population are 18.5% for males and 9.8% for females. **CONCLUSIONS:** Random sampling from patient level data provided the best pretest probability of the NHANES population predicted CVD rates. The cholesky 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 underestimation was seen in some regions. About 75%–80%, 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.

**PMF74**

**VALIDATION OF THE SPHR DIABETES PREVENTION 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 decision rules. **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. Simulation was run to simulate the complications of diabetes were estimated from the UKDFS 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 disease incidence and metabolic distributions with HSE 2011 data. We compared microvascular, cardiovascular and mortality outcomes in a diabetic population with those observed in the UKDFS. 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 in the general population by 6% compared to reported data, 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 similar to those simulated with the UKDFS, although mortality were slightly under-predicted. 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 Diabetic Prevention model appears to be fairly accurate at predicting complications to diabetes at the population level. **Outcomes:** The current data provides an example to address structural uncertainty in CEA. **METHODS:** Using a cohort partition model, the numbers of patients in “progression-free”, “progressed”, “dead” and “alive” were calculated from progression-free survival (PFS) and overall survival (OS) curves. Weibull, exponential, lognormal, log-logistic, generalized gamma, and Gamma-Copula parametric models were used to extrapolate these curves to a lifetime horizon. Total costs, life years (LY), and quality adjusted life years (QALY) were included. **RESULTS:** Weibull, lognormal and Gamma-Copula distributions provided the best fit for all survival curves. Total costs, life years and QALY were calculated directly from progression-free survival (PFS) and overall survival (OS) curves. **CONCLUSIONS:** Choice of parametric models often has the biggest impact on the model outcomes. **PMF75**

**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 phase III randomized controlled trials are extrapolated to a lifetime horizon. Total costs, life year (LY), and quality adjusted life years (QALY) are modelled. **METHODS:** Exponential, generalized gamma, and Gompertz parametric models were used to extrapolate survival data to a lifetime horizon. Total costs, life year (LY), and quality adjusted life years (QALY) were included. **RESULTS:** Weibull, lognormal and Gamma-Copula distributions provided the best fit for all survival curves. **CONCLUSIONS:** Choice of parametric models often has the biggest impact on the model outcomes. **PMF76**

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

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**OBJECTIVES:** To compare the performance of the standard half-cycle correction method and two recent improvements to this method over selected parameter values and used to predict the incidence of cancer in the general population. The study is designed to assess the performance of the standard half-cycle correction method over a range of parameter values. **METHODS:** The methods were applied to data from the Surveillance, Epidemiology, and End Results program of the National Cancer Institute. The study is designed to assess the performance of the standard half-cycle correction method over a range of parameter values. **RESULTS:** The standard half-cycle correction method overpredicted the number of cases by 1–2% for all age groups. The standard half-cycle correction method overpredicted the number of cases by 1–2% for all age groups. **CONCLUSIONS:** The standard half-cycle correction method overpredicted the number of cases by 1–2% for all age groups. The standard half-cycle correction method overpredicted the number of cases by 1–2% for all age groups.
addition, the Dutch National Health Care Institute commented on usefulness for decision makers. In a separate group of 50 HE experts could comment during a workshop at ISPOR Montreal 2014. RESULTS: 35 Validation techniques were identified and grouped into four categories: conceptual model validation, computerized model validation, data validation and operational validation. Around 30 HE experts commented in each of the first three Delphi rounds, resulting in a 15 item draft. The methods and/or rationale for the approach taken to model the relationship between OS and PFS/TPP within the health economic model. This included the sponsor submission and updated analyses, the NICE website containing information on the methods used and/or rationale based on data from a phase 3 clinical trial in MBC (N=1102) utility mapping was conducted using a published regression algorithm to convert the SORC-QLQ-C30 questionnaire to the EQ-5D utility. Mean utility values were estimated for health relevant states: stable disease (SD), tumor response (TR), progression and disease progression (PD). 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. METHODS: The following databases were searched systematically: PubMed, Health Technology Assessment Database, NHS Economic Evaluation Database, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, DAHTA database, PSYNDEX and PsycINFO. For the abstracts that met the pre-defined inclusion criteria, full text articles were obtained and evaluated for inclusion in the assessment. RESULTS: After eliminating duplicates the search identified 1 219 articles of which another 960 were excluded based on the title selection. Finally 59 articles have been reviewed in full text after abstract review. Out of those articles 39 were deemed to be relevant based on the research question. The majority of models (48%) have been Markov models, other methods being used were various statistical analysis applications, micro-simulation, and discrete-event simulations. Limitations of existing models include the following: Focus on cognitive function as disease progression only, lack of inclusion of correlation between disease progression and other factors (e.g. residential status), lack of complete structure of diagnosis and treatment of disease (e.g. including non-drug treatments). Based on the Drummond checklist for health economic models the quality of models proved generally to be high but the majority of those lack presenting 10% of patients with progressive pulmonary hypertension of the natural history of the disease. Conclusions: Current models do not allow decision makers optimally characterizing the disease, to better assess the costs and benefits of a wide range of potential interventions. Potential new models need to take the disease characteristics and specifics more appropriate to account. OBJECTIVES: Within health economic models of metastatic cancer therapies assumptions about the relationship between progression to metastatic disease (PROG) and overall survival (OS) are typically required, notably when OS data are immature or unavailable. A review was undertaken to identify the methods that have been used within health economic models regarding this relationship and to identify the factors that may account for the variability seen in the models. RESULTS: OS data were not available or immature. METHODS: All NICE technology appraisals in the advanced and/or metastatic cancer setting completed by December 2013 were reviewed. RESULTS: In those instances where OS data were immature or not available, PFS/TPP was typically assumed to be a valid surrogate of OS. Justification for this assumption was inconsistently reported. In some health economic models a quantification of the assumed relationship was informed by published evidence and/or expert judgement. In some cases attempts were made to explore the potential impact of this relationship in sensitivity analysis. Conclusions: The methods and/or rationale for the approach taken to model the relationship between OS and PFS/TPP within health economic models has been inconsistently reported and justified. Whilst some health economic models attempted to quantify this relationship, further transparency is required. A consensus needs to emerge on the most appropriate 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. RESULTS: Of three models that incorporate the long-term survival profile of ipilimumab (naïve comparison or more sophisticated adaption of the mapping methodology) demonstrate a higher number of life years with ipilimumab versus vemurafenib. COST-EFFECTIVENESS MODELS FOR CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD): CROSS-MODEL COMPARISON OF HYPOTHETICAL TREATMENT SCENARIOS. Hogendoorn M1, Fenestra T2, Aukui Y1, Borg S1, Hansen RN1, Jansson SA1, Samyshkin Y1, Wacker M1, Briggs A1, Loyd A4, Sullivan SD1, Rutter-van Molkelen M1. 1Erasmus University Rotterdam, Rotterdam, The Netherlands, 2BiVA, VUMC, Bilthoven, The Netherlands, 3IMS Health, Economics and Outcomes Research, London, UK, 4The Sieweude Institute for Health Economics, Lund, Sweden, 5School of Pharmacy, University of Washington, Seattle, WA, USA, 6The OLIN Studies, Uleå, Sweden, 7Helmholtz Zentrum München, Neuhem, Germany, 8University of Glasgow, Glasgow, UK. 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 frequency, 3) 10% reduction in possible adverse events (potentially non-drug treatments). Based on the Drummond checklist for health economic models the quality of models proved generally to be high but the majority of those lack presenting 10% of patients with progressive pulmonary hypertension of the natural history of the disease. Conclusions: Current models do not allow decision makers optimally characterizing the disease, to better assess the costs and benefits of a wide range of potential interventions. Potential new models need to take the disease characteristics and specifics more appropriate to account. APPROACHES USED TO MODEL THE RELATIONSHIP BETWEEN PROGRESSION-FREE SURVIVAL (FPS) /TIME-TO-PROGRESSION (TTP) AND OVERALL SURVIVAL (OS) WITHIN HEALTH ECONOMIC MODELS OF CANCER THERAPIES. Rafia R., Ward S.E. University of Sheffield, Sheffield, UK. Modelling round resulted in 17 responses. This led to a refined version containing 16 items, commented in each of the first three Delphi rounds, resulting in a 15 item draft. The methods and/or rationale for the approach taken to model the relationship between OS and PFS/TPP within the health economic model. This included the sponsor submission and updated analyses, the NICE website containing information on the methods used and/or rationale based on data from a phase 3 clinical trial in MBC (N=1102) utility mapping was conducted using a published regression algorithm to convert the SORC-QLQ-C30 questionnaire to the EQ-5D utility. Mean utility values were estimated for health relevant states: stable disease (SD), tumor response (TR), progression and disease progression (PD). 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. RESULTS: Of three models that incorporate the long-term survival profile of ipilimumab (naïve comparison or more sophisticated adaption of the mapping methodology) demonstrate a higher number of life years with ipilimumab versus vemurafenib. OBJECTIVES: Traditional indirect treatment comparison methods assume the underlying survival profiles of treatments are similar (i.e. proportional hazards). This assumption is unlikely to hold for the comparison of ipilimumab and vemurafenib. Whereas vemurafenib exhibits improved short-term survival compared with ipilimumab, pooled study data for ipilimumab consistently show that patients achieve durable long-term survival. We present a method to compare across trials with differing methodological, clinical population, accounting for follow-on treatments and differences in baseline characteristics. METHODS: Comparative survival estimates for ipilimumab and vemurafenib were produced using patient-level data from trial CA184-024 for ipilimumab and survival curve data from the BRIM-3 (alongside survival data for vemurafenib). The BRIM-3 vemurafenib overall survival curve was adjusted to account for (a) the effect of second-line ipilimumab (via a tunnel-state methodology), (b) patient baseline characteristics and (c) time-varying hazard ratio (i.e. hazard ratio as a function of time). RESULTS: Estimated survival for ipilimumab was 3.3 years (mean). Predicted survival for vemurafenib, using a naive comparison, was 3.0 years (mean). Adjusting for second-line ipilimumab and different baseline characteristics resulted in an estimate of 3.8 years for vemurafenib. When a hazard ratio was applied to the ipilimumab data, which underlies the here strong assumption that the vemurafenib overall survival profile is similar to that of ipilimumab, predicted survival for vemurafenib increased to 4.2 years (mean). CONCLUSIONS: These results provided a basis for and the methodology used, the mean predicted survival for vemurafenib varied from 2.8 to 4.2 years. Alternative methods that incorporate the long-term survival profile of ipilimumab (naïve comparison or more sophisticated adaption of the mapping methodology) demonstrate a higher number of life years with ipilimumab versus vemurafenib. HEALTH ECONOMIC MODELS IN ALZHEIMER’S DISEASE: A CRITICAL ASSESSMENT. Weller S1, Droeschel D2, Kaiser K1. 1Max Planck Market Access & Pricing Strategy GmbH, Wulm an Rhein, Germany, 2University of Freiburg, Freiburg, Germany. OBJECTIVES: Alzheimer’s Disease destroys brain cells, causing problems with memory, thinking, and behavior. Severe enough to affect work, family, and social relationships. Although devastating, the most basic activities of daily living. Many options have been introduced and evaluated from a health economic perspective. However, given the specific characteristics of the disease an evaluation of existing models is needed. METHODS: The following databases were searched systematically: PubMed, Health Technology Assessment Database, NHS Economic Evaluation Database, Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, DAHTA database, PSYNDEX and PsyCINFO. For the abstracts that met the pre-defined inclusion criteria, full text articles were obtained and evaluated for inclusion in the assessment. RESULTS: After eliminating duplicates the search identified 1 219 articles of which another 960 were excluded based on the title selection. Finally 59 articles have been reviewed in full text after abstract review. Out of those articles 39 were deemed to be relevant based on the research question. The majority of models (48%) have been Markov models, other methods being used were various statistical analysis applications, micro-simulation, and discrete-event simulations. Limitations of existing models include the following; Focus on cognitive function as disease progression only, lack of inclusion of correlation between disease progression and other factors (e.g. residential status), lack of complete structure of diagnosis and treatment of disease (e.g. including non-drug treatments). Based on the Drummond checklist for health economic models the quality of models proved generally to be high but the majority of those lack presenting 10% of patients with progressive pulmonary hypertension of the natural history of the disease. Conclusions: Current models do not allow decision makers optimally characterizing the disease, to better assess the costs and benefits of a wide range of potential interventions. Potential new models need to take the disease characteristics and specifics more appropriate to account.