and cardiovascular disease amongst others. Treatment effects and cohort characteristics (mean age 63.1 years, diabetes duration 12.8 years, HbA1c 8.17%, BMI 30.3 kg/m^2) were based on the German cohort of the PREDICTIVE (Predictable Results and Experience in Diabetes through Intensification and Control to Target: an International Variability Evaluation) study. Direct medical costs were derived from published sources and expressed in 2006 Euro (€) values. Projections were made over a 35-year time horizon. Future costs and clinical benefits were discounted at 3.5% annually. Sensitivity analyses were performed. **RESULTS:** Treatment with IAsp was projected to improve quality-adjusted life expectancy by approximately 0.10 quality-adjusted life years (QALYs) (6.06 ± 0.09 versus 5.96 ± 0.09 QALYs). Increased treatment costs with IAsp were partially offset by cost savings due to reductions in the cumulative incidence of diabetes-related complications. Over patient lifetimes, mean direct medical costs were projected to increase by approximately €1,274 per patient with IAsp versus HSI (€45,423 ± 1,354 versus €44,149 ± 1,391). This resulted in an incremental cost-utility ratio of €13,305 per QALY gained. **CONCLUSION:** Over patient lifetimes, IAsp treatment was projected to result in fewer diabetes-related complications and improved quality-adjusted life expectancy compared to HSI. Based on currently accepted willingness-to-pay limits, IAsp would represent good value for money in the German setting.

ED3

DIFFERENCES IN HEALTH RELATED RESOURCE USE IN THE 6 MONTHS PRIOR TO AND AFTER INSULIN INITIATION IN PATIENTS WITH TYPE 2 DIABETES IN GERMANY AND UNITED KINGDOM: DATA FROM THE INSTIGATE STUDY

Timlin L[1], Tynan A[1], Simpson A[1], Jones S[2], Liebl A[3]
[1]Eli Lilly and Company Limited, Surrey, UK, [2]The James Cook University Hospital, Middlesborough, UK, [3]Fachklinik Bad Heilbrunn, Bad Heilbrunn, Germany

OBJECTIVES: An objective of the INSTIGATE study is to describe the resource utilisation associated with care for type 2 diabetes in the 6 months before and after insulin initiation. This abstract presents data from patients enrolled in Germany and UK. **METHODS:** INSTIGATE is an ongoing prospective European observational study investigating patients with type 2 diabetes who have initiated insulin during usual care. Data on resource use for diabetes was collected at baseline retrospectively for the 6 months prior to initiating insulin and at 3 and 6 months following insulin initiation. **RESULTS:** In all, 509 patients were enrolled in Germany and UK. 6 month follow-up data was collected from 457 patients. The following changes in health care professional consultations were observed in the 6 months before and after insulin initiation: The % of patients with a visit to a primary care doctor declined from 93.4% to 83.7% in Germany, and in the UK from 79.4% to 48.2%. Visits to specialist nurses increased in Germany from 52.3% to 91.4%, and in the UK from 77.5% to 81.7 % of patients. In both countries the % of patients having phone calls with a specialist nurse increased; from 11.7% to 50.6% in Germany and from 21.3% to 75.9% in UK. The % of patients using a blood glucose monitor and the median weekly number of test strips used increased in both countries, most notably in Germany from 76.6% of patients testing 4 times a week before insulin initiation to 99.6% of patients testing 21 times per week 6 months after insulin initiation. **CONCLUSION:** The type of health care professionals visited and nature of the consultations changed in both countries following insulin initiation; the % of patients having visits to primary care providers decreased and the % of patients having visits and phone calls to specialist nurses increased.

ED4

THE RELATIVE COST EFFECTIVENESS OF SWITCHING TO INSULIN GLARGINE VERSUS NPH INSULIN IN INSULIN NAIVE AND NON INSULIN NAIVE TYPE 2 DIABETES PATIENTS USING UK REAL LIFE DATA

McEwan P[1], Mehin N[2], Tetlow AP[3], Sharplin P[3]
[1]Cardiff University, Cardiff, South Glamorgan, UK, [2]sanofi-aventis, Paris, France, [3]Cardiff Research Consortium, Cardiff, South Glamorgan, UK

OBJECTIVES: This study, conducted in Type 2 diabetes mellitus (T2DM), evaluated the cost utility of glargine versus NPH in previously insulin naïve (IN) and non insulin naïve (NIN) patients switching from NPH to insulin glargine in the UK using observational data. The study assessed the combined effect of HbA1c and hypoglycaemia reduction. **METHODS:** A discrete event life time simulation based on UKPDS 68 was adapted to include the effects of HbA1c and hypoglycaemia reduction using published meta-regression results from 11 randomised clinical trials. Direct costs and health utility (EQ5D) were derived from published sources and the HODaR database respectively; costs and benefits were discounted at 3.5%. This model used the demographic and efficacy profiles of T2DM patients who were IN or NIN who switched from NPH to glargine identified via the THIN database. Analysis was conducted on 1,496 and 174 IN and NIN patients respectively; the primary outcome measure was Hba1c change. As hypoglycaemia was not directly collected from the THIN database, sensitivity analysis was performed taking into account HbA1c benefit only. **RESULTS:** The mean age and duration of diabetes at switch was 63 years and 7.5 years (IN) and 70 years and 10.2 years (NIN) respectively. After adjustment for baseline profiles IN patients starting glargine showed a significant reduction in HbA1c of 0.21% ($p = 0.029$) 12 months post initiation versus NPH. For NIN patients switching from NPH to glargine the adjusted HbA1c reduction was 0.46% ($p = 0.0093$). The cost per QALY for a simulated cohort of 10,000 patients was £5,806 and £3,415 for IN and NIN patients. In sensitivity analysis considering an HbA1c reduction only the cost per QALY was £18,179 and £7,973 for IN and NIN patients respectively. **CONCLUSION:** Based on real life observational data, in both IN and NIN patients T2DM patients, glargine is cost-effective compared to NPH.

PODIUM SESSION I: METHODS & CONCEPTS

MC1

ASSESSING THE GENERALISABILITY OF COST EVALUATION RESULTS USING THE EUCLIDEAN METRIC AND PRINCIPAL COMPONENTS ANALYSIS: LESSON FROM A HIGH-COST INNOVATION IN ONCOLOGY

Perrier L[1], Pommier P[1], Carrère MO[2], Sylvestre Baron P[3]
[1]Léon Bérard Cancer Centre, Lyon, France, [2]University of Lyon, Lyon, France, [3]University of Lyon, Ecully, France

OBJECTIVES: This study tested a method to measure the variability of data among countries, and to assess the generalisability of cost evaluation results. **METHODS:** The first step of the method consisted in identifying, within cost evaluations, all the factors potentially responsible for variability among locations. The second step consisted in selecting, among all potential transferability factors, the final transferability factors which generated variability, impacted on outcomes of economic evaluation, and were both measurable and distinguishable from other factors. The third step was the identification of transferability areas as sets of homogeneous final transferability factors. Both the Euclidean metric and Principal Components Analysis were used in the fourth step to explore the generalisability of the results.

The method was applied to a high-cost innovation in oncology currently under development in five European countries, carbon ion radiotherapy. **RESULTS:** 138 potential factors identified, 116 final factors were analysed and regrouped into 9 areas. The Principal Components Analysis between countries 1 and 2, and between 4 and 5, showed proximity between the costs of equipment and the cost of buildings. A large variation was observed using the Euclidean metric between countries 1 and 2, especially for working time, and between countries 4 et 5 for the use of personnel resources. On the opposite, a low distance was observed between countries 2 and 4 for treatment capacity, and between countries 2 and 3 for technology availability and costs of personnel. **CONCLUSION:** Using this method we could assess the generalisability of the cost of carbon ion radiotherapy, and we identified factors and areas that limited this generalisability. This study also showed the necessity to integrate recommendations in order to increase the generalisability of economic evaluations in health care.

MC2

BAYESIAN MODELING OF RESOURCE USE ALONGSIDE MULTINATIONAL RANDOMISED CLINICAL TRIALS

Gauthier A[1], Manca A[2], Anton SF[3], Dewberry H[4]
[1]i3 Innovus, Uxbridge, Middlesex, UK, [2]University of York, York, UK, [3]Boehringer-Ingelheim, Ridgefield, CT, USA, [4]Boehringer Ingelheim Limited, Bracknell, Berkshire, UK

OBJECTIVES: Most cost-effectiveness analyses conducted alongside multinational randomized controlled clinical trials (RCTs) are carried out applying the unit costs from the country of interest to each resource item with the objective of estimating total health care by treatment group. An alternative is to model health care resource use (HCRU) directly rather than expressed in monetary units. This study aimed to model HCRU collected alongside RCTs, accounting for their specific distributions and the hierarchical structure of the data. **METHODS:** The analysis was conducted using data from multinational RCTs enrolling approximately 2000 patients suffering from a chronic disease. For each HCRU, appropriate distribution functions were identified based on the deviance of the univariate model (including treatment effect only). Standard models were extended to the Bayesian multi-level models (MLM) settings, whereby covariates at different levels (patient, centre and country) were introduced as predictors. **RESULTS:** Depending on the treatment group, 69% to 71% of patients had no GP visits. The Poisson distribution under-estimated the proportion of zeros by 18%, whereas the negative binomial (NB) and zero-inflated Poisson (ZIP) provided good matches. The greater flexibility of ZIP models provided significantly better fit than NB. ZIP was the best distribution to model health care resource contacts and the zero inflated Poisson overdispersed (ZIPO) function was best representing concomitant medications treatment days. GP visits presented the highest heterogeneity between countries (9% of the variance was explained by the country effect) and this was well captured by the MLMs. **CONCLUSION:** Misspecification of statistical models may result in biased parameters and misleading inference. This study proposed the development of ZIP and ZIPO MLMs to model HCRU alongside RCTs. To obtain more precise estimates, multivariate analyses of HCRU could be conducted and other sources of evidence could be used additionally, external to the clinical studies.

MC3

THE DEVELOPMENT OF AN INCREMENTAL WILLINGNESS TO PAY CURVE DERIVED FROM A DISCRETE CHOICE EXPERIMENT

Regier DA[1], Marra CA[2], Ryan M[1]
[1]University of Aberdeen, Aberdeen, Scotland, UK, [2]University of British Columbia, Vancouver, BC, Canada

OBJECTIVES: The purpose of this study was to investigate the development of an incremental willingness to pay curve (IWTPC) using parameters obtained from a discrete choice experiment (DCE). **METHODS:** The DCE was structured around a novel genetic technology that identifies genetic causes of developmental delay (DD). The DCE included three alternatives. The first two alternatives differed on three attributes: number of children receiving a genetic diagnosis, time waiting for results, and cost. The third alternative was an opt-out option to allow for non-demanders. A mixed logit (MXL) behavioural model was specified to incorporate preference heterogeneity, and hierarchical Bayes (HB) was employed to estimate the joint posterior of parameter partworths. The opt-out parameter was assumed to follow a normal distribution, a truncated normal was given to number of children diagnosed and waiting time, and the log normal distribution was assumed for cost. The HB procedures employed allow for the direct estimation of each individual's parameter estimates, which are transformed into an incremental willingness to pay (WTP) value. Under certain assumptions, the IWTPC represents the incremental WTP that each individual in society has for the technology under a given scenario. **RESULTS:** A total of 796 respondents from the general public were recruited using a research firm in British Columbia, Canada. Each respondent completed 16 choice questions. The parameter estimates revealed a considerable amount of preference heterogeneity, which indicated that the mean incremental WTP estimate might not accurately represent society's WTP. Individual WTP ranged from $28 to $12,000 for an increase in 14 children identified to have a genetic cause of DD and a 1-week reduction in waiting time. Fifty-one percent of respondents had an incremental WTP of at least $1041 for the scenario. **CONCLUSION:** Using the joint posterior of preference partworths, the IWTPC is a promising tool to characterize the value of a health care good.

MC4

COMPARISON OF THREE INSTRUMENTS ASSESSING THE QUALITY OF ECONOMIC EVALUATIONS

Gerkens S, Crott R, Beguin C, Closon MC, Horsmans Y
Université Catholique de Louvain, Brussels, Belgium

OBJECTIVES: The increasing use of full economic evaluations has lead to the development of various instruments to assess their quality. In addition to the much used British Medical Journal (BMJ) check-list, two new instruments were recently developed: the Consensus Health Economic Criteria (CHEC) list and the Quality of Health Economic Studies (QHES) instrument. The purpose of this study was to compare these three instruments as quantitative tools to measure the quality of economic evaluations. The analysis was performed through a systematic review of economic evaluations of the surgical treatment of obesity. **METHODS:** Quality of 9 selected studies was assessed independently by two health economist experts. Rater 1 repeated the analysis after 8 weeks. The spearman rank correlation coefficient was used at time 1 and 2 to compare the instruments, and for each instrument, the intraclass correlation coefficient (ICC(3,1)) to assess test-retest reliability between time 1 and 2. For each instrument, the interrater agreement was estimated at two levels: comparison of the total score of each article by the ICC(2,1) and comparison of results per item by kappa values. **RESULTS:**