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**OBJECTIVES:** Cervical cancer (CC) is one of the world's deadliest forms of cancer. In Ukraine during the previous decade incidence rates for CC has been gradually increasing, taking nowadays the 2nd place of cancers among women of reproductive age. The causative agents of CC are high-oncogenic-risk types of Human Papillomaviruses (HPVs). Central role in CC development prevention is taken by screening programs. Maximization of effectiveness of screening strategies increases the significance of elaboration of the needed methods. From an economic point of view screening strategies are evaluated through cost-utility analysis. Different variations of cervical screening strategies are implemented all over the world, but their expected utilities for Ukrainian population are not assessed. **METHODS:** 1257 cervical smears from Ukrainian women aged 19 – 65 were tested (HPV typing test and cytological testing). Obtained results of laboratory testing formed the basis for developing of simulation-optimization technique, based on Markov model. Screening strategies, with HPV test only, cytological test only or both tests depending on the differences in clinical and epidemiological history of the patient, were evaluated. **RESULTS:** Simulation shows maximum of diagnostic utility for HPV test, as a single screening strategy, in women aged 29-30 years. Screening with cytological test only increases its utility with the increase of patients' age. Combined screening strategy based on both HPV and cytological tests shows maximum of utility for HPV test when using it among younger women (<21 years old) and for cytological test when using it with women aged >21. Markov chain was designed for assessment of optimal screening intervals for each woman, depending on her previous medical history and age. **CONCLUSIONS:** The study provides simulation-optimization techniques for development of cervical screening recommendations in Ukraine. According to the results of the modeling, the optimal screening strategy depends on previous medical history and age individually.

PRM44

## THE ECONOMIC IMPACT OF SHAPE FORMULA FOR THE CHILDREN OF OVERWEIGHT AND OBESE MOTHERS

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**OBJECTIVES:** The global prevalence of obesity is rising rapidly, highlighting the importance of understanding risk factors related to the condition. Childhood obesity, which has itself become increasingly prevalent in recent years, is an important predictor of adulthood obesity. Studies suggest that the protein content of milk consumed in infanthood is an important predictor of weight gain in childhood. For instance, there is evidence that a lower-protein formula for non-exclusively breast-fed infants of overweight or obese mothers (SHAPE) can offer such advantages over standard infant formulas. The current study used predictive health economic modelling to determine the long-term clinical and economic outcomes associated with the SHAPE formula compared with a standard formula when used in Mexico. **METHODS:** A discrete event simulation was constructed to extrapolate the outcomes of trials on the use of formula in infanthood to changes in lifetime body mass index (BMI), the health outcomes due to the changes in BMI, and the healthcare system costs, productivity and quality of life impact associated with these outcomes. **RESULTS:** The model predicts that individuals who receive SHAPE in infancy go on to have lower BMI levels throughout their lives, are less likely to be obese or develop obesity-related disease, live longer, incur fewer health system costs and have improved productivity. **CONCLUSIONS:** Simulation-based economic modelling suggests that the benefits seen in the short term, with the use of SHAPE over standard formula, could translate into considerable health and economic benefits in the long term. Modelling over such long timeframes is inevitably subject to uncertainty. Further research should be undertaken to improve the certainty of the model.

PRM45

## DIFFERENT MODELS FOR DIFFERENT PAYERS – ARE WE MOVING TOWARDS OR AWAY FROM UNIVERSAL ECONOMIC MODELS?

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**BACKGROUND:** Manufacturers developing new medicines must conduct numerous reimbursement applications in multiple geographies before their treatments became widely used. This provides a challenge when developing economic models in meeting these varied demands. Planning an effective strategy requires a clear understanding of the variation in requirements from different reimbursement authorities. **OBJECTIVES:** The aim of this research was to review the submission guidelines from several leading HTA agencies to identify the similarities and differences between them. In addition, we assessed options to develop a universal economic model and have it incorporated across these agencies. **METHODS:** Submission guidelines published by HTA authorities in UK, Germany, France, Sweden, Netherlands, Australia and Canada were reviewed. Initiatives from EUnetHTA and EMA were also included. Model structure and methodology were compared to assess variability and make recommendations on the acceptability and likelihood of having a single economic model suitable for these bodies. **RESULTS:** Cost-utility analysis was found to be the preferred method of assessing cost-effectiveness, with Germany being the most notable exception. Good practice for conducting literature reviews and indirect comparisons were broadly similar, with NICE providing the greatest detail. Mapping QoL was widely accepted, but there was a preference for PROs collected during RCTs using EQ-5D and disease-specific instruments. There is also a joint HTA-Regulatory advice pilot between multiple HTA agencies and the EMA underway, with 13 initial joint assessments having been completed as of March 2015. **CONCLUSIONS:** Economic evaluation requirements are comparable across many HTA agencies, and should be closely followed to optimize economic models. Ongoing initiatives are allowing cross-border collaborations to become more commonplace. These activities mean manufacturers are now able to engage in new types of model design, both universal and flexible enough for local adaptation.

PRM46

## BAYESIAN ECONOMETRIC MODELLING OF OBSERVATIONAL DATA FOR COST-EFFECTIVENESS ANALYSIS

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**OBJECTIVES:** In the absence of evidence from randomised controlled trials on the relative effectiveness of treatments, cost-effectiveness analyses (CEAs) may use observational evidence instead. Treatment assignment is not, however, randomised, and naïve estimates of treatment effect may therefore be biased. To appropriately deal with this form of bias, one may need to adjust for observed and unobserved confounders. In this work we explore these adjustment strategies within a case study of negative pressure wound therapy (NPWT) in the healing of surgical wounds healing by secondary intention (SWHSI). **METHODS:** Time to healing of SWHSI patients, the main effectiveness outcome, was estimated using i) OLS models, ii) OLS model adjusting for potential confounders and iii) two-stage instrumental variable (IV) models. All econometric models were Bayesian and used MCMC simulation. CEA estimates were obtained for selected models. **RESULTS:** The case study was a longitudinal cohort study that included 393 participants followed up by on average 500 days. Unadjusted estimates of the additional days NPWT patients take to heal was 69.1 (mean, SE=10.2), compared to other treatments. When adjusting for observables, 77.2 (mean, SE=19.9) and when using the IV approach, 61.0 (mean, SE=64.9) days were estimated. NPWT was not cost-effective across all approaches implemented. **CONCLUSIONS:** This study demonstrates the feasibility of analysing observational evidence for CEA by adjusting for both observable and non-observable confounders. Within the case study, we could not demonstrate that the existing endogeneity affects the effectiveness of NPWT, and thus cost-effectiveness results were consistently negative.

PRM47

## SOCIETAL BURDEN AND IMPACT ON HEALTH RELATED QUALITY OF LIFE (HRQOL) OF NON-SMALL CELL LUNG CANCER (NSCLC) IN EUROPE

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**OBJECTIVES:** NSCLC accounts for approximately 85% of lung cancers globally and is associated with poor prognosis and a substantial burden to patients, societies and economies. Two systematic literature reviews (SLRs) were conducted to explore NSCLC and the associated societal burden (indirect and direct costs; SLR1) and impacts on patient HRQoL (SLR2) across Europe. **METHODS:** Both SLRs were conducted using the OVID search engine and reviewed: Medline® in process (PubMed) and Embase (OVID) for SLR 1 and 2, EconLit (EBSCOhost) and NHS Economic Evaluation Database for SLR1, and PsycINFO for SLR2. Searches were limited to human studies, English language and the past 10 years (July 2004 to July 2014 [SLR1] and June 2014 [SLR2]). Additional pragmatic searches were conducted of oncology organisation websites and conference proceedings of the American Society of Clinical Oncology (ASCO) Annual Meetings (2009–2014). **RESULTS:** Six publications on indirect costs (including lost productivity) and 18 on direct costs were identified through SLR1. Indirect costs were high in relation to total costs. Reporting of direct costs was diverse; in-patient stay, diagnostic/staging and treatment costs including medication and surgery were identified as major cost drivers. SLR2 identified 59 publications; HRQoL was reduced in patients with NSCLC when compared to the general population. Specific domains affected included emotional functioning (notably, depression and anxiety) and physical functioning. Generally, impacts were more unfavourable for patients with late-stage or progressive NSCLC and those receiving later lines of treatment. **CONCLUSIONS:** Data suggest the societal burden of NSCLC is substantial; however heterogeneity in study designs, reporting and evaluation methods limit cost comparisons. While NSCLC differentially impacts domains of HRQoL, the impact on daily activities, work, cognitive function and social functioning was not commonly reported. Further research to explore particular HRQoL domains and quantify the societal burden of NSCLC is ongoing.

PRM48

## ESTIMATING LIFETIME MEDICAL COSTS FROM CENSORED CLAIMS DATA

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**OBJECTIVES:** Estimates of expected lifetime survivals and lifetime costs for cohort with specific conditions are usually needed in cost-effectiveness analysis. However, the survival data of followed-up patients were often censored with high rates and observed expenditures were incomplete. It is desirable to develop reliable and robust methods for extrapolating survival and cost functions beyond the follow-up. **METHODS:** We propose using a semi-parametric extrapolation method to replace parametric survival models for estimating lifetime survival rates. We extrapolate the lifetime monthly mean costs using a weighted average of mean expenditures of patients in their final years and months prior to their final years. The weights are functions of hazards which can be estimated from the extrapolated lifetime survival rates. The expected lifetime cost can be estimated by summing the product of the estimated survival probabilities and monthly mean costs. **RESULTS:** We evaluate performance of the proposed approach using simulated data and empirical data. For demonstration, we use population-based claims data from the Taiwan National Health Insurance to establish cohorts of ischemic stroke and intracerebral hemorrhage and estimate the lifetime direct medical costs of first-ever stroke patients. We found that life expectancy of patients diagnosed with intracerebral hemorrhage and ischemic stroke is about the same of 9 years since the onset of stroke. The expected lifetime direct medical costs are also about the same amount of US$ 35,000 for both cohorts. **CONCLUSIONS:** We demonstrated the proposed semi-parametric method of survival extrapolation performed well using simulated data and empirical data. We also showed in the simulation that even perfectly fitted parametric model may not be accurate for long-term extrapolation. Our estimates