a similar number of cycles in the non-cirrhotic for both the simple and complex model. This was done by calculating: (1) the expected number of cycles in F0F3 before transitioning to F4 (E) in the simple model; (2) the minimum number of cycles from Fn to F4 adjusted for the fibrosis stage distribution; (3) the (I-T)^-1 matrix equal to the average number of cycles in each Fn state based on (1) and (2); (4) the T matrix corresponding to the transition probability for Fn to Fn+1. **RESULTS:** Based on a F0F3 to F4 TP of 0.04 and a fibrosis stage distribution of 23% F0 & F1, 27% F2 & F2, we obtained Fn to Fn+1 TP = 0.097. For both the simple and complex models E was equal to 25. However, the sum of cycles in the non-cirrhotic states after only 50 cycles were 20.12 and 21.92 for the simple and complex models respectively. Taking into account a 2% discounting the sums were 13.83 and 8.59. **CONCLUSIONS:** Markov models are sensitive to their structure, even when properly fitting the TP. For HCV, changing from a simple to a complex model is not trivial.

PRM38

THE COST OF TREATMENT OF THE NEW ANTIVIRAL THERAPIES AGAINST THE HEPATITIS C VIRUS

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OBJECTIVES: The goal of our poster is to analyse the costs of treatment of the new antiviral therapies against the Hepatitis C virus (HCV) submitted to the Department of Health Technology Assessment of the National Institute of Pharmacy and Nutrition. **METHODS:** In our analysis, we examined the cost of treatment with the available interferon (IFN)-based and IFN-free therapies based on the current PUPHA database from the official website of National Health Insurance Fund of Hungary. The cost estimates have been made in two different ways both from the payer's view. The first calculation does not take into account the success of therapy as it's based on the SPC with the assumption of a complete possible length of the treatment. The second calculation method is based on the sustained virologic response (SVR) which has become the best indication of therapeutic success. **RESULTS:** Performance-based risk-sharing arrangements should be based on an endpoint which is meaningful both from the payer's and the patients' perspective, which can be measured objectively and which depends primarily on the applied therapy. This endpoint is the SVR rate in the treatment of HCV. The SVR rates were between 34,4% and 95% in the relevant clinical studies. The cost of the therapy ranges between 8.4 million HUF and 31 million HUF, if we do not take into account the SVR rates. **CONCLUSIONS:** Following a more than two decades of intense research, the interferon-free era of hepatitis C treatment has arrived. The availability of IFN-free regimens allows many patients who could not be treated previously because of medical or psychiatric contraindications or an inability to tolerate IFN to receive treatment. Introduction of these new HCV drugs put a financial strain on the payer. The use of performance-based financing is a way to maintain the balance of the budget.

PRM39

RESOURCE USE MEASUREMENT IN TRIALS CONDUCTED IN CARE HOMES: A STUDY OF LEVEL-OF-AGREEMENT BETWEEN DATA COLLECTED FROM GP RECORDS AND CARE HOME RECORDS

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OBJECTIVES: Methodological research focused on resource use measurement has been limited in comparison to the amount of research focussed on measuring outcomes within the economic evaluation context. This study was designed to assess the level-of-agreement between two different sources of health and social care resource use data collected on care home residents. **METHODS:** The methods were informed by a review of level-of-agreement studies concerned with resource use in older people. In the base case, resource use data collected from both GP medical records (electronic records) and care home records (paper-based records) on 362 care home residents were obtained as part of the CAREMED cluster randomised controlled trial. Descriptive statistics were explored before assessing level-of-agreement through percent agreement, 95% limits of agreement, and Lin's concordance correlation coefficient (CCC). Sensitivity analyses excluded non-users and tested timeframe. Factors affecting the magnitude of difference were explored using multilevel modelling. **RESULTS:** Several resource items (number of GP, out of hours GP and podiatrist contacts) were found to have substantial agreement (0.61 to 0.80) between the GP records and care home records according to the CCC. The number of total visits, dietician, paramedic and SLT contacts showed moderate agreement (0.41 to 0.60). Most resources showed a poor (less than 0.00) or slight (0.00 to 0.22) level-of-agreement either due to care home records (for chiropodist, music therapy, and social worker contacts) or GP records (for phlebotomist and practice nurse) recording a greater number of visits. Patient classification (residential/nursing), number of falls, number of STOPP criteria met, number of medications and comorbidities significantly affected the magnitude of differences observed. **CONCLUSIONS:** This research suggests that both sources of data are reliable for some resources but not others, indicating dual sources may be necessary where a wider perspective is important and feasible in terms of costs of data collection.

PRM40

ARE QALYS AN APPROPRIATE MEASURE TO USE WHEN EVALUATING PUBLIC HEALTH INTERVENTIONS IN THE UK?

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OBJECTIVES: Quality-adjusted life years (QALYs) are commonly used in health technology appraisals, including those by NICE in the UK. However, QALYs only include 'health-related' quality of life (QOL) which may not apply to interventions that have benefits and costs that fall outside of the NHS. NICE recommends that public health economic evaluations take a cost consequence or cost benefit approach and present a public sector or societal perspective. However, it is not clear how or if the costs and benefits that fall outside the NHS should be incorporated into this threshold for cost-effectiveness. The objective of this research was to investigate the methodology used in public health modelling, to determine the effect that this has on predicted cost-effectiveness and to make recommendations about the most appropriate methods to use. **METHODS:** We reviewed past NICE public health guidance and the associated economic evaluations to assess if methods tended to be based on the ICER alone or if other benefits are taken into account. In those instances where non-health benefits are included, we evaluated how this was done and if it was done consistently. **RESULTS:** Results showed that a range of methodologies were used to evaluate public health interventions in the UK and that the methods used were inconsistent. ICERs were often calculated despite not always being the most appropriate measure. There tended to be considerable uncertainty around data inputs in the majority of economic evaluations. **CONCLUSIONS:** The methods used to evaluate public health interventions in the UK vary, mostly by the type of economic evaluation and the perspective taken. ICERs were not always the most appropriate outcome. Variations in the methods could result in inconsistent recommendations across Public Health Guidance.

PRM41

BUDGET IMPACT ANALYSIS IN THE UK SETTING – KNOW YOUR AUDIENCE

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OBJECTIVES: When developing a budget impact model (BIM) the design stage is key. A particular element which should be carefully considered during the design phase is the perspective and in particular who the audience will be. The objective of this study was to identify who the potential users and healthcare decision-makers may be and what elements should be captured within the BIM to meet their requirements within a UK setting. **METHODS:** Research was conducted in a staged approach. The first stage involved identifying the different types of potential users of a BIM. Following identification of these different users, the next stage of research sought to identify the cost criteria each user is expected to assess a BIM against, thus informing what should be captured in an analysis. The final stage then identified what cost categories are required in a BIM to satisfy these criteria. **RESULTS:** Two main users of a BIM were identified: providers and commissioners. The criteria that a provider is expected to consider is: what is the incremental cost and resource use implications of providing the intervention in question? What is the incremental income that will be received for providing this intervention? Whereas, the criteria that a commissioner is expected to consider are: what is the incremental cost of commissioning the provision of the intervention? Is there any added value in terms of quality, capacity or outcomes? An example of appropriate costs which are aligned with the perspective of a provider and commissioner, would be NHS reference costs and national tariffs, respectively. **CONCLUSIONS:** Determining the audience of a BIM is crucial in designing a model fit for purpose. Key requirements of a BIM will be dependent on the audience, in particular capturing costs appropriately. Research should be conducted for other countries.

PRM42

STRUCTURE OF HEALTH-RELATED DIRECT COSTS IN UKRAINE - THE FIRST STEP OF ANALYSIS

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OBJECTIVES: Now in Ukraine state, regional and private budgets on country, regional, institutional and personal levels have substantial level of insufficiency. Human productivity is the main national asset for economic recovery, so, health care system could make significant impact and guarantee sustain economic growth. Therefore, every decision within Ukrainian healthcare system must be justified clinically and economically. With the purpose to prepare basis for economic justification the analysis of health-related cost categories specific for Ukraine was performed. **METHODS:** Direct cost are specific for Ukrainian Healthcare system were drawn in 3 main categories: outpatient, inpatient and emergency (pre-hospitalization) costs. Macroeconomic result categories, Tax and Work policy, tariffs for services in healthcare system and standards for care were analyzed to determine cost units and cost compositions. Four payer perspectives were considered: state budget and funds; patient and family; employer; insurance company. **RESULTS:** In result, health-related costs are specific for Ukraine and approaches for calculation were determined. Outpatient costs: outpatient visit costs (physician and nurse salary); diagnostic measures costs (laboratory or instrumental required by healthcare standards); treatment costs (basis or course required by healthcare standards). Inpatient costs: hospital-days costs (daily accommodation & care); diagnostic measures costs (laboratory or instrumental required by healthcare standards); treatment costs (single intake or course required by healthcare standards). Emergency costs: visit costs (physician and nurse salary); diagnostic measures costs (laboratory or instrumental required by healthcare standards); treatment costs (single intake required by healthcare standards); transportation costs (driver salary, fuel and amortization costs). **CONCLUSIONS:** Costs are drawn in current study to be validated internally in Ukraine with the State-Healthcare, Legislation, Economic experts. An external validation to be performed as well by the comparison of costs and cost categories with the same in other countries. After the validation, current cost matrix is planned to be integrated in population model for Cost of Illness Analysis.

PRM43

CONSTRUCTION OF SIMULATION TECHNIQUES FOR DEVELOPMENT OF OPTIMAL CERVICAL CANCER SCREENING STRATEGIES: EXPERIENCE OF UKRAINE

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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