for HbA1c, SBP, BMI, TC, HDL and LDL was predicted as follows. MI: 0.89, 0.90, 1.00, 0.98, 1.36, 1.00 (UK-68-RE), 0.93, 0.95, 1.00, 1.00, 1.00, 0.93 (UK82-RE) and 0.92, 0.92, 1.00, 0.99, 1.29, 0.98 (SNDR-RE). Stroke: 0.88, 0.76, 1.00, 0.99, 1.18, 1.00 (UK68-RE), 0.91, 0.84, 1.00, 1.00, 1.00, 0.97 (UK82-RE) and 0.85, 0.94, 1.00, 0.99, 1.18, 1.00 (SNDR). IHD: 0.85, 0.89, 0.94, 1.00, 1.00, 1.00 (UK68-RE), 1.00, 0.94, 1.00, 1.00, 1.21, 0.96 (UK82-RE) and 0.94, 1.00, 0.98, 0.99, 1.29, 1.00 (SNDR-RE). HF: 0.88, 0.91, 1.00, 0.98, 1.48, 1.00 (UK68-RE), 1.00, 1.00, 0.93, 1.00, 1.00, 0.98 (UK82-RE) and 0.83, 0.83, 0.94, 0.99, 1.19, 1.00 (SNDR-RE). **CONCLUSIONS:** The degree to which RF modification influences CV risk can vary considerably, dependent on RE selected. The choice of equation within a model may influence the predicted health economic benefit associated with CV risk factor modification.

PRM74

ASSESSING THE RELATIVE CONTRIBUTION TO CHANGES IN QUALITY-ADJUSTED LIFE EXPECTANCY ASSOCIATED WITH HBA1C, WEIGHT AND HYPOGLYCAEMIA ACROSS MULTIPLE RISK EQUATIONS WITH THE CORE DIABETES MODEL (CDM)

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OBJECTIVES: The cost-effectiveness type 2 diabetes mellitus (T2DM) therapies are often driven by changes in HbA1c, weight and hypoglycaemia rates. There are a number of risk equations available for modeling diabetes complications. The objective of this study was to attribute the predicted gain in quality adjusted life years (QALYs) to HbA1c, weight and hypoglycaemia change for each of the UKPDS-68 risk equations (UK-68-RE); the UKPDS-82 risk equations (UK-28-RE), the Swedish-National-Diabetes-Registry RE (S-NDR) and ADVANCE RE (A-RE). **METHODS:** Published data on T2DM switching to insulin degludec from either insulin glargine or detemir were used. Mean (± SD) baseline profiles were age 62.8 years (± 14.7); diabetes duration 16.2 years (± 5.0); HbA1c 9.4% (±1.1); weight 102.8 kg (±23.0) and 1.0 hypoglycaemia events per week (±1.4). Mean 1-year change in clinical variables was HbA1c -0.7% (±0.3); weight -1.3kg (±1.1) and hypoglycaemia events/week -1.0 (±1.3). The CDM, with lifetime perspective, was used calculate the incremental QALYs predicted associated with either the UK-68-RE; UK-82-RE, S-NDR RE and A-RE. Results were discounted at 3%. **RESULTS:** With UK-68-RE total QALYs for insulin degludec were 7.747 (QALY gain of 3.306 vs. basal insulin); 2.84%, 97.73% and -0.57% were attributable to HbA1c, hypoglycemia and weight change respectively. For UK-82-RE, total QALYs were 7.718 (QALY gains 3.306), 2.90%, 97.43% and -0.33% attributable to HbA1c, hypoglycemia and weight change respectively. For S-NDR-RE total QALYs were 5.937 (QALY gains 2.68), 3.47%, 97.24% and -0.71% attributable to HbA1c, hypoglycaemia and weight change. Finally, for ADVANCE-RE total QALYs were 7.035 (QALY gains 2.987), 2.31%, 98.32% and -0.63% attributable to HbA1c, hypoglycaemia and weight change respectively. **CONCLUSIONS:** HbA1c reduction is not necessarily the key driver of health benefit within diabetes models. Validating costs and health utilities associated with changes in weight and hypoglycaemia frequency are as important as justifying choice of risk equations used.

PRM75

META-ANALYSIS FOR THE EVALUATION OF MULTIPLE SURROGATE ENDPOINTS

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OBJECTIVES: In health technology assessment (HTA), decision-makers face increased pressures to make earlier decisions. However, in early stages of drug development, data on effectiveness of new health technologies measured by the final outcome is often limited, especially when measuring the effectiveness of new interventions requires long follow-up time. Therefore, shorter-term surrogate endpoints play an important role in HTA. Candidate surrogate endpoints do not always proove to be perfect. However, when more than one of such endpoints exists, they may jointly fully mediate the treatment effect on the final outcome. This study presents methodology for evaluation of multiple surrogate endpoints as predictors of the treatment effect on the final outcome. **METHODS:** Meta-analytical methods for the evaluation of multiple surrogate endpoints are developed. The modelling techniques, developed in Bayesian framework, take into account measurement errors of the treatment effects on all outcomes and the correlations between them. Methods developed are applied to a case study in multiple sclerosis (MS) where the relapse rate (RR) and the number of active MRI lesions (MRI) are the candidate surrogate endpoints and the final outcome is the disability progression (DP). Surrogate endpoints are evaluated by assessing their predictive value in the cross-validation procedure. **RESULTS:** Applying bivariate model showed a good association between effects on RR and DP. Extending to trivariate case to include the effect on MRI increased the precision of the association and reduced the heterogeneity. The cross validation gave better predictions, by reducing the intervals on average by 14%, when including multiple surrogate endpoints. **CONCLUSIONS:** The methods used for combining evidence on multiple surrogate outcomes can lead to more precise predictions of the effect on final outcome. Inclusion of multiple surrogate endpoints may lead to a more substantial gain in precision in other disease areas, hence leading to faster HTA decisions.

PRM76

ASSESSING THE VARIABLES AFFECTING THE COMPLETION OF A COMPLIANCE MONITORING PROGRAM (CMP) FOR NURSES UNDERGOING SUBSTANCE ABUSE TREATMENT

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OBJECTIVES: The main goal of this research is to determine the factors which best predict the completion of a nurse substance abuse monitoring program. **METHODS:** A retrospective cross sectional analysis was conducted in a state database (Florida) of 65,000 nurses enrolled in CMP. The entire dataset and the subset of 10,000 were used for analysis. The outcome variable was the status of CMP program. The predictor variables included demographics, treatment type and length, drug usage, healthcare setting and experience, status of treatment, aftercare treatment, and nursing specialty. Missing data was not considered in the study. After checking for all the assumptions, univariate analysis using chi-square test was performed on the entire data as well as the subset. All features with significant relationships in the univariate analysis were entered in the forward, backward and stepwise multiple logistic models to predict the completion of contract by the nurses. All tests were conducted at 5% level of significance. **RESULTS:** All independent variables had a significant relationship with the status of CMP. The model using the entire data did not converge. The forward logistic model of the subset data showed that drug usage, treatment type, status of treatment in contract, annual income and healthcare setting had a higher association with the completion of CMP (p-value=0.1188). The backward logistic model showed that aftercare treatment, type of treatment and nursing specialty had a significant association with CMP status (p-value =0.064). The stepwise model converged with aftercare treatment having a significant association with the CMP status. **CONCLUSIONS:** In this study, the forward logistic model was preferred over the backward or the stepwise model to reduce the bias resulting from selection of variables and eliminate the resulting quasi-complete separation of data. Therefore, this CMP data for nurses was best fit using the forward logistic model.

PRM77

A BAYESIAN FRAMEWORK TO ESTIMATE THE COST OF CARE FOR RENAL DISEASE PATIENTS WITH AND WITHOUT A USUAL SOURCE OF CARE PROVIDER

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OBJECTIVES: To model total health care costs on end-stage renal disease adult patients with and without an usual source of care provider and to evaluate whether these costs differ between dialysis and transplant patients. **METHODS:** Retrospective cross-sectional data from 197 unique adult patients was collected for years 2002 to 2011 using the Medical Expenditure Panel Survey conducted on American households. Total cost for renal disease patients was modeled using the Bayesian mean regression posterior estimates and was followed by computing predictive values for a new set of observations. Total cost comprised of total costs for office based expenditures, prescription drugs, home health care, inpatient care, outpatient care, emergency room visits and costs associated with equipment and medical supplies. **RESULTS:** Among the 197 end-stage renal disease patients, 43% underwent dialysis and 22% underwent transplantation. Overall for the end-stage renal disease adults, the mean annual costs of care for a patient with an usual source of care provider vs. without an usual source of provider was $28,807 vs. $20,851. In comparison, the mean annual cost of care for a transplant patient without a usual source of care was $19,464 and for a dialysis patient was $92,326. Transplant patients with a source of care provider can potentially save 23% in annual total cost in comparison to patients without any source of care; dialysis patients can save 56% of total cost annually. **CONCLUSIONS:** Transplant and dialysis patients having an usual source of care provider incurred less health expenditures. In renal disease patients, having an usual source of provider has possibly large implications for health care cost savings.

PRM78

THE USE OF BOOTSTRAP MODEL AVERAGING WHEN ESTIMATING SURVIVAL CURVES

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OBJECTIVES: To explore the use of bootstrap model averaging (BOOT) for estimating survival curves when conducting parametric survival analysis. **METHODS:** A set of four clinical trials in advanced soft tissue sarcoma were identified from a published systematic review. Individual patient data for overall survival were estimated from digitised Kaplan-Meier curves using a published algorithm. A range of parametric survival models (exponential, Weibull, Gompertz, lognormal, log-logistic, Gamma and Generalised Gamma) were fitted for each study. One thousand bootstrap samples of the IPD for each study were taken. The model which minimised the Bayesian Information Criterion (BIC) was selected for each sample. The proportions of bootstrap samples within which each model was selected were used as the weights for the BOOT estimate. These were applied to the mean survival estimates obtained from each candidate model applied to the original data set to obtain the weighted average BOOT estimate of mean survival for each treatment. **RESULTS:** Estimates of mean survival varied markedly according to the choice of functional form for the parametric survival model. There was also considerable uncertainty in the selection of an optimal functional form based on the BIC (the bootstrap estimation for the probability that the optimal model had been selected varied between 16% and 71% across studies). Using the results from the BOOT analysis rather than selecting a single functional form reduced the estimated variance in mean survival in all studies. **CONCLUSIONS:** BOOT can reduce the variance in mean survival estimates and avoids the need for selecting a single functional form for a parametric survival model. Given the considerable uncertainty in selecting a functional form and the influence of this process on mean survival estimates, BOOT could act as a useful method for addressing uncertainty in functional form selection and hence in cost-effectiveness analyses.

RESEARCH ON METHODS – Patient-Reported Outcomes Studies

PRM79

DEVELOPMENT AND VALIDATION OF THE HEMOPHILIA-SPECIFIC BURDEN SCALE FOR CAREGIVERS OF CHILDREN WITH HEMOPHILIA IN THE US – THE HEMOPHILIA ASSOCIATED CAREGIVER BURDEN SCALE (HEMOCABTM)

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