evaluate across multiple outcomes. As a result, ascertainment of the most patient impacting symptom is crucial. Joint modelling allows us to evaluate the association between surrogate outcome measures such as patients’ symptom profiles and time to treat a symptom. OBJECTIVE: To define the rates of occurrence of symptom with patients’ perceived time of treatment failure using a novel application of a joint modelling framework. METHODS: To account for the potential correlation between outcomes, we applied a joint model of the longitudinal and time-to-event data to a randomised clinical trial of patients receiving botulinum toxin for DO. We investigate the association of incontinence, urgency and voiding episodes collected at baseline, 6 weeks, 3 months, and 6 months, on patients’ perceived time of treatment failure. RESULTS: The multivariate joint model was applied to 122 patients (270 data points) with 69 (56.6%) patients reporting treatment failure. The results identified urgency as the most impactful surrogate measure on patients’ perceived time of treatment failure, with an estimated hazard ratio of 1.26 (95% CI: 0.97 to 1.64) for every additional urgency episode. Incontinence, voiding episodes and the interaction between symptom measures had a non-significant association. However, in this example, sensitivity to the model choice produced inconsistent estimates of the shape and nature of the time-to-event processes across interpreted cautiously. CONCLUSIONS: This approach illustrates the advantage of applying a joint modelling framework to identify symptoms most associated with time to treatment failure. With an increasing prevalence of and assess core symptoms for varying medical conditions, the novel use of a joint modelling approach would appear to be extremely promising.

**PM208 USING MULTI-CRITERIA DECISION ANALYSIS TO SUPPORT ALLOCATION DECISIONS IN LARGE TRANSLATIONAL RESEARCH PROJECTS**

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OBJECTIVES: Large translational research projects often have abstract objectives, such as reducing the burden of disease and health care costs from type-2 diabetes (T2DM). Such an abstract objective entails: i) a very large number of possible strategies to reach the objective and ii) a lack of detailed data and high levels in uncertainty. Currently, no methods to support project selection and resource allocation decision-making are available. METHODS: As a case study, we supported a resource allocation decision for the remaining funds in a large Dutch translational research consortium with the aforementioned objective, and compared the results to the decision made at the start of the project. We used the problem structuring model building methods from multi-criteria decision analysis to identify four different alternative research strategies, and a set of evaluation criteria. Consequently, we used a combination of judgment from experts involved in the project and previously, for the successful completion. This study (post factum study) sought to evaluate which factors drive physician motivation in prospective observational studies. METHODS: A web-based survey was designed using input from structured literature review, investigators in observational research, and experienced observational study researchers. It comprised 35 questions structured using Stochastic Multicriteria Acceptability Analysis for ordinal data (SMAA-O), which allows for the comparative and subjective evaluation of ranked data. RESULTS: Using our method, it was decided to allocate remaining resources to the identification of biomarkers and development of technologies that can be used in the prevention of macrovascular complications in T2DM patients. This decision differed from the one made at the start of the project, which was not supported by any formal decision analysis. CONCLUSIONS: Our study shows that our method using SMAA-O can be a practical and valuable tool to support decisions on the allocation of research funds within large translational research consortia.

**RESEARCH ON METHODS – Study Design**

**PM209 CONFRONTING HETEROGENEITY: USING SYSTEMATIC REVIEW EFFECTIVELY FOR META-ANALYSIS**

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OBJECTIVES: The pooling of treatment effects estimated from several trials via a meta-analysis or network meta-analysis can be confounded by differences across studies; however, advanced methodologies are available to address many of these issues. Systematic reviews of interventions typically generate a large volume of data and lead to assimilation of a large amount of knowledge by the reviewers. Identifying key variations between trials can be difficult and important nuances can be missed by a meta-analyst. We have designed a novel checklist that highlights key areas of heterogeneity to be considered when designing and undertaking meta-analyses. METHODS: It is important to identify differences early on, hence, we have developed a checklist that can be applied to the results of a systematic review of randomised controlled clinical trials. Components of the checklist fall into five domains that deal with database search strategies: publication bias, interventions, study outcomes, and risk of bias. Sections documenting the feasibility of network meta-analysis and recommendations for analysis design are also included. The checklist has been retrospectively applied to a recent NICE technology appraisal, percutaneous vertebroplasty and percutaneous kyphoplasty for the treatment of osteoporotic vertebral compression fractures (TA27). RESULTS: The checklist identified the following sources of heterogeneity in the nine included studies: inclusion criteria, endpoint definitions, endpoint reporting, presence of cross-over, differences in interventions, risk of bias, and within-trial imbalances in baseline characteristics. The checklist suggests that a quality network meta-analysis of this data should exclude one study with high risk of bias, avoid the Dornier procedure and optimal pain management, and control for baseline pain-score to address imbalance across arms. Meta-regression to control for differences in endpoint definitions or inclusion criteria would likely have been infeasible given the 21 number of studies. CONCLUSIONS: The checklist improved our ability to identify sources of confounding to be addressed or highlighted as caveats in a meta-analysis.

**PM210 IMPLEMENTATION OF INTERNATIONAL CHART REVIEW STUDIES: AN ASSESSMENT OF KEY DESIGN AND OPERATIONAL CONSIDERATIONS FOR SUCCESSFUL CONDUCT**

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OBJECTIVES: The results identified urgency as the most impactful surrogate measure on patients’ perception of treatment failure, with an estimated hazard ratio of 1.26 (95% CI: 0.97 to 1.64) for every additional urgency episode. Incontinence, voiding episodes and the interaction between symptom measures had a non-significant association. However, in this example, sensitivity to the model choice produced inconsistent estimates of the shape and nature of the time-to-event processes across interpreted cautiously. CONCLUSIONS: This approach illustrates the advantage of applying a joint modelling framework to identify symptoms most associated with time to treatment failure. With an increasing prevalence of and assess core symptoms for varying medical conditions, the novel use of a joint modelling approach would appear to be extremely promising.