and 0.87 [0.68, 1.11] vs 0.655 [0.465, 0.944], respectively. CONCLUSIONS: This analysis showed no significant difference in survival between patients who received chemotherapy as compared to conventional therapies, across the different therapy lines. Additionally, results indicate the impact of selection bias induced by selective treatment switching, and the need to apply novel approaches as IPCW to make additional adjustments, for which traditional statistical techniques cannot be used for.

PM16 COMPARING THE USE OF PATIENT-LEVEL DATA TO AVERAGE PATIENT PROFILE WITHIN A TYPE 2 DIABETES SIMULATION MODEL. McEwan P1, Bennett H2, Ward T1, Bergheim K1
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OBJECTIVES: Despite significant patient heterogeneity and complex treatment pathways, averages are commonly relied upon when defining patient populations and trials of new type 2 diabetes treatments. This study aims to investigate the struggle to relate results to the clinical setting. This study compares outcomes when using patient-level and average cohort inputs within a published simulation model, based on the UKPDS68 outcomes equations. METHODS: UK patient data (n=2,251 patients initiating dual therapy) were obtained from The Health Improvement Network (THIN). Simulations, performed over a medium-term horizon of 20 years, utilised either patient-level data, collating outputs over all replications, or average cohort data. The outputs (total costs, benefits and complication rates) were then compared. RESULTS: Average baseline characteristics were: age 65.36 ± (±11.14) years, Hba1c: 8.39% ± (±1.23); total cholesterol: 4.18 ± (±0.92) mmol/L, systolic blood pressure: 153.07 ± (±17.44) mmHg, weight: 89.85 ± (±19.01) kg. The mean treatment effect was a reduction in Hba1c of 1.91 (±1.26) %, over 20 years. Fewer macrovascular and microvascular events (~21,000 patients) and higher all-cause mortality (~71,000 patients) were predicted when using patient-level data compared to the average profile. Differences in the frequency of change in medications driven by patient identification in age and led to fewer estimated life-years (~0.66), quality-adjusted life-years (QALYs) (~0.59) and costs (~£551) per patient. Patients estimated to have lower costs (and a higher estimated life-years) were younger, with higher Hba1c and cholesterol but lower blood pressure at baseline. CONCLUSIONS: Modelling results differ depending on the use of patient-level or average cohort model inputs. Patient-level data may provide insight into the type of patients in whom the therapy is likely to be the most beneficial, utilising patient-level data enforces the accurate simulation of correlation between patient characteristics and treatment effect, which are rarely accounted for as part of a standard probabilistic sensitivity analysis.

PM17 QUANTIFYING NONLINEAR EFFECTS IN STOCHASTIC MARKOV SIMULATION USING UKPDS 68 AND UKPDS 82 EQUATIONS IN TYPE 2 DIABETES MODELING WITH THE ECONOMIC DIABETES MODEL (CDM). McEwan P1, Grant D2, Lamotte M3, Foss V4
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OBJECTIVES: Previous studies have demonstrated incorporating parameter sampling (PS) is crucial to capture nonlinear effects (NE) in cost effectiveness modeling. NE are, among other causes, driven by the degree through which the symmetric sampling (SS) is translated into variation of the probabilities and how the ability of the applied risk equations (RE) to describe the degree of NE through PS alters event rate predictions from the UKPDS 68 (UK68) and UKPDS 82 (UK82) REs. In this study, models of each of the trials were conducted with and without PS using UK68 and UK82 REs. Predicted versus observed mortality (ACM) were assessed using the coefficient of determination (R2) goodness of fit measure. RESULTS: When the CDM was run without PS, validation studies produced an R2 statistic of 0.898 using UK68 and 0.853 using UK82 RE. This compared to R2 statistics of 0.876 and 0.791 in analysis with PS for UK68 and UK 82 REs, respectively. Overall, PS caused end point predictions for ACM, MIC and ACM to increase. Internal validations against UKPDS 80 demonstrated that PS increased event rate predictions for myocardial infarction (MI), stroke, MI and ACM by 4.4%, 21.5%, 19% and 16.4% when UK82 RE were applied and 26.5%, 64.7%, 14.5% and 34.8% with UK82 RE, respectively. CONCLUSIONS: The findings from this study have shown that external validity declined with PS in simulations using UK68 RE and UK82 RE. The degree by which PS increased end point predictions was considerable stronger in UK82 RE predictions for ACM and ACM than lower for MIC.

PM18 INVERSION OF PROBABILITY OF CENSORED WEIGHTED ANALYSIS TO ADJUST THE TREATMENT EFFECT ON OVERALL SURVIVAL FOR SUBSEQUENT THERAPY: A CASE STUDY IN A CLINICAL TRIAL IN MULTIPLE MYELOMA. Thulasiarjuna E1, Palumbo A2, Diels J3, Delgerge M3, van Sanden S4, Mateos MV4, Chioro O5
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OBJECTIVES: The ITT-analyses of oncology trials tend to underestimate the treatment effect on all-cause survival and impact of subsequent therapy. Inversion of censored weighted analysis (IPCW) was explored to estimate an adjusted treatment effect on OS in VISTA, a phase III randomized clinical trial comparing melphalan and prednixone with salmora (MPS) or bortezomib and dexamethasone (VMP) in previously untreated multiple myeloma patients ineligible for stem cell transplantation. METHODS: The IPCW consisted of 2 steps. First, time-weighing were estimated using multivariate hazard ratio models. M-parallel predictions as baseline covariates and M-protein as time-weighing covariate. In a second step, these time-dependent weights were incorporated in a proportional hazards model, including the same baseline characteristics, with patients censored at initiation of subsequent treatment. RESULTS: 334 patients received subsequent treatment. RESULTS: 334 patients received subsequent therapy, compared to 58% in the VMP-arm. Age ≤75, creatinine ≤100 µmol/L and albumin ≤4 g/dL were additional drivers for treatment-switching. The IPCW-approach generated an adjusted hazard ratio of 0.584 [0.406, 0.839], compared to the ITT-estimate of 0.704 [0.576, 0.860]. CONCLUSIONS: In oncology, particularly in early line treatment, it is common for patients receive subsequent treatment lines. This typically happens more frequently and earlier in the comparator arm, which may bias the estimate for the treatment effect on OS. The IPCW-approach was explored to adjust for this bias, which resulted in an increased estimate of the treatment effect on OS of VMP vs MP, compared to the original ITT-analysis. With overall survival being a key input in economic evaluation, estimating the accurate effect on OS is key. Employing this type of approaches may result in more accurate cost effectiveness results and thus more consistent/appropriate Health Technology Assessment recommendations.

PM19 SHARING INFORMATION ACROSS STUDIES TO INFORM CHOICE OF FUNCTIONAL FORM WHEN CONDUCTING PARAMETRIC SURVIVAL ANALYSIS. Parker C1, Hawkins NS2
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OBJECTIVES: To explore the sharing of information across multiple studies in order to inform the choice of functional form when conducting parametric survival analysis. METHODS: Simulation of correlation between patient characteristics and treatment effect, (QALYs; -0.59) and costs (-£551) per patient. Patients estimated to have lower costs (and a lower estimated life-years) were younger, with higher Hba1c and cholesterol but lower blood pressure at baseline. This study compares outcomes when using patient-level and average cohort model inputs. Patient-level data may provide insight into the type of patients in whom the therapy is likely to be the most beneficial, utilising patient-level data enforces the accurate simulation of correlation between patient characteristics and treatment effect, which are rarely accounted for as part of a standard probabilistic sensitivity analysis.

PM20 PREDICTIVE MODELING TO ASSESS PREDICTORS OF TREATMENT SUCCESS AND FAILURE IN COMBINATION STATIN-FIBRATE THERAPY PATIENTS. Nyadiege A1, Runoolddeh C2, Philip S1
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OBJECTIVES: Combination statin fibrate treatment success or failure in patients diagnosed with hypertriglyceridemia (HTG). METHODS: A large claims database was used to identify patients initiating a fibrate between January 2011 and December 2011 (index date). Diagnosis of HTG and the use of statins were confirmed within 6 months before the index date. A total of 622 patients were selected for the current analysis. Patients were categorized into very high risk, high risk, moderate risk, and low risk groups. Logistic regression and two-group discriminant analysis models based on 17 potential predictors for treatment success or failure were constructed. RESULTS: At index, the median triglyceride (TG) level among all patients was 95.5 mg/dL. LDL-C level was 92 mg/dL, and high-density lipoprotein (HDL) was 40 mg/dL. The mean age was 54 years. Two predictors were associated with combination statin-fibrate treatment success: failure, M-parallel predictions as baseline covariates and M-protein as time-weighing covariate. In a second step, these time-dependent weights were incorporated in a proportional hazards model, including the same baseline characteristics, with patients censored at initiation of subsequent treatment. RESULTS: 334 patients received subsequent therapy, compared to 58% in the VMP-arm. Age ≤75, creatinine ≤100 µmol/L and albumin ≤4 g/dL were additional drivers for treatment-switching. The IPCW-approach generated an adjusted hazard ratio of 0.584 [0.406, 0.839], compared to the ITT-estimate of 0.704 [0.576, 0.860]. CONCLUSIONS: In oncology, particularly in early line treatment, it is common for patients receive subsequent treatment lines. This typically happens more frequently and earlier in the comparator arm, which may bias the estimate for the treatment effect on OS. The IPCW-approach was explored to adjust for this bias, which resulted in an increased estimate of the treatment effect on OS of VMP vs MP, compared to the original ITT-analysis. With overall survival being a key input in economic evaluation, estimating the accurate effect on OS is key. Employing this type of approaches may result in more accurate cost effectiveness results and thus more consistent/appropriate Health Technology Assessment recommendations.