population are 18.5% for males and 9.8% for females. **CONCLUSIONS:** Random sampling from patient level data provided the best approximation of NHANES population predicted CVD rates. The choleste deposition 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-estimation of the mean by 12%–20%, an interesting finding as many individual stratification models created patients with this approach. Researchers should be cautious in their use of summary statistics when populating individual simulation models.

**PM7/4 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 the model. **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 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 parameters is not accounted for. This study describes the development of the Sphr diabetes prevention model to provide an example to address structural uncertainty in CEA. **Methods:** Using a cohort partition model, the number of patients in "progression-free" (PFS), "progressed", and "remission" states were calculated from progression-free survival (PFS) and overall survival (OS) curves. Weibull, exponential, log-normal, generalised 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 regression model were compared. The best model was selected, based on the lowest observed ICERs. The model replicated the non-significant differences observed in the overall survival distributions with HSE 2011 data. We compared microvascular, cardiovascular and oncological outcomes to external data to test the accuracy of the Sphr diabetes prevention model against real-world data. **Results:** Cardiometabolic events were compared between the Sphr model and HSE 2011 data. Cardiovascular events were estimated from the QRISK2 algorithm. Microvascular complications were compared with the UKPDS 85 cohort. **Conclusions:** The Sphr diabetes prevention model provides an example to address structural uncertainty in CEA. The model appears to be fairly accurate at predicting the microvascular complications of diabetes were estimated from the UKPDS 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 osseous outcomes in a diabetic population with those observed in the UKPDS. 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, but not 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 cardiovascular events were similar to the UKPDS, but cardiovascular disease and microvascular mortality were slightly under-predicted. The model replicated the non-significant difference seen between control and intervention arms of the ADDITION trial, but underestimated total mortality and cardiovascular disease. **Conclusions:** The Sphr diabetes prevention model appears to be fairly accurate at predicting microvascular complications from patient-level data and to a lifetime horizon using parametric regression techniques. The standard half-cycle correction method provided more accurate results than calculations without this 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.

**PM7/7 ADJUSTMENT OF A MODEL OF DECISION BASED ON FUZZY LOGIC TO PHARMACOECOLOGIC: TREATMENT OF CROHN’S DISEASE WITH ANTI-TNF IN OUT-OF-LABEL USE**

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**OBJECTIVES:** We present a model based on fuzzy logic, and apply to off label use (non anti-TNF) in Crohn’s disease (CD) (Infliximab (IFB) 30 mg/kg/q4 weeks, adalimumab (ADA) 80mg/2 weeks, Certolizumab (CZB) 200mg/2weeks). The term “fuzzy logic” (FL) was introduced in 1965 by LAZadeh. Compared to traditional logic, FL variables may have a truth value in degree. FL has been applied to many fields, from engineering, to medicine, to psychology. The use of FL in pharmacoeconomics. **Methods:** According to a decision analysis model based on FL four fuzzy variables that affect the choice of treatment are defined: treatment success (expressed as a probability), cost of success, cost of failure (expressed as inverses), and other conditions about the cost (negotiation, handling of drugs...). Based on the value of these fuzzy variables, three linguistic variables (High, Medium, Low) are defined to expressing convenience of choice. The combination of the three possible values for each of the variables gives us 81 possible decision rules, so that the (HHHL, HLLH, LHHH) would be the most favorable option and (LLLL) the most unfavorable. So a new fuzzy variable called “ranking” is established for classifying these options with 7 possible values (very unfavorable, unfavorable, neutral, slightly favorable, favorable, very favorable). The value of the fuzzy variables for anti-TNF at 52 weeks of treatment, were established based recent meta-analysis and reviews. **Results:** The value of FL was based in the meta analysis. The result was to apply meth-ods of “FL” to pharmacoeconomic studies According to the model, Certolizumab would be a most favorable choice in off-label use for CD.
addition, the Dutch National Health Care Institute commented on usefulness for decision makers. A separate group of COPD 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, which is currently sent out for a final, fifth round. CONCLUSIONS: When filled out by the modellers, AdViSH (Assessment of the Validation Status of Health-Economic decision models) supports model users in assessing the validation status of a model. It will be useful as part of reimbursement dossier, by providing systematic and transparent insight into the validation efforts performed and their results.

PRM01
MODELING SURVIVAL IN THE PRESENCE OF DIFFERENT MECHANISMS OF ACTION: IPILIMUMAB AND VEMURAFENIB IN ADVANCED MELANOMA

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OBJECTIVES: To compare the approaches for the modelled relationship between OS and PFS/TPP within the independent Assessment Report, and other reports/analyses in relation to the appraisal process. RESULTS: In those instances where OS data were immature or not available, FFS/TPP was typically assumed to be a valid surrogate of OS. Justification for this assumption was incrementally reported. In some 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 given for the approach taken to model the relationship between OS and FFS/TPP in 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.

PRM02
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

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OBJECTIVES: With health economic models of metastatic cancer therapies assuming OS as the primary outcome, the progression to OS (TTP) 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 rationale given for the approach taken, specifically in those situations where 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. This included all relevant appraisal documents publicly available on the NICE website containing information on the methods used and/or rationale for the approach taken to model the relationship between OS and FPS/TPP within the health economic model. This included the sponsor submission and updated analyses, the Appraisal Report and, other reports/analyses in relation to the appraisal process. RESULTS: In those instances where OS data were immature or not available, FPS/TPP was typically assumed to be a valid surrogate of OS. Justification for this assumption was incrementally reported. In some 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 given for the approach taken to model the relationship between OS and FPS/TPP in 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.