OBJECTIVES: This study assessed, from a societal perspective, the cost-effectiveness of idelalisib in combination with rituximab versus rituximab monotherapy for the treatment of relapsed/refractory chronic lymphocytic leukemia (CLL). CLL is the most common leukemia in the Western world and is clinically characterized by peripheral blood B-cell lymphocytosis as well as lymphadenopathy, organomegaly, cytopenias and systemic symptoms in advanced stages. **METHODS:** The cost-effectiveness model adopted a lifetime horizon with three health states: 1) pre-progression; 2) post-progression and 3) death. Patients enter in the model in the pre-progression state and in each cycle (1 week length) may survive without progression; advance to post-progression or die. Remission was not considered in the model: patients in post-progression state remain there until death. Costs and benefits were estimated for the Portuguese setting, and discounted at 5%, as recommended by national guidelines. Univariate and probabilistic sensitivity analyses assessed the robustness of results. Clinical efficacy, safety and utility data were based on published evidence, while survival curves were extrapolated using a Weibull function. Costs estimation was based on Diagnosis Related Group database, national legislation and opinions of an experts' panel. Model outputs included life years gained, quality-adjusted life years (QALYs), and incremental cost-effectiveness ratios (ICERs). **RESULTS:** Survival gains as well as direct medical costs were higher with idelalisib in association with rituximab compared to rituximab monotherapy, but costs related to adverse events and end-of-life care were lower. The ICER was of 32.702€/QALY and 15.935€/LY. Results were sensitive to the discount rates with an undiscounted ICER of 21.942 €. For other parameters univariate analyses ranged between 31.228€/QALY and 34.176 €/QALY. PSA resulted in a median willingness to pay of 34.801€/QALYs or 17.000€/LY. **CONCLUSIONS:** Idelalisib plus rituximab in the treatment of relapsed/refractory CLL, compared with rituximab plus placebo, is cost-effective in Portugal.

PCN181

LOSS OF OPPORTUNITY LINKED WITH THE SUBOPTIMAL COVERAGE RATE OF HPV VACCINATION IN FRANCE

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OBJECTIVES: HPV vaccination is recommended in France for girls aged 11 to 14 with a catch-up from 15 to 19 years old. Though, with a cumulative coverage rate (VCR) of less than 20% in girls aged 16 years old for the HPV vaccine, France has one of the lowest VCR in Europe. The objective of the present study is to estimate the burden that would be averted by reaching in France the VCR currently observed in several EU countries. **METHODS:** A dynamic transmission model including a wide range of health and cost outcomes related to cervical, anal, vulvar, vaginal diseases and genital warts, was adapted to French setting. The health outcomes resulting from the vaccination of girls with quadrivalent HPV vaccine was assessed according to two different vaccine coverage rates: (i) the 2014 cumulative coverage rate in girls aged 16 years old of 17.2% (reported by the InVS in July 2014) (ii) a VCR of 70% as observed in several European countries. **RESULTS:** The analyses demonstrated that reaching in France a VCR comparable to those observed in other European countries would lead to avert additional 3,873,070 genital warts, 582,339 CIN2/3, 78,899 cervical cancers, 1,253 vaginal cancers, 1,756 vulvar cancers, and 17,993 anal cancers (including 4,774 in males) over 100 years. Overall, 27,222 deaths from HPV cancers could be averted by increasing the VCR at 70%. **CONCLUSIONS:** The present study shows that the suboptimal HPV vaccination coverage rate observed in France is linked with a tremendous loss of opportunity for the French population. Even though the applied VCR is not representative of the VCR of the entire targeted population, it is clear that benefits of HPV vaccination are still undermined. In a context where cancer is a health priority in France, combined efforts to improve HPV vaccination coverage rate must be pursued.

PCN182

COST-EFFECTIVENESS OF CERITINIB IN PREVIOUSLY TREATED PATIENTS WITH CRIZOTINIB IN ANAPLASTIC LYMPHOMA KINASE-POSITIVE (ALK+) NON-SMALL CELL LUNG CANCER IN CANADA

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OBJECTIVES: To assess the cost-effectiveness of ceritinib versus alternatives in patients who discontinue treatment with crizotinib in anaplastic lymphoma kinase-positive (ALK+) non-small cell lung cancer (NSCLC) from a Canadian healthcare perspective. **METHODS:** A partitioned survival model with three health states (progression-free, progressive, and death) was developed to compare ceritinib versus other alternatives in patients with ALK+ NSCLC who were previously treated with an ALK inhibitor. Comparators were chosen based on reported utilization from a retrospective Canadian chart study; comparators were pemetrexed, best-supportive care (BSC) and historical control. Progression-free survival and overall survival for ceritinib were estimated using data from reported single-arm clinical trials (ASCEND-1(NCT01283516) and ASCEND-2(NCT01685060)). Survival data for comparators were obtained from published clinical trials in general NSCLC population and from a Canadian retrospective chart study in ALK+ patients treated with crizotinib. Parametric models were used to extrapolate outcomes beyond trial period. Drug acquisition, administration, resource use and adverse event (AE) costs were obtained from public databases. Utilities for health states and disutilities for AEs based on EQ-5D were derived from literature. Incremental costs per quality-adjusted life year (QALY) gained were estimated. Univariate and probabilistic sensitivity analyses were performed. **RESULTS:** Over 4 years, ceritinib was associated with 0.86 QALYs and total direct costs of $89,740 for post-ALK population. The incremental cost per QALY was $149,117 comparing ceritinib vs. BSC, $80,100 vs. pemetrexed, and 104,436 vs. historical controls. Additional scenarios included comparison to docetaxel with an ICER/QALY of $149,780 and utility scores reported from PROFILE 1007, with a reported ICER/QALY ranging from $62,543 vs. pemetrexed to $119,735 vs. BSC. Sensitivity analysis results were consistent with the base-case findings. **CONCLUSIONS:** Based on the willingness-to-pay threshold for end-of-life cancer drugs, ceritinib may be considered as a cost-effective option compared with other alternatives in patients who have progressed or are intolerant to crizotinib.

PCN183

A COST-EFFECTIVENESS ANALYSIS OF ASPIRIN IN THE PRIMARY PREVENTION OF CARDIOVASCULAR DISEASES AND COLORECTAL CANCER

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OBJECTIVES: This study aims to assess the cost-effectiveness of aspirin in the primary prevention of cardiovascular events (myocardial infarction (MI) and ischemic stroke (IS)) and colorectal cancer (CRC) in the low-risk general population in the United States (US). **METHODS:** We developed and validated a Markov model to predict the number of primary events (MI, IS, or CRC) in US Caucasian males using established age-dependent risk data from the literature. Simulations were performed from the US healthcare system perspective using a starting cohort of non-smoking, non-diabetic Caucasian males aged 40 years old with low cardiovascular risk (10-year risk <5%) and normal CRC risks for the aspirin and no-aspirin arms. Annual cycles were simulated until 100 years old. Cost per quality-adjusted life year (QALY) and cost per life year (LY) were used as the primary outcome measures and clinical measures, numbers needed to treat (NNT) and numbers needed to harm (NNH), as secondary outcome measures. A 3% discount rate was applied to both costs and outcomes. Both deterministic and probabilistic sensitivity analyses (PSA) were performed. **RESULTS:** Aspirin was found to be the dominant strategy in the base-case analyses. NNT and NNH were 11.1 and 13.6 respectively. One-way sensitivity analyses showed that the findings were highly sensitive to rates of hemorrhagic stroke, utilities of taking pill, aspirin's effects on cardiovascular events, out-of-hospital MI fatality rates, and CRC risks. PSA showed that when willingness-to-pay (WTP) levels were varied from USD0 to USD100,000 per QALY gained, aspirin is likely to be cost-effective more than 80% of the time. **CONCLUSIONS:** Aspirin is likely to be cost-effective as a primary preventive agent. However, the finely balanced NNT and NNH made it premature to recommend aspirin for primary prevention of cardiovascular and CRC events in low-risk Caucasian males. Resources should be channeled towards conducting further studies to generate more precise model inputs.

PCN184

COST-EFFECTIVENESS ANALYSIS ON STARTING PATIENTS WITH CHRONIC MYELOID LEUKEMIA ON A HIGHLY POTENT TYROSINE KINASE INHIBITOR AND EARLY SWITCHING TO IMATINIB

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OBJECTIVES: To evaluate the cost-effectiveness of several sequential treatment strategies for chronic myeloid leukemia (CML) dependent on early molecular response (EMR) in the Austrian healthcare context. **METHODS:** We adapted a previously developed Markov state-transition model to incorporate different treatment options (imatinib, dasatinib, nilotinib) dependent on achievement of EMR after 3 months. We analyzed eight sequential treatment strategies using cohort simulation over a lifelong time horizon. Model parameters were extracted from published literature, epidemiological and economic databases. We applied a 3% discount for health outcomes and costs. We analyzed 3 different base-case scenarios for patients not achieving an EMR after 3-months of imatinib treatment that were switched to a second-generation TKI, assuming three different effectiveness for these second-generation TKIs. Comprehensive sensitivity analyses were conducted. **RESULTS:** The base-case analysis resulted in two non-dominated strategies: (1) imatinib, followed by nilotinib in case of non-achieved EMR at 3 months and dasatinib after treatment failure or imatinib continuation in case of achieved 3-month EMR and nilotinib after treatment failure; (2) nilotinib followed by its continuation in case of non-achieved EMR at 3 months or switch to imatinib in case of achieved 3 month EMR and dasatinib after treatment failure. Depending on the scenario, strategy 2 resulted in an incremental cost-effectiveness ratio (ICER) of €84,200/QALY, €118,500/QALY or €142,200/QALY gained compared to the baseline strategy. Remaining strategies were excluded due to dominance. Sensitivity analyses on generic pricing of imatinib showed that starting with a more potent second-generation TKI and switching to imatinib after an achieved EMR are the preferred strategies. **CONCLUSIONS:** Based on our analyses, we suggest nilotinib and its continuation for non-achieved EMR at 3 months or switch to imatinib after achieved 3-month EMR and dasatinib after treatment failure as a cost-effective strategy for Austria if the willingness-to pay threshold is at least around €120,000/QALY.

PCN185

ESTIMATING THE PUBLIC HEALTH IMPACT OF A VACCINATION PROGRAMME WITH A NONAVALENT HPV VACCINE IN GERMANY

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OBJECTIVES: The nonavalent vaccine, by protecting against five additional oncogenic HPV types, and nine HPV types in total (6, 11, 16, 18, 31, 33, 45, 52 and 58), is

expected to prevent an even broader spectrum of HPV-related cancers and other diseases and in particular, 90% of cervical cancers. This objective of this study was to estimate the incremental public health impact of a girls-only vaccination program with that of a universal vaccination program with a nonavalent human papillomavirus vaccine in Germany as compared to the current girls-only vaccination with a quadrivalent HPV vaccine (6/11/16/18). **METHODS:** A dynamic transmission model of HPV infection and the related diseases was calibrated to the German epidemiological data. Up to 70% of cervical cancer cases were attributed to HPV 16/18 for the quadrivalent vaccine, and an additional 20% to the five additional types included in the nonavalent vaccine. In the base case, a two dose vaccination program with lifelong protection and a cumulative vaccination coverage rate of 55.6% was assumed. Sensitivity analyses were conducted. **RESULTS:** The findings of the analyses indicate that girls-only vaccination with the nonavalent vaccine has the potential to: i) reduce the incidence of HPV16/18/31/33/45/52/58 -related cervical cancer by 73% after 100 years, relative to 57% for the quadrivalent vaccine and , ii) prevent an additional of 345,627 cases of CIN2/3 and 25,566 cases of cervical cancer over 100 years. When vaccination of girls with the nonavalent vaccine was extended to boys, the cumulative reduction over 100 years in the incident cases was 498,007 and 39,489 of CIN2/3 and cervical cancer respectively. **CONCLUSIONS:** The introduction of a nonavalent HPV vaccine immunization program in Germany is estimated to significantly reduce the public health impact of cervical and other HPV-related diseases.

PCN186

COST-EFFECTIVENESS AND FEASIBILITY OF IMPLEMENTING MRI-GUIDED NEOADJUVANT CHEMOTHERAPY TO TREAT ER-POSITIVE HER2-NEGATIVE BREAST CANCERS IN THE NETHERLANDS

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OBJECTIVES: Evidence suggests that response-guided neoadjuvant chemotherapy (RG-NACT) with magnetic resonance imaging (MRI) is effective in treating oestrogen receptor positive/human epidermal growth factor receptor-2 negative (ER+/HER2-) breast cancer patients. We estimated the expected cost-effectiveness and resource requirements of implementing RG-NACT with MRI vs. conventional-NACT for treatment of ER+/HER2- breast cancers in the Netherlands (NL). **METHODS:** A Markov-model was developed to analyse the incremental costs/QALY from a hospital perspective over a 5-year time horizon. Health services required (MRI scans performed, MRI technologists, breast radiologists and confirmatory scans) for and health outcomes (prevented relapses, prevented deaths, patients with adverse events or contraindications and MRI technologists with adverse events) of implementing RG-NACT were estimated via resource modelling analysis considering the current (4%) and a full implementation (100%) scenario in the Dutch population of ER+/HER2- breast cancer women (n=6306). **RESULTS:** RG-NACT is expected to generate 0.001 and 0.07 QALYs and save €8 and €341 costs for the 4% and 100% implementation scenarios respectively. At current implementation rate, 213 MRI examinations, 273 MRI technologists and 1 breast radiologist are required to prevent 0.4 relapses and 6 cancer deaths. At full implementation, a 25-fold increase in MRI examinations is projected, requiring ~5 times higher MRI utilization and 6560 additional MRI technologists, which is expected to prevent 10 additional relapses (+2400%) and 169 cancer deaths (+2400%). Increasing implementation rates markedly increased the number of confirmatory scans (+901), contraindications (+932) and MRI technologists experiencing adverse events (+1706) by 25-fold, and decreased the number of patients with adverse events (-29) by 1.3-fold. **CONCLUSIONS:** RG-NACT likely dominates conventional-NACT at current and full implementation rates. Full implementation generates a 25-fold increase in additional health benefits, but requires MRI capacity in the Netherlands to be increased 5-fold, which is challenging given a shortage of MRI technologists.

PCN187

ECONOMIC EVALUATION OF ORAL CHEMOTHERAPY REGIMEN IN METASTATIC BREAST CANCER EGYPTION PROSPECTIVE

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OBJECTIVES: The main objective for conducting this study was to evaluate economic evaluation through the cost-effectiveness study of oral chemotherapy regimens we choose vinorelbine oral capsule plus oral capecitabine versus docetaxel iv plus oral capecitabine in treatment of metastatic breast cancer, in the Egyptian patients previously treated with anthracycline, from the national fund perspective over a time horizon of 3 years. **METHODS:** A cost-effectiveness analysis from the perspective of the Ministry of Health and Population was conducted. A Markov model was applied with three health states. Utility data were incorporated in the model to make adjusted results. Costs used were the local ones according to the national fund list. Discounting was applied at 3.5% annually both on costs and benefits. The results obtained were in term of ICER and number of QALYs. Robustness of our findings was checked using sensitivity analyses. Results are expressed in QALYs **RESULTS:** During the three-year time horizon, the total cost for oral chemotherapy regimen vinorelbine oral plus capsitabine was associated with a 2.46QALY gained. The total for docetaxel IV. was associated with 0.84 QALY gained.That yields a difference of and 1.62 in QALY. The oral chemotherapy regimen(Vinorelbine oral plus capsitabine is economically dominating the docetaxel strategy, producing more benefit at a lower cost. The one-dimensional sensitivity analysis indicated that the overall survival medians of both drugs had the largest impact on the results. When conducting sensitivity analysis using plausible ranges, Vinorelbine oral remained economically dominant in all cases. **CONCLUSIONS:** The introduction of oral chemotherapy regimen in metastatic breast cancer vinorelbine oral to the national fund Pay-at-The-Expense-of-the-State (PTES) system was likely be cost saving based strictly from its perspective.

PCN188

SUBCUTANEOUS VS INTRAVENOUS ADMINISTRATION OF TRASTUZUMAB IN HER2+ BREAST CANCER PATIENTS: A MACEDONIAN COST-MINIMIZATION ANALYSIS

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OBJECTIVES: The aim of this study is to compare the total cost of subcutaneous trastuzumab (SC-TRA) vs intravenous trastuzumab (IV-TRA) for HER2+ breast cancer patients from the R. Macedonia. Recent studies suggest that SC-TRA has a pharmacokinetic profile and efficacy non-inferior to standard IV-TRA and is a valid alternative for the treatment of eligible breast cancer patients. **METHODS:** A cost-minimization analysis was performed using data from prior prospective time-motion study. Total time and cost of both types of TRA administration were quantified in a time horizon of over 18 cycles therapy course.The total of 169 patients (mean weight 74.20 kg) (300 observed episodes) from two oncology clinics were enrolled. Patients were HER2+ and received the drug in the adjuvant (132 patients) or first line metastatic (37 patients) setting. Health care resources included drug treatment, patient's room and chair time treatments, active healthcare professional time and consumables. Non-health care resources encompassed patients' transport. The model accounted the 3%wastage of IV-TRA administration. Unit costs were obtained utilizing official (government and hospital pharmacy) publicly available data and they were expressed in Euro 2015, with no discount. **RESULTS:** Direct medical costs per (mean weight) patient were €30 500 for IV-TRA and €30 102 for SC-TRA. The mean total costs per patient of IV compared to SC administratuin of TRA over the full course of treatment were €30 695 and €30 106, respectively. SC-TRA incurred less non-drug related cost (€4,20) than IV-TRA (€196). The results of the model were most sensitive to patient weight and % of wastage in IV treated patients. Mean cost saving per patient over a full treatment course for SC administration was €589,2. Mean savings (preparation and administration) in time with SC-TRA were 47 min. **CONCLUSIONS:** SC-TRA can be time and cost-saving therapy for HER2+ breast cancer patients from the R. Macedonia.

PCN189

PHARMACOECONOMIC EVALUATION OF THE USE OF TRASTUZUMAB FOR SUBCUTANEOUS ADMINISTRATION COMPARED TO INTRAVENOUS DOSAGE FORM IN THE TREATMENT OF BREAST CANCER

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OBJECTIVES: To determine the preferable treatment scheme for breast cancer (BC) from the pharmacoeconomic perspective by the comparison of subcutaneous (SC) and intravenous (IV) administration. **METHODS:** The following pharmacoeconomic methods were used: cost-minimization analysis, budget impact analysis. **RESULTS:** For cost-minimization analysis the following costs were included: cost of testing on tumor expression of HER2, the main drug therapy, concomitant therapy (medical services and drugs), introduction, services provided by medical personnel and the conditions of administration (in case of hospitalization or outpatient). Total costs per 1 patient with BC for treatment course with trastuzumab for subcutaneous administration were 1 314 181 RUB/21 863 EUR and 1 503 716 RUB/25 016 EUR of trastuzumab for IV administration. Cost-minimization analysis revealed treatment change from trastuzumab for IV administration on trastuzumab for SC administration gave economy of 189 535 RUB/3 153 EUR per 1 patient for treatment course. According to budget impact analysis it was revealed that trastuzumab for SC administration allows to make economy of 175 508 955 RUB/2 919 796 EUR. **CONCLUSIONS:** During cost-minimization analysis it is determined that trastuzumab for IV allows to obtain economy compared with IV dosage form. Budget impact analysis reveals that change of BC treatment from trastuzumab for IV administration on trastuzumab for SC one give monetary economy.

PCN190

PHARMACOECONOMIC STUDY OF THE USE OF RITUXIMAB FOR SUBCUTANEOUS ADMINISTRATION IN THE TREATMENT OF FOLLICULAR LYMPHOMA

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OBJECTIVES: To determine the most preferable from the pharmacoeconomic perspective treatment scheme of follicular lymphoma (FL) treatment with rituximab for subcutaneous (SC) and intravenous (IV) administration. **METHODS:** For this objective, the following pharmacoeconomic methods were used: cost-minimization analysis, budget impact. **RESULTS:** The following costs were calculated for cost-minimization analysis: the main drug therapy, concomitant therapy, including medical services and medicines, administration, services provided by medical personnel and the conditions of administration (outpatient or hospitalization). According to the cost analysis it was determined that cost of FL treatment equals 3 534 687 RUB/ 58 803 EUR under IV administration and 3 498 840 RUB/58 207 EUR under SC one. Cost-minimization analysis revealed that rituximab for SC administration compared with IV one gives economy of 35 847 RUB/ 596 EUR per one patient for treatment course. During budget impact analysis it was determined that rituximab for SC administration gives 177 083 678 RUB/ 2 945 994EUR economy for treatment course of all patients in Russia. **CONCLUSIONS:** According to cost-minimization analysis, subcutaneous dosage form of rituximab allows to obtain economy compared with intravenous form. Budget impact analysis shows that rituximab for subcutaneous administration allows to make economy.

PCN191

COST-EFFECTIVENESS ANALYSIS OF OBINUTUZUMAB FOR PREVIOUSLY UNTREATED CHRONIC LYMPHOCYTIC LEUKEMIA (CLL) IN PORTUGUESE PATIENTS THAT ARE UNSUITABLE FOR FULL-DOSE FLUDARABINE BASED THERAPY