Markov model was developed to estimate the health outcome (QALY) and total treatment costs with Markov cycle of 21 days and lifetime horizon. The effectiveness data was retrieved from the randomized clinical trial ECOG 4599. Direct costs, including cost of drugs, administration, medical services, hospital bed day and adverse drug reaction management were estimated based on treatment guideline of NCCN for NSCLC. Indirect costs, including loss of earnings, cost for meal, transportation, accomodation of patients and their caregivers due to treatment, were estimated based on survey of a cohort of 87 patients with NSCLC in HCMC Oncology Hospital. Both cost and effectiveness were discounted 3% annually. **RESULTS:** Adding bevacizumab to PC regimen in first-line therapy of advanced NSCLC patients resulted in incremental QALY gained of 2.26 month compared with PC regimen (7.88 versus 5.62). The total treatment cost with BCP was 3 times higher than PC (2,499 millions vs 761.7 millions VND, respectively). ICER of BCP versus PC was 768,732,924 VND, which is 3.35 times higher than the Willingness-To-Pay of Vietnam in 2013 (229,242,416 VND). A probability sensitivity analysis demonstrated the patient's weight and bevacizumab's price as the most affecting factors to the ICER of BCP vs PC. **CONCLUSIONS:** Conducted analysis showed that combination of bevacizumab and PC regimen in first-line therapy of NSCLC was not cost-effective compared with PC regimen. Support from the manufactures, suppliers and insurance organizations are neccessary to raise its economic effectiveness in treatment of advanced NSCLC.

PCN119

COST-EFFECTIVENESS SIMULATION OF COLONOGRAPHY VERSUS COLONOSCOPY IN GERMANY: IS LAXATIVE-FREE COLONOGRAPHY COST-EFFECTIVE?

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OBJECTIVES: Colorectal cancer (CRC) screening using computerised tomographic colonography (CTC), also referred to as virtual colonography, has attracted considerable attention due to its positive impact on high screening uptake rates, especially with a laxative-free preparation before screening. A decision analysis model was constructed in order to evaluate the clinical and economic consequences of performing three different screening tests versus a no screening scenario in a population at average risk of colorectal cancer in Germany: colonoscopy, conventional CT-colonography and laxative-free CT colonography. **METHODS:** A state-transition microsimulation was developed for the evaluation of the different screening strategies using TreeAge Pro Healthcare 2014. A hypothetic population of 100,000 German asymptomatic adults aged between 50 and 100 years was used for the basis of the model. The simulation of the screening strategies was undertaken by assessing the number of screening patients diagnosed with CRC on the basis of the sensitivity and specificity of each strategy and the related uptake of each screening method. Sensitivity analysis will be applied to test the impact of parameter uncertainty on model outcomes and recommendations. **RESULTS:** Initial results of the simulation show that laxative-free colonography was found to be the most costly screening option, with a total cost of EUR 4,115 per screening patient in the simulation model. Colonoscopy was found to be the least costly screening method, with total equivalent costs of EUR 2,132. The most effective screening was modeled for laxative-free colonography. The ICER of laxative-free colonography compared to colonoscopy was simulated at 5,221 EUR per life year saved. **CONCLUSIONS:** Our simulation has shown that using data from new research indicating the possibility of less costly use of CTC than previously used for modeling, laxative-free CTC screening has the potential to become a cost-effective alternative screening method for CRC due to its advantage related to improvements in screening uptake.

PCN120

COST-EFFECTIVENESS ANALYSIS OF ABIRATERONE ACETATE TREATMENT COMPARED WITH CABACITAXEL IN COSTA RICA, IN PATIENTS WITH METASTATIC CASTRATION-RESISTANT PROSTATE CANCER THAT HAVE FAILED TO CHEMOTHERAPY WITH DOCETAXEL

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OBJECTIVES: To assess the cost-effectiveness of Abiraterone Acetate plus Prednisone (A-P) compared with Cabazitaxel plus Prednisone (C-P) in Costa Rica, in patients with Metastatic Castration-Resistant Prostate Cancer (mCRPC) that have failed to chemotherapy with Docetaxel. **METHODS:** A three-health state cohort simulation Markov Model (progression-free, post-progression and death) was developed based on overall and progression free survival data. The time frame was 10 years. The perspective was that of the Public System of Health of Costa Rica. The health outcomes of interest were Quality Adjusted Life Years (QALYs) and Life Years (LYs). Efficacy data was taken from clinical trials (COU-AA-301 for A-P and TROPIC for C-P). Utilities for health states and negative utilities for adverse events were estimated based on quality of life endpoints of the COU-AA-301 trial. The base year was 2012. All costs are presented in Costa Rican currency (Colones - CRC). Costs and outcomes were discounted at 5%. Probabilistic sensitivity (PSA) analysis was performed to evaluate uncertainty surrounding the parameters. **RESULTS:** A-P resulted in 0.79 QALYs and 1.35 LYs, per patient, respectively. C-P resulted in 0.71 QALYs and 1.28 LYs, per patient, respectively. Mean total costs per patient were: CRC 33.881.184 for A-P and CRC 41.981.207 for C-P. The results of the probabilistic sensitivity analysis showed that, when compared with C-Z, A-P was found dominant (associated with reduced costs and increased QALYs) in the majority of the iterations. A-P had an 89% probability of being cost effective, independent of the willingness to pay, when compared to C-P. **CONCLUSIONS:** A-P can be considered dominant (cost-saving), when compared with C-P, in patients with Metastatic Castration-Resistant Prostate Cancer that have failed to chemotherapy with Docetaxel, from the perspective of the Public System of Health of Costa Rica.

PCN121

COST-EFFECTIVENESS ANALYSIS OF ABIRATERONE ACETATE TREATMENT COMPARED WITH CABACITAXEL IN DOMINICAN REPUBLIC, IN PATIENTS WITH METASTATIC CASTRATION-RESISTANT PROSTATE CANCER THAT HAVE FAILED TO CHEMOTHERAPY WITH DOCETAXEL

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OBJECTIVES: To assess the cost-effectiveness of Abiraterone Acetate plus Prednisone (A-P) compared with Cabazitaxel plus Prednisone (C-P) in Dominican Republic, in patients with Metastatic Castration-Resistant Prostate Cancer (mCRPC) that have failed to chemotherapy with Docetaxel. **METHODS:** A three-health state cohort simulation Markov Model (progression-free, post-progression and death) was developed based on overall and progression free survival data. The time frame was 10 years. The perspective was that of the Public System of Health of Dominican Republic. The health outcomes of interest were Quality Adjusted Life Years (QALYs) and Life Years (LYs). Efficacy data was taken from clinical trials (COU-AA-301 for A-P and TROPIC for C-P). Utilities for health states and negative utilities for adverse events were estimated based on quality of life endpoints of the COU-AA-301 trial. The base year was 2012. All costs are presented in Dominican currency (Dominican Pesos - RD$). Costs and outcomes were discounted at 5%. Probabilistic sensitivity (PSA) analysis was performed to evaluate uncertainty surrounding the parameters. **RESULTS:** A-P resulted in 0.79 QALYs and 1.35 LYs, per patient, respectively. C-P resulted in 0.71 QALYs and 1.28 LYs, per patient, respectively. Mean total costs per patient were: RD$ 2.204.289 for A-P and RD$ 2.732.365 for C-P. The results of the probabilistic sensitivity analysis showed that, when compared with C-Z, A-P was found dominant (associated with reduced costs and increased QALYs) in the majority of the iterations. A-P had a 75% probability of being cost effective, independent of the willingness to pay, when compared to C-P. **CONCLUSIONS:** A-P can be considered cost-saving (dominant), when compared with C-P, in patients with Metastatic Castration-Resistant Prostate Cancer that have failed to chemotherapy with Docetaxel, from the perspective of the Public System of Health of Dominican Republic.

PCN122

CLINICAL AND ECONOMIC ANALYSIS OF EFFECTIVENESS OF EVEROLIMUS IN THE TREATMENT OF HR+, HER2- ADVANCED BREAST CANCER IN RUSSIA

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OBJECTIVES: Modern therapeutic approaches in treatment of advanced breast cancer can achieve clinically significant regression of symptoms, prolong life and improve its quality. Aim of this study was to conduct clinical and economic analysis of application of everolimus in the treatment of hormone-receptor-positive (HR^+), human epidermal growth factor receptor-2-negative ($HER2^-$) advanced breast cancer in postmenopausal women. **METHODS:** An epidemiological and pharmacoeconomic evaluation of HR^+, $HER2^-$ advanced breast cancer in postmenopausal women with using a survey of experts from different regions of Russia and modeling method. Calculating the cost of drugs and medical services was conducted according to experts and standard of medical care. Filling of a Markov model was conducted without using and with using of everolimus in the treatment of the patients within 5 years. Calculated indicators were: the impact of the disease on budget, the cost of one additional year of life. **RESULTS:** From 13 regions of Russia 8 experts refused to provide information on the questionnaire, which may indicate the unwillingness to disclose information on epidemiology and tactics of treatment of disease. The burden of breast cancer for 5 years without the use of everolimus in the treatment regimens of patients with postmenopausal HR^+, $HER2^-$ advanced breast cancer and with using it were: in Moscow 118.668.419€ and 137.596.651€; St. Petersburg-36.730.318€ and 38.133.492€; Republic of Khakassia-18.854.270€ and 19.812.467€; Omsk region-32.428.540€ and 33.603.456€; Primorsky Krai-39.176.077€ and 40.877.880€. The use of of everolimus with exemestane in the treatment of advanced breast cancer increases by 1.5-2 times life expectancy and its "cost-effectiveness" indicator is 2 times lower comparing to exemestane monotherapy and chemotherapy. Sensitivity analysis using the results from 5 regions of Russia showed unidirectional comparison. **CONCLUSIONS:** The use of everolimus with exemestane is the dominant technology of treatment HR^+, $HER2^-$ advanced breast cancer in postmenopausal patients compared with traditional technology of application of chemotherapy drugs or exemestane alone.

PCN123

A COST-EFFECTIVENESS ANALYSIS OF EGFR-TK MUTATION STATUS-GUIDED 1ST- AND 2ND-LINE TREATMENT OF STAGE III/IV NON-SMALL CELL LUNG CANCER IN THE UK

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OBJECTIVES: Lung cancers are the most common malignant tumours, accounting for 1.38 million annual deaths worldwide. Non-small cell lung cancer (NSCLC), the predominant tumour subtype, is associated with significant deteriorations in both survival and quality of life. Epidermal growth factor receptor tyrosine kinase (EGFR-TK) has emerged as a drug therapy target. The National Institute for Health and Care Excellence (NICE) recommends erlotinib – an EGFR-TK inhibitor – for first-line treatment of NSCLC in EGFR-TK mutation-positive patients, and second-line treatment in all patients irrespective of EGFR-TK mutations. We developed a model to assess the cost-effectiveness of an EGFR-TK mutation status-guided treatment strategy for stage III/IV NSCLC, compared with a strategy not dependent on mutational status. **METHODS:** A Markov model was developed from the perspective of the UK National Health Service (NHS) over a lifetime horizon. This compared a current scenario (in which a cohort of NSCLC patients received doublet chemotherapy at first-line therapy, followed either by erlotinib or docetaxel at second-line) to a revised scenario (in which all EGFR-TK mutation-positive patients received erlotinib at first-line followed by second-line docetaxel, and all mutation-negative patients received doublet chemotherapy followed by either docetaxel or

erlotinib). Efficacy data were based on the TORCH and TAX317 randomised controlled trials. Cost data were obtained from NHS Reference Costs, British National Formulary list prices and other publically-available sources. **RESULTS:** In the base-case analysis, the estimated incremental cost-effectiveness ratio exceeded the NICE willingness-to-pay threshold of £20,000 per quality-adjusted life year gained. Univariate and probabilistic sensitivity analyses suggested the results were robust to parameter changes, showing greatest sensitivity to variation in overall survival parameters. **CONCLUSIONS:** Our model suggests that, from the perspective of the UK NHS, an EGFR-TK mutation status-guided treatment strategy across first- and second-line treatment of NSCLC is not cost-effective compared with a strategy not dependent on mutational status.

PCN124

COMPARATIVE COST-EFFECTIVENESS STUDY OF MODERN RADIATION THERAPIES IN HUNGARY FOR LOCALIZED PROSTATE CANCER

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OBJECTIVES: The introduction of innovative medical devices with high investment and operational costs is often delayed in countries with severe resource constraints. Cost-effectiveness analysis can help decision-makers to understand the economic value of such technologies. The purpose of our study was to compare the cost-effectiveness of two modern radiation therapy techniques, the stereotactic body radiation therapy (SBRT) and intensity-modulated radiation therapy (IMRT) compared to the 3-dimensional conventional radiation therapy (3DCRT) for treatment of low- to intermediate-risk prostate cancer in Hungary. **METHODS:** A Markov model was constructed with the following disease states of a 65-year-old patient with organ confined prostate cancer: no evidence of disease after radiation therapy, hormone therapy, chemotherapy, death. Transition probabilities were calculated based on the international literature for SBRT, IMRT and 3DCRT. Utility values for each health state were obtained from publically available secondary sources. Costs in the model were calculated based on the Hungarian Health Insurance Fund rates, and were converted to EUR by applying actual exchange rates (1 EUR = 305 HUF). Analysis was conducted from payer perspective for 65-year-old patients over 10 years time horizon. **RESULTS:** Based on preliminary calculations the expected mean cost of patients undergoing SBRT, IMRT and 3DCRT were 2,201 EUR, 5,704 EUR and 11.549 EUR respectively. Expected QALYs were 6.00 for SBRT, 5.8 for IMRT and 3.9 for 3DCRT. Compared to 3DCRT, both IMRT and SBRT were less costly and resulted in more health gain. **CONCLUSIONS:** The modern SBRT and IMRT are not only cost-effective compared to the conventional 3DCRT but also provide a great cost saving potential for the Hungarian health care system and may improve access to radiation and quality of life for patients. Appropriate financial incentives in the DRG system should support the uptake of cost-effective hospital technologies in Hungary.

PCN125

SYSTEMATIC CRITICAL REVIEW OF ECONOMIC EVALUATIONS OF RITUXIMAB, ADDED TO CONVENTIONAL CHEMOTHERAPY REGIMEN IN THE TREATMENT OF PATIENTS WITH CHRONIC LYMPHOCYTIC LEUKEMIC REFRACTORY

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OBJECTIVES: To review the cost-effectiveness studies of chronic lymphocytic leukemia (CLL) treatment, in combination and in comparison with fludarabine and cyclophosphamide chemotherapy (R-FC) in refractory patients or patients who had been previously treated. **METHODS:** Search and analysis of scientific evidence: the basics of The Cochrane Library, Centre for Reviews and Dissemination (CRD), Embase, Lilacs, Database of the Brazilian Network for Technology Assessment (SISREBRATS), and MEDLINE via PubMed were searched. Aiming to meet economic evaluations (AVE), or evaluations of health technologies (ATS), comparing schemas cyclophosphamide and fludarabine (CF) and the same plus Rituximab (R-FC). Studies were only selected in second-line treatment for CLL. **RESULTS:** Two economic evaluations studied the treatment of patients with refractory or relapsing disease (R-FC vs FC). In the study, 24% had improvement in progression-free survival outcome ($p < 0.05$) in the R-FC, with more patients achieving partial or complete response in this group (61% vs 49%, $p < 0.05$). There was no statistically significant difference in overall survival. The Rituximab caused more adverse effects, but values of statistical tests for these outcomes are not presented. In a technology assessment conducted by NICE, even with reservations, the drug was recommended in view of the British health care system. **CONCLUSIONS:** There is significant uncertainty in the relevant outcomes for stages of refractory or relapsing disease. Few clinical trials evaluating the effectiveness of Rituximab in patients with CLL, which demonstrate no impact on overall survival, were found. In addition to the significant increase in costs for managing the disease.

PCN126

WHAT IS THE MOST COST-EFFECTIVE STRATEGY FOR TREATING CHRONIC MYELOID LEUKEMIA AFTER IMATINIB LOSES PATENT EXCLUSIVITY IN EUROPE?

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OBJECTIVES: To analyze the cost-effectiveness of treating all chronic-phase chronic myeloid leukemia (CML) with imatinib initially compared to physician-choice between imatinib or the second-generation tyrosine kinase inhibitors (TKIs) dasatinib or nilotinib. Imatinib will lose patent exclusivity between 2015-2016 and its price is expected to drop 60-90% within one year throughout Europe. **METHODS:** A Markov model simulating "step-therapy" compared to "physician-choice" in treating CML in 2015 through 5 years. The model assumes a European societal perspective. In both approaches, if initial treatment fails, patients are switched to a second-generation TKI. Patients are assumed to switch if they fail to meet efficacy endpoints: complete cytogenetic response (CCyR) or major molecular response (MMR). The model assumes stabilized prices of second-generation TKIs, but discounts the price of imatinib: 100% for first 6-months; 60-80% for second 6-months; and 10-30% thereafter. For each drug, tolerance, efficacy and the probabilities of treatment choice, switching and failure were drawn from published clinical trials. Quality-adjusted life years (QALYs) were based on U. K. preference weights (Szabo et al. 2010). According to Hoyle et al. (2011), direct medical costs per patient were: £20,244 for imatinib; and ~£30,000 for dasatinib and nilotinib. Additional costs included patient monitoring and allogeneic transplantation. Costs and QALYs were discounted at 3% (British Pounds Sterling (£); 2013). Sensitivity analyses tested parameters for impact on results at a willingness-to-pay of £50,000/QALY. **RESULTS:** Step-therapy costs less and offers clinically-equivalent utility (£62,388; 2.864 QALYs) compared to physician-choice (£71,268; 2.879 QALYs), at an ICER of £592,000/QALY. The results are robust to changes based on univariate analyses of each parameter. Multivariate probabilistic sensitivity analyses found step-therapy cost-effective in 99.9% of 10,000 Monte Carlo simulations. **CONCLUSIONS:** When imatinib loses patient protection between 2015-2016 throughout Europe, it will be the cost-effective initial treatment strategy for CML compared to second-generation TKIs.

PCN127

LITERATURE REVIEW OF DECISION-ANALYTICAL MODELS USED IN THE ECONOMIC EVALUATION OF EMPIRICAL/TARGETED ANTIFUNGAL TREATMENTS FOR INVASIVE FUNGAL INFECTIONS

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BACKGROUND: Invasive fungal infections (IFIs) are an important cause of morbidity and mortality in immunocompromised patients. Based on the pathogen identification status, either empirical (without diagnosis) or targeted (with diagnosis) antifungal therapy is administered to symptomatic patients (e.g. with fever). Several antifungal agents are available and their cost-effectiveness is often evaluated using decision analytic models (DAMs). **OBJECTIVES:** The objective was to review all published DAMs used in economic evaluations of empirical/targeted antifungal treatments for IFIs. This approach is novel as previous reviews were either pathogen or agent-specific. **METHODS:** A review was conducted in MEDLINE/EMBASE to identify all economic evaluations that included DAMs published until 1-1-2014. Previous reviews were checked for additional studies. Non-English and studies of prophylactic treatment were excluded. Data extracted included: population, indication, comparators, model structure, time horizon, outcomes, events, year, country, and sponsorship. **RESULTS:** Overall, 24 published economic evaluations including a DAM were identified. 54% (n=13) were for targeted treatments and the remaining (n=11) for empirical treatments. 62% of the DAMs on targeted treatments (n=8) focused on invasive pulmonary aspergillosis and the remaining 38% (n=5) on invasive candiasis/candidemia. The majority (73%, n=8) of DAMs evaluating empirical treatments focused on patients with persistent fever/febrile neutropenia. Lipid formulation amphotericin-B was a comparator in 46% (n=11) of the studies, followed by caspofungin in 42% (n=10) and voriconazole in 42% (n=10). 92% of the DAMs (n=22) included only a decision tree, whereas the remaining 8% (n=2) embedded a lifetime Markov model. The majority (54%, n=13) had a hospital perspective and time horizon of less than 12 weeks (54%, n=14). Only one study utilized real-world data. **CONCLUSIONS:** There are major differences in the modeling approach, time horizon, comparator (s), treatment sequences and outcomes of published economic evaluations in IFI. A list of minimal, consensus-based methodological and structural requirements for DAMs on antifungal treatments of IFIs, elicited from key experts is needed.

PCN128

EXPANSION OF THE NORWEGIAN HPV VACCINATION PROGRAM

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OBJECTIVES: To evaluate the cost-effectiveness of expanding the Norwegian HPV vaccination program to catch-up females and 12 years old boys. **METHODS:** We systematically searched the literature for randomized clinical trials (RCTs) that examined the effect of HPV vaccines on cancer mortality and incidence, precancerous stages and serious adverse events. We assessed selected publications for potential risk of bias, and the overall quality of the evidence for each outcome using GRADE. We adapted a published economic model to the Norwegian setting with respect to incidence of HPV-related outcomes, costs and quality adjusted life years (QALYs) lost from HPV-related diseases. The cost utility analysis reported results in Euros/QALY gained in both a public health budget and a societal perspective. **RESULTS:** We included 46 publications reporting on 13 RCTs for young women, and 3 on 2 RCT for boys (maximum follow-up period: three-four years). We found a borderline protective effect of HPV catch-up vaccination on all CIN2+, with a pooled risk ratio (RR) of 0.80 (95% CI: 0.62-1.02) for a follow-up period of 4 years. HPV catch-up vaccination was associated with a reduction in VIN2+ and VaIN2+ lesions, and genital warts. No difference in risk of serious adverse events was seen in vaccinated participants versus unvaccinated women (pooled RR of 0.99 (0.91-1.08)). We are currently reviewing the studies on boys. From a public health budget perspective, catch-up vaccination led to higher costs and health gains and an ICER=70371€. From a societal perspective, the incremental costs were lower, resulting in an ICER=67365€. **CONCLUSIONS:** This systematic review indicates that a HPV catch-up vaccination could be beneficial and cost-effective for young women. The long-term effect of such a vaccination, and its effect on cancer incidence and mortality is still unclear.

PCN129

COST-EFFECTIVENESS OF RADICAL PROSTATECTOMY, RADIATION THERAPY AND ACTIVE SURVEILLANCE FOR THE TREATMENT OF LOCALIZED PROSTATE CANCER – A CLAIMS DATA ANALYSIS

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