ADVISHE: A new tool to report validation of health-economic decision models
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population are 18.5% for males and 9.8% for females. CONCLUSIONS: Random sampling from patient-level data provided the best approximation of the NHANES population predicted CVD rates. The cholescy decomposition approach was slightly limited since only continuous variables could be utilized which could explain the deviation from the population predicted CVD rates. Independent sampling under-estimates the mean by ~20%, an interesting finding as many individual simulation models created patients with this approach. Researchers should be cautious in their use of summary statistics when populating individual simulation models.

**PM74**

**VALIDATION OF THE SPHR DIABETES PREDICTION MODEL**

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**OBJECTIVES:** We have developed a model to evaluate type-2 diabetes prevention interventions. We aimed to validate this model against external data to test the accuracy of our predictions. **Methods:** An individual patient simulation was developed to predict longitudinal trajectories of HbA1c, 2-hr glucose, FPG, BMI, systolic blood pressure, total cholesterol and HDL cholesterol based on statistical analyses of the Whitehall II longitudinal cohort. Criteria for diabetes diagnosis were flexibly specified based on the individual patient characteristics, to attempt to capture the full range of complications of diabetes were estimated from the UKDFD outcomes model. Several validations were performed to compare model outcomes with reported data from external sources. We assessed the predicted diabetes incidence using data from the EPIC Norfolk cohort. Data from the Health Survey for England (HSE) 2003 cohort was simulated for eight years to compare predicted diabetes incidence and metabolic distributions with HSE 2011 data. We compared microvascular, cardiovascular and mortality outcomes in a diabetic population with those observed in the UKDFD. We assessed the performance of the model in predicting the results of the ADDITION trial for diabetes screening. **Results:** We found that the model overestimated three-year incidence of diabetes, particularly in high-risk individuals but underestimated diabetes incidence in medium risk individuals (HbA1c 5.5-5.9) compared with the EPIC-Norfolk data. Predictions from HSE 2003 were fairly accurate. Predictions for mortality were not related to the model and were slightly underestimated. The model replicated the non-significant difference seen between control and intervention arms of the ADDITION trial, but overestimated total mortality and cardiovascular disease. CONCLUSIONS: The Sphr Diabetes model appears to be fairly accurate at predicting diabetes incidence, but needs to be improved to accurately predict mortality rates in a newly diagnosed diabetic cohort, and underestimate cardiovascular disease and mortality compared with the UKDFS.

**PM75**

**USE OF MODEL AVERAGING TECHNIQUES IN COST-EFFECTIVENESS ANALYSIS IN ONCOLOGY**

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**OBJECTIVES:** Often in cost-effectiveness analysis (CEA) of oncologic drugs, survival data from a randomized controlled trial are extrapolated to a lifetime horizon using parametric regression techniques. To capture parameter uncertainty in the analysis, regression parameters along with other model parameters are varied in probabilistic sensitivity analysis. However, structural uncertainty in the choice of regression model is currently not considered. This study described a model-based CEA framework that provides an example to address structural uncertainty in CEA. **METHODS:** Using a cohort partition model, the numbers of patients in "progression-free", "progressed", and "dead" cohorts were extrapolated from progression-free survival (PFS) and overall survival (OS) curves. Weibull, exponential, lognormal, log-logistic, generalized gamma, and Gompertz parametric models were used to extrapolate these curves to a lifetime horizon. Total costs, life year (LY), and quality adjusted life year (QALY) for each regimen model were calculated based on progression-free survival (PFS) and overall survival (OS) curves. Weibull, exponential, lognormal, log-logistic, generalized gamma, and Gompertz parametric models were used to extrapolate these curves, and corresponding decision rules were developed. The matrices obtained and corresponding decision rules were: for IFB (0.65, 6.3 10-5, 0.075) / (MMML); for ADA (0.41, 9.21 10-5, 6.4 10-5, 0.075) / (MMML); for CZB (0.52, 1.30 10-4, 1.50 10-4, 0.075) / (MH/HB). Thus the CZB would be the slightly-favorable option, versus IFB and ADA (unfavorables). **CONCLUSIONS:** It is possible to apply methods of PIMA to highly uncertain oncologic settings. Assessing the model, the CZB would be a most favorable choice in off-label use for CD.

**PM76**

**COMPARING THREE DIFFERENT METHODS OF HALF-CYCLE CORRECTION**

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**OBJECTIVES:** To compare three different half-cycle correction methods and their effect on the final results of Markov models. **METHODS:** To assess the relative performance of the alternatives to the standard half-cycle correction we constructed 5-, 10-, and 20-year Markov model where the courses of the number of patients in health states follow different shapes to represent the most likely cases in modelling practice. We applied three different correction methods (standard half-cycle correction, Simpson's method and using the mid-cycle values) and we also looked at the results without any correction. We calculated the ICER (incremental cost-effectiveness ratio) for all patients included in the model, but only for those patients who could score items in three e-cohorts. Participants were HE modelling experts, covering various nationalities and work environments. They could comment on relevance, feasibility and formulation of the items and received feedback on comments from others. This resulted in a draft tool of selected items, which was tested and improved in two further rounds.

**PM77**

**ADJUSTMENT OF A MODEL OF DECISION BASED ON FUZZY LOGIC TO PHARMACOECONOMICS: TREATMENT OF CROHN’S DISEASE WITH ANTITNF IN OUT OF LABEL USE**

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**OBJECTIVE:** We present a model based decision model on fuzzy logic, and apply to off label use of Adalimumab (ANTITNF) in Crohn’s disease (CD) (Infliximab (IFB) 30 mg/kg/8 weeks) follow different shapes to represent the most likely cases in modelling practice. The second most accurate method was using the mid-cycle correction. The standard half-cycle correction method provided more accurate results than calculations without any kind of half-cycle correction with the exception of one set of input parameters. **CONCLUSIONS:** Based on our model the most accurate method for half-cycle correction is Simpson’s method as in most cases it was the closest to real data. It is important to note that with a few exceptions even the standard method’s results were more accurate than in cases where no half-cycle correction was applied.

**PM78**

**MULTI-CRITERIA DECISION ANALYSIS (MCDA): TESTING A PROPOSED MCDA MODEL FOR ORPHAN DRUGS**

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**OBJECTIVES:** Since the introduction of the orphan drugs in Europe, it has been suggested that the general method of approval for drugs (i.e., reimbursement) is not necessarily suitable for orphan drugs. The National Institute for Health and Clinical Excellence indicated that several criteria other than cost and efficacy could be considered in reimbursement decisions for orphan drugs. The aim of this study was to test the proposed model of MCDA framework developed using the nine criteria suggested by Hughes-Wilson et al. A supplementary literature review was conducted to identify other attributes described in the application of MCDA in rare diseases. A numerical scoring matrix was developed based on these criteria. The literature review identified further commonly cited criteria: ’convenience of administration’, ‘age of the target population’, ‘quality of life’, and ‘drug innovation’ that were added to the aggregate index scores. In the drugs studied, the Kappa of 0.808 and 0.704 when costs were included and not included, respectively. The standard error of the slope varied from 7711.9 to 10443.3 when costs were included and not included, respectively. **CONCLUSIONS:** This quantitative study provided insight into using MCDA and its framework that was proposed by Hughes-Wilson et al., and compared to a range of orphan drugs in different diseases to test the correlation between drug price and aggregated MCDA scores for each product. **METHODS:** A MCDA framework was developed using the nine criteria suggested by Hughes-Wilson et al. A supplementary literature review was conducted to identify other attributes described in the application of MCDA in rare diseases. A numerical scoring matrix was developed based on these criteria. The literature review identified further commonly cited criteria: ’convenience of administration’, ‘age of the target population’, ‘quality of life’, and ‘drug innovation’ that were added to the aggregate index scores. In the drugs studied, the Kappa of 0.808 and 0.704 when costs were included and not included, respectively. The standard error of the slope varied from 7711.9 to 10443.3 when costs were included and not included, respectively. The literature review identified further commonly cited criteria: ’convenience of administration’, ‘age of the target population’, ‘quality of life’, and ‘drug innovation’ that were added to the aggregate index scores. In the drugs studied, the Kappa of 0.808 and 0.704 when costs were included and not included, respectively. The standard error of the slope varied from 7711.9 to 10443.3 when costs were included and not included, respectively. The standard error of the slope varied from 7711.9 to 10443.3 when costs were included and not included, respectively. **CONCLUSIONS:** This quantitative study provided insight into using MCDA and its framework that was proposed by Hughes-Wilson et al., and compared to a range of orphan drugs in different diseases to test the correlation between drug price and aggregated MCDA scores for each product. **RESULTS:** The literature review identified further commonly cited criteria: ’convenience of administration’, ‘age of the target population’, ‘quality of life’, and ‘drug innovation’ that were added to the aggregate index scores. In the drugs studied, the Kappa of 0.808 and 0.704 when costs were included and not included, respectively. The standard error of the slope varied from 7711.9 to 10443.3 when costs were included and not included, respectively. **CONCLUSIONS:** This quantitative study provided insight into using MCDA and its framework that was proposed by Hughes-Wilson et al., and compared to a range of orphan drugs in different diseases to test the correlation between drug price and aggregated MCDA scores for each product.
addition, the Dutch National Health Care Institute commented on usefulness for decision makers. The Health Economic models are a results from the workshop to the Dutch Health Care

**OBJECTIVES:** Traditional indirect treatment comparison methods assume the underlying survival profiles of treatments are similar (i.e. proportional hazards). However, given the specific characteristics of the disease an evaluation of existing approaches to be used within health economic models to quantify this relationship, specifically when OS data are not available or immature and to identify the circumstances when particular approaches may be most relevant.

**PRM83**

**COMPARISON OF METHODS TO ESTIMATE HEALTH STATE UTILITIES IN METASTATIC BREAST CANCER (MBC)**

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**OBJECTIVES:** Patient-level utility values for different stages of MBC and toxicities commonly associated with chemotherapy regimens are useful for health economic assessments. Three methods to estimate utilities exist when direct utility data are not available: utility 'mapping' from existing disease-specific scales, vignette studies that describe the health states; or derivation of preference-based measures from an existing condition-specific scale. This study compares utility estimates in MBC utilizing the above methods. METHODS: Based on data from a phase 1 clinical trial in MBC (N=1102) utility mapping was conducted using a published regression algorithm to convert the EORTC QLQ-C30 questionnaire to the EQ-5D utility. Mean utility values were estimated for relevant health states: stable disease (SD), tumor response (TR), disease progression (DP) and common toxicities. Results were compared to previously published values obtained for a vignette study conducted in one hundred members of the general public. RESULTS: Observed MBC utilities were similar in mapping vs. vignette studies for SD: 0.697 vs. 0.715, and TR: 0.782 vs. 0.760. General public respondents in the vignette study assigned much lower utility to symptomatic DP (0.443) vs. imaging-based DP in mapping study (0.679); and disutility for toxicities: vomiting 0.109 vs. 0.050; fatigue 0.115 vs. 0.029; febrile neutropenia 0.159 vs. 0.027; and rash 0.255 vs. 0.027. Conclusion: Utility of different methods to estimate utilities in MBC may lead to a wide range of estimated values with potentially significant implications for health economic evaluation. Caution must be exercised when comparing utility values derived using different methods. It is preferable to use such data from patients directly and use vignettes as a last resort.

**PRM84**

**COST-EFFECTIVENESS MODELS FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): CROSS-MODEL COMPARISON OF HYPOTHETICAL TREATMENT SCENARIOS**

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**OBJECTIVES:** To compare different COPD cost-effectiveness models with respect to structure and input parameters and to cross validate the models by running the same hypothetical treatment scenarios. **METHODS:** COPD modeling groups simulated four hypothetical interventions with their model and compared the results with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. The four interventions modeled assumed: 1) 20% reduction in decline in lung function, 2) 25% reduction in exacerbation frequencies, 3) 10% reduction in all-cause mortality and 4) all these with a reference scenario of no intervention. **RESULTS:** Seven or nine contacted COPD modeling groups agreed to participate. Differences in 5-year QALY gains ranged from 0.00020 to 0.039 for intervention one, 0.0089 to 0.075 for intervention two, 0.025 to 0.081 for intervention three. The differences in costs ranged from €561 to €912 for intervention one, €739 to €1350 for intervention two and €1410 to €1618 for intervention three. The 5-year cost-effectiveness ratios (ICERs) for the most comprehensive intervention, intervention four, was €7,000/QALY for two models, €25,000 to €28,000/QALY for three models.