Hospital Maastricht, Maastricht, The Netherlands. 18University of Ioannina, Ioannina, Greece, 19Lund University, Malmo, Sweden

OBJECTIVES: Crohn’s disease is a chronic relapsing remitting inflammatory bowel disease with heterogeneous disease course, requiring life-long treatment. Phenotypes explaining disease heterogeneity is of interest in optimizing allocation of health care resources, e.g. to avoid expensive maintenance treatment to prolong remission in remitters and to avoid early relapse in patients with early relapses. The aim was to compare liraglutide to insulin glargine in the last in rank of the best treatments.

CONCLUSIONS: Liraglutide is still effective in maintaining the HbA1c < 7.0% in more diabetes patients compared to exenatide and insulin glargine however exenatide once weekly seems to be more convenient to administer and has a cost advantage compared to liraglutide once daily dose. Liraglutide dose may need to be modified to once weekly or once monthly dose to me more effective in the management of diabetes type 2.

PHM41 DESIGNING PATIENT REGISTRIES: A CASE-STUDY USING AN ONLINE INTERACTIVE DATA ANALYSIS TOOL

Polese FL, Patel AM, Long S, Benner G

Thomson Reuters Healthcare, Cambridge, MA, USA, 2Janssen Scientific Affairs, LLC, Raritan, NJ, USA, 3Janssen Scientific Affairs, LLC, Titusville, NJ, USA

OBJECTIVES: Planning and conducting patient registries requires significant research to determine the type and amount of data to collect, identifying recruitment sites, understanding the impact of study criteria on sample size, and estimating patient retention. Our objective was to test the utility of a new tool for answering these questions in a timely and cost-efficient manner, and to examine how claims data can be leveraged to plan registry design. METHODS: We used an online interactive data analysis tool, MarketScan™Treatment Pathways, to explore the characteristics and health care utilization patterns in a sample of cancer patients with pain. RESULTS: Patients newly diagnosed with prevalent cancers that are highly associated with pain such as multiple myeloma, colorectal, lung, prostate, or breast cancer were included, if they had at least 2 ICD-9-codes for one of the cancers on different days within 60 days of each other. A 6-month pre-period without any cancer diagnosis was defined to identify new cancer cases. RESULTS: There were 64% patients with prevalent cancer in the 6-month period, and 36% patients newly diagnosed with cancer. 60% of patients meeting the entry criteria, 54% had an ICD-9-code for pain-related diagnosis. The median and mean number of days from cancer to pain diagnosis was 113 and 192 days, respectively. Only 3% had a co-morbidity that would exclude participation in the registry for patients of 28 years or older. CONCLUSION: Using MarketScan™Treatment Pathways, we tested sample selection criteria and health care utilization in a fraction of time than typical database analyses. These data answered critical questions in the study design for a planned cancer pain registry in a timely and cost-efficient way.

PRM32 MANAGING A SYSTEMATIC LITERATURE REVIEW PROJECT

Kiss N, Ridu M, Tongraham V

Oxford Outcome, Morristown, NJ, USA

OBJECTIVES: A systematic literature review (SLR) is a well-established tool for identifying and summarising existing evidence or identifying gaps that need to be filled by new research. Although SLRs are widely used in the drug reimbursement sphere, there are many challenges in maximizing its value and in delivering project objectives with a vendor. The objective of this study is to outline the delirations of SLR of a SLR, and examine the optimal methodology in extracting maximum value from a SLR review by exploring important caveats and pitfalls of two hypothetical case studies. METHODS: Two hypothetical case studies are used to outline the process and the pitfalls of a SLR project and the relationship between industry and SLR consultants and industry in order to identify expectations and advice for a successful systematic literature review. RESULTS: The analysis found that in depth discussion during the protocol phase of the SLR is crucial to the success of the project. A successful protocol will incorporate key questions that are focused and specific, to outline the search strategy, and address the purpose of the review in terms of a product’s value story (ie. a SLR for inclusion in a CVD), or evidence development. The analysis found that some challenges include too much or too little literature, which can be due to a very narrow or a wide search. CONCLUSION: The authors found that communication was crucial, question was used helpful in year successful literature reviews. Furthermore, detailed discussion at the protocol stage helped to avoid pitfalls at later points in SLR development. The authors provide a list of pitfalls and remedies that may help when considering SLRs.

RESEARCH ON METHODS - Modeling Methods

PRM44 A SYSTEMATIC REVIEW ON THE APPLICATION OF CARDIOVASCULAR RISK PREDICTION MODELS IN PHARMACOECONOMICS, WITH A FOCUS ON PRIMARY PREVENTION

Stevanovic J, Postma MJ, Pechlivanoglou P

University of Groningen, Groningen, The Netherlands

OBJECTIVES: A systematic review of pharmacoeconomic studies for primary CVD prevention interventions in high-risk populations was performed. The objective of the study was to identify the methods used to incorporate the CVD risk information and the various approaches used to model the treatment effect of CVD risk predictors. METHODS: Electronic databases were searched for pharmacoeconomic models used to support the analysis of CVD risk predictors. Studies were included if they had at least 2 ICD-9 codes for one of the cancers on different days within 60 days of each other. A 6-month pre-period without any cancer diagnosis was defined to identify new cancer cases. RESULTS: There were 64% patients with prevalent cancer in the 6-month period, and 36% patients newly diagnosed with cancer. 60% of patients meeting the entry criteria, 54% had an ICD-9-code for pain-related diagnosis. The median and mean number of days from cancer to pain diagnosis was 113 and 192 days, respectively. Only 3% had a co-morbidity that would exclude participation in the registry for patients of 28 years or older. CONCLUSION: Using MarketScan™Treatment Pathways, we tested sample selection criteria and health care utilization in a fraction of time than typical database analyses. These data answered critical questions in the study design for a planned cancer pain registry in a timely and cost-efficient way.

PRM45 A SYSTEMATIC REVIEW OF THE APPLICATION OF CARDIOVASCULAR RISK PREDICTION MODELS IN PHARMACOECONOMICS, WITH A FOCUS ON PRIMARY PREVENTION

Stevanovic J, Postma MJ, Pechlivanoglou P

University of Groningen, Groningen, The Netherlands

OBJECTIVES: A systematic review of pharmacoeconomic models used to support the analysis of CVD risk predictors. Studies were included if they had at least 2 ICD-9 codes for one of the cancers on different days within 60 days of each other. A 6-month pre-period without any cancer diagnosis was defined to identify new cancer cases. RESULTS: There were 64% patients with prevalent cancer in the 6-month period, and 36% patients newly diagnosed with cancer. 60% of patients meeting the entry criteria, 54% had an ICD-9-code for pain-related diagnosis. The median and mean number of days from cancer to pain diagnosis was 113 and 192 days, respectively. Only 3% had a co-morbidity that would exclude participation in the registry for patients of 28 years or older. CONCLUSION: Using MarketScan™Treatment Pathways, we tested sample selection criteria and health care utilization in a fraction of time than typical database analyses. These data answered critical questions in the study design for a planned cancer pain registry in a timely and cost-efficient way.

PRM46 Efficacy of Liraglutide Compared to Exenatide and Insulin Glargine in Patients with Diabetes Type 2: A Meta-Analysis

Fathi M

University of Wolverhampton, Wolverhampton, West Midlands, UK

OBJECTIVES: liraglutide and exenatide are the two known approved GLP-1 analogue drug in the management of diabetes, a network meta-analysis was performed to get a more robust evidence on the effect of liraglutide compared to exenatide in achieving HbA1c < 7.0% in more diabetic patient. METHODS: Electronic database was browsed for available material on the proposed subject until May 2012, the inclusion criteria were phase 3 randomised controlled trials in diabetes type 2 patients. The software ADDIS 1.14 (Aggregate Data Drug Information System) was used to perform the network meta-analysis of liraglutide, exenatide and insulin glargine. RESULTS: Node-splitting analyses showed that there were no relevant inconsistencies in the evidence. A consistency model was used to draw conclusion about the relative effect of the three treatments. The relative risk (RR) of liraglutide compared to exenatide is 1.28 (0.75, 2.2) and the RR of exenatide compared to insulin glargine is 1.72 (0.70, 4.37) and the RR of exenatide compared to insulin glargine is 1.35 (0.66, 2.76). A vague prior for the study specific baseline (α) and the treatment effect coefficients (β) are α = N (0, 3.56E-3) and β = N (0, 3.56E-3) respectively. The rank probability of the three drugs ranked liraglutide first, exenatide second and insulin glargine as the last in rank of the best treatments.

CONCLUSIONS: Liraglutide is still effective in maintaining the HbA1c < 7.0% in more diabetes patients compared to exenatide and insulin glargine however exenatide once weekly seems to be more convenient to administer and has a cost advantage compared to liraglutide once daily dose. Liraglutide dose may need to be modified to once weekly or once monthly dose to me more effective in the management of diabetes type 2.
come countries. METHODS: We systematically reviewed the literature on the application of CVD risk models in pharmaco-economic studies. We assessed the quality of integration of these models in these studies by evaluating the agreement of the population characteristics and the time horizon applied between the risk model and the pharmaco-economic study, the appropriateness of the risk model for the population studied, and the incorporation of the uncertainty of the risk model in their study designs. RESULTS: We included a total of 15 studies using published CVD risk models. The studies demonstrated the usefulness of projecting intermediate effectiveness endpoints to long-term, health and cost-related, benefits. However, our quality assessment highlighted the distance between the populations of the risk model and the studies reviewed, the disagreement between risk model and study time horizons, and the lack of consideration of all uncertainty surrounding risk predictions. CONCLUSIONS: Given that utilizing a risk model to project the effect of a pharmacological intervention to CVD events provides an estimate of the intervention’s clinical and economic impact, consideration should be paid on the agreement between the two sets of risk models as well as the understanding of how these predictions add to the decision-analytic model. In the absence of hard endpoint trials, the value of risk models to model pharmacological efficacy in primary CVD prevention remains high, although their limitation should be acknowledged.

PM46

INCREASING LIFE EXPECTANCY: IMPLICATIONS FOR COST-EFFECTIVENESS ANALYSIS

Majer IM, Heeg B
Pharmerit International, Rotterdam, Zuid Holland, The Netherlands

OBJECTIVES: In developed countries mortality in the general population has been declining for several decades and is anticipated to decrease further, especially among the elderly. Life tables based on national statistics reflect mortality conditions of a particular year and therefore do not take into account that survival increases in the general population. As a consequence, life tables seem to systematically overestimate overall survival of the general population. Health-utility economic models use life tables to predict survival of the general population and may therefore also underestimate survival. Our study compares survival prediction methods and discusses implications for health economic models. METHODS: Period life expectancy at age 50 calculated from Dutch mortality rates published for 2009 was compared with life expectancy of a cohort aged 50 in 2009 calculated from projected mortality rates forecasted by the standard Lee-Carter approach. The Lee-Carter model forecasts the level and age pattern of mortality based on the combination of historical mortality patterns and age-specific and time-series components. Mortality rates were taken from the Human Mortality Database. Projected values were based on historical data between 1970 and 2009. RESULTS: Based on projected mortality, cohort life expectancy was 34.97 years whereas period life expectancy was only 32.37 years (2.6 years). When life expectancy was discounted at 1.5% rate, the corresponding values were 25.31 and 26.40 years (1.10 years). CONCLUSIONS: The analyses show that taking into account the decrease in survival over time results in a difference of 2% in undiscounted and 4% in discounted life expectancy in the Netherlands. This difference can have a substantial impact on cost-effectiveness results, especially of curative interventions for diseases that are life threatening or of prevention programmes over a long time horizon. In these cases, sensitivity analysis should be carried out to investigate the impact of decreasing mortality.

PM45

UTILITY ESTIMATION FOR VISUAL ACUITY HEALTH STATES: AN ORIGINAL METHOD TO TRANPOSE PUBLISHED EVIDENCE INTO A MORE FLEXIBLE ESTIMATION

Bennison Cl, Thurston S2, Lescruiawet B1, Jakobakis S1, Koza-Mwiebe S4
1Pharmerit International, York, UK, 2Pharmerit Ltd, York, UK, 3Xixitera Consulting, Leuven, Belgium, 4Thomson Genics NV, Nivelles, Belgium

OBJECTIVES: The NICE reference case stipulates cost-utility analysis as the preferred form of economic evaluation, with health effects expressed in QALYs and health states valued using a validated choice-based method such as the time trade-off (TTO). The evidence-base describing the impact of visual impairment (VI) on quality-of-life is very limited. To date, the Czeck-Murray et al. (2009) utility values for 4 visual health severity groups are considered the most plausible set of utility values for use in eye-disorder economic models. These utility values, originally elicited through simulating VI similar to that associated with wet age-related macular degeneration, were recently applied in other retinal disorders such as diabetic macular edema. The objective of our analysis was to refine the mapping of utilities onto visual acuity (VA).

METHODS: OLS regression models were built to estimate the relationship between mid-point VA of 4 visual health severity groups and mean TTO scores as described in the literature. Linear and non-linear approaches for utility estimation as a function of the number of VA letters were explored. RESULTS: The linear regression for utility estimation was found to be statistically significant. The beta-coefficient for mid-point VA was 0.0054 (p=0.030) and 0.2864 for the constant term (p=0.034). Linear regression estimates were used to project life expectancy for 100,000 persons using available data (0.671); VA3 (0.616); VA4 (0.562); VA5 (0.507); VA6 (0.382). CONCLUSIONS: Published evidence on utility estimates for deterministic visual health severity groups may not easily transpose to alternative vision health-states. Our analysis demonstrated an original approach for utility estimation allowing a more flexible and robust method to map previously elicited VA-associated utilities onto alternate VA health-states. This method allows wider applicability of VA-associated utility estimation in other eye disorders characterized by VA impairment such as vitreomacular traction and macular hole.

PM47

DESEIGN OF A FRAMEWORK FOR COST-EFFECTIVENESS ANALYSIS COHORT SIMULATION USING AN ORDINARY DIFFERENTIAL EQUATION SOLVER ALGORITHM IN R

Frederix GW1, van Hasselt JC1, Severens JL1, Hövels AM3, Huitema AD2, Raaijmakers JA4
1Netherlands Cancer Institute, Amsterdam, The Netherlands, 2Slotervaart Hospital/Netherlands Cancer Institute, Amsterdam, The Netherlands, 3Erasmus University Rotterdam, Rotterdam, The Netherlands, 4Utrecht University, Utrecht, The Netherlands

OBJECTIVES: Dynamical processes in cost-effectiveness analysis (CEA) are typically described using Markov models that account for the full stochastic nature of the process, or alternatively using systems of ordinary differential equations (ODEs). In CEA, ODEs are useful for defining dynamical systems with complex, time-varying properties that often need to be considered, and are difficult to implement as Markov models. However, in the field of CEA, fixed step sizes (‘cycle lengths’) are used for solving systems of ODEs, which may result in bias if the step size is too large in relation to the magnitude of change. The aim of this project was to implement and demonstrate use of a well established dynamical ODE solver algorithm (LSODA) for CEA in the statistical scripting language R, and to quantify bias in outcome caused by use of a fixed-size step cycle simulation approach.

RESULTS: To demonstrate the proposed approach, a previously reported CEA on adjuvant breast cancer therapies was re-analysed using the ODE solver algorithm LSODA. A model implementing the fixed-cycle length method was also developed to compare bias by using a range of different cycle lengths. RESULTS: The CEA model was successfully developed using the ODE solver LSODA. The use of fixed cycle lengths resulted in bias compared to the outcome of the ODE model. A cycle length of 1 year resulted in an underestimation of 0.016 absolute LYS (5.6%) and 0.05 for pairs of 0.030). Linear regression estimates were used to project life expectancy for 100,000 persons using available data (0.671); VA3 (0.616); VA4 (0.562); VA5 (0.507); VA6 (0.382). CONCLUSIONS: The developed dynamical approach was found to be suitable for conduct of CEA’s and flexible enough to implement. Moreover, it was demonstrated that use of fixed cycle lengths could potentially cause unnecessary bias in CEA outcomes. Finally, we advocate use of scripting languages such as R in the field of health economics to improve transparency, reproducibility and overall integrity of conducted CEA's.