approach.

METHODS: To demonstrate the proposed approach, a previously reported CEA on adjuvant breast cancer therapies was re-analysed using the ODE solver algorithm LSODA. A model implementing the fixed-cycle length method was also developed to compare bias by using a range of different cycle lengths. RESULTS: The CEA model was successfully developed using the ODE solver LSODA. The use of fixed cycle lengths resulted in bias compared to the outcome of the ODE model. A cycle length of 1 year resulted in an underestimation of 0.016 absolute LYS (5.6%) and €158 (6.8%) compared to the dynamical-step size model. CONCLUSIONS: The developed dynamical approach was found to be suitable for conduct of CEA’s and feasibility of implementation. Moreover, it was demonstrated that use of fixed cycle lengths could potentially cause unnecessary bias in CEA outcomes. Finally, we advocate use of scripting languages such as R in the field of health economics to improve transparency, reproducibility and overall integrity of conducted CEA.