[1]*SIHS Health Economics Consulting, Torino, Italy,* [2]*ARIAD Pharmaceuticals Europe Sàrl, Epalinges, Switzerland,* [3]*University Hospital of Wales, Cardiff, UK,* [4]*ARIAD Pharmaceuticals, Inc., Cambridge, MA, USA,* [5]*Occam Research Ltd, Glasgow, UK*

OBJECTIVES: Adults with Philadelphia chromosome-positive (Ph+) acute lympho-blastic leukaemia (ALL) who develop resistance or intolerance to first- and second-generation tyrosine-kinase inhibitors (TKIs) may be eligible for potentially curative allogeneic hematopoietic stem cell transplantation (alloHSCT) if remission of the disease is achieved. The third-generation TKI ponatinib has been shown to be safe and efficacious in TKI resistant and intolerant patients, with 47% achieving a major cytogenetic response (MCyR). Accordingly, ponatinib followed by alloHSCT in those who achieve MCyR represents a potential therapeutic alternative to best supportive care (BSC) with standard chemotherapy only. **METHODS:** A Markov cohort model was constructed to assess the cost-effectiveness after dasatinib failure of ponatinib followed by alloHSCT in patients who achieve MCyR, versus BSC. Direct medical costs for ponatinib, BSC, alloHSCT, monitoring and follow-up, and adverse events were considered from the perspective of the UK National Health Service. Treatment outcomes were estimated from data for the Ph+ ALL patients in a phase 2 ponatinib trial (PACE), alloHSCT recipients in the LALA-94 trial, and a historical cohort receiving BSC. In the absence of valuations for Ph+ ALL health states, utilities for blast-phase chronic myeloid leukaemia were used. Outcomes were evaluated in terms of life-years (LY) and quality-adjusted life-years (QALYs), and cost-effectiveness in terms of life-years gained (LYG) and QALYs gained. **RESULTS:** Patients in the ponatinib plus alloHSCT arm had higher overall survival (4.14 versus 0.32 LY) and QALYs (2.57 versus 0.09) than BSC, at an increased cost (£88,553 versus £21,208). Incremental cost-effectiveness ratios were £17,700/LYG and £27,200/QALY gained relative to BSC. **CONCLUSIONS:** Given the assumptions and limitation of this analysis, our results suggest ponatinib may offer improved survival and health-related quality-of-life by enabling patients with Ph+ ALL who have failed dasatinib to achieve remission and benefit from alloHSCT, at a moderate increase in cost compared with BSC.

PSY54

COST-EFFECTIVENESS ANALYSIS OF ROMIPLOSTIM FOR THE TREATMENT OF ADULT CHRONIC IMMUNE THROMBOCYTOPENIC PURPURA (ITP) IN BRAZIL

dos Santos RF[1], Vargas-Valencia JJ[2], Giannopoulou A[3], Campioni M[3]

[1]*Amgen, São Paulo, Brazil,* [2]*Econopharma Consulting, Ciudad de México, Mexico,* [3]*Amgen (Europe) GmbH, Zug, Switzerland*

OBJECTIVES: To assess the cost-effectiveness of romiplostim as treatment for adult ITP splenectomized patients with refractory disease or non-splenectomized patients with surgery contra-indication, in comparison with the use of Intravenous Immunoglobulin (IVIg) rescue therapy only, from the Brazilian private health care perspective. **METHODS:** A cost per response model was developed. Overall response rates were derived from the romiplostim clinical trials (Kuter 2008) and were weighted by the proportion of patients splenectomized or not. The use of IVIg as rescue therapy in both arms was derived from Pullarkat, 2009. Treatment cost was calculated assuming drug wastage for an average patient weight of 72.4Kg and height of 170cm. Bleeding rates according to severity and site (gastrointestinal, intracranial and other) were estimated for patients without response considering data from Weitz, 2012. Resources and procedures used for the treatment of bleed-ing events were based on a medical specialist group recommendation and costs were obtained from official Brazilian databases. Gynecological bleed was used as a proxy for costs of other inpatient bleeds. The analysis assumed 50% splenecto-mized patients and was performed over a time horizon of 24 weeks. **RESULTS:** The average cost per patient over 24 weeks was R$60,509 for romiplostim (including rescue therapy and bleeding events costs) and R$173,319 for IVIg. 83.2% and 7.1% of patients in the romiplostim and IVIg arm respectively achieved overall response, leading to a cost per response equal to R$72,727 for romiplostim compared with R$2,424,047 for IVIg as rescue therapy. **CONCLUSIONS:** The use of romiplostim in the treatment of ITP increases and maintains the platelet level of splenectomized and non-splenectomized patients and, at the same time, reduces the need of rescue therapy as IVIg. That generates cost savings and positions romiplostim as a dominant (less costly and more effective) strategy when compared with IVIg rescue therapy only.

PSY55

RE-EVALUATING THE COST-EFFECTIVENESS OF SCREENING FOR CONGENITAL ADRENAL HYPERPLASIA (CAH): THE SENSITIVITY TO CHOICE OF DISTRIBUTIONS IN PROBABILISTIC SENSITIVITY ANALYSES (PSAS)

Alzarea A, Alolayan S, Almutairi H, Alqahtani SS, Rittenhouse B

MCPHS University, Boston, MA, USA

OBJECTIVES: In 2009 Yoo and Grosse (Y/G) compared screening/no screening for CAH in a CEA, including a PSA using triangular distributions with minimum (MIN), mode and maximum (MAX) values for parameters. These distributions have been criticized for use in PSAs (Briggs et al). This research reproduces the Y/G analysis and then conducts a PSA with more appropriate distributional assumptions to evaluate potential bias from triangular distributions. **METHODS:** We limited our reanalysis to a change in distributions to focus on the question of distributional sensitivity. For parameters in Y/G with symmetric triangular distributions (MIN and MAX values equidistant from their mean/mode), we used a normal distribu-tion with the same mean and chose a Standard Error based on a 95% confidence interval defined by the MIN and MAX values of the triangular. For non-symmetric distributions, we fit a beta distribution to the triangular, keeping the means equal and ensuring that the tails of the distributions extended slightly beyond the MIN and MAX of the triangular. **RESULTS:** We reproduced the Y/G deterministic ICER ($292,841 vs. Y/G reported $292,000). We also reproduced the triangular distribu-tion-based PSA ICER from Y/G (256,947 vs Y/G $255,700). In our revised PSA, our mean ICER was higher ($273,187), but the CEACs were nearly superimposable. For low Willingness to Pay (WTP) values, the probability of being cost-effective - P(CE) - was very similar between the two analyses. There was some divergence at higher

WTPs. For a WTP of $270,000, the P(CE) for the no screen option was .482 with the TRI distributions and .535 with our revised distributions. **CONCLUSIONS:** In this case, despite the criticism of triangular distributions generally, CEA results were not appreciably different qualitatively or quantitatively with the change to more accepted distributional assumptions. For an intervention with an ICER closer to the CE threshold, the importance may be greater.

PSY56

COST-EFFECTIVENESS ANALYSIS OF PONATINIB IN THE TREATMENT OF CHRONIC-PHASE CHRONIC MYELOID LEUKEMIA (CP-CML) IN SWEDEN

Iannazzo S[1], McGarry L[2], Chiroli S[3]

[1]*SIHS Health Economics Consulting, Torino, Italy,* [2]*ARIAD Pharmaceuticals, Inc., Cambridge, MA, USA,* [3]*ARIAD Pharmaceuticals Europe Sàrl, Epalinges, Switzerland*

OBJECTIVES: In CP-CML, there are few therapeutic options for highly-resistant patients (e.g. third line [3L] or beyond), who have a poor prognosis. Current treat-ment options are tyrosine kinase inhibitors (TKIs) and allogeneic stem cell trans-plantation (allo-SCT) for suitable patients. Efficacy of ponatinib, designed to inhibit the kinase activity of native BCR-ABL and all mutant variants, including T315I, was demonstrated in patients with highly-resistant CML in the pivotal phase II Ponatinib Ph+ ALL and CML Evaluation(PACE) trial. In the absence of head-to-head trials, an economic model employing a Swedish public healthcare perspective was developed to assess the cost-effectiveness of ponatinib for 3L treatment of CP-CML compared with current treatment options in Sweden. **METHODS:** The cost-effectiveness model compares ponatinib, second-generation TKIs (dasatinib, nilotinib, bosutinib), and allo-SCT, with cost per life-years (LY) saved and cost per quality-adjusted life-years (QALYs) gained as outcome measures, and a lifetime time horizon. Resource use includes study drugs, monitoring and follow-up, adverse events and allo-SCT procedure. Costs, based on current tariffs in Sweden, and benefits (LY and QALYs) projected based on 12-month treatment response, were discounted at 3%/year. We performed sensitivity analyses (SA) to identify parameters that most strongly influenced results. Clinical validity was evaluated by comparing model-generated survival estimates with relevant clinical data. **RESULTS:** Over the patients' life-time, ponatinib provides an increase in LY of almost 7 years and a gain of almost 4 QALYs compared with the next-best therapy, bosutinib. The incremental cost-effectiveness ratios range from SEK78,044/QALY gained vs. allo-SCT to SEK351,702/QALY gained vs. bosutinib. SA showed the model was robust to plausible changes in input parameters and had good face validity. **CONCLUSIONS:** This analysis sug-gests that treating 3L CP-CML with ponatinib provides substantial clinical benefit as compared with current alternatives at a reasonable cost, from the perspective of the Swedish public healthcare system.

PSY57

THE COST-EFFECTIVENESS OF BIOLOGICS FOR THE TREATMENT OF INFLAMMATORY BOWEL DISEASES: A SYSTEMATIC REVIEW

Huoponen S, Blom M

University of Helsinki, Helsinki, Finland

OBJECTIVES: Biologics are used for the treatment of inflammatory bowel diseases (IBDs), Crohn´s disease (CD) and Ulcerative colitis (UC), while their costs are signifi-cant high. To allocate health spending efficiently, biologics for IBDs are an important target for cost-effectiveness analyses. The aim of this study was to systemically review the cost-effectiveness of biologics for IBDs and to evaluate the methodo-logical quality of cost-effectiveness analyses. **METHODS:** The literature search was performed to Medline (Ovid), Cochrane Library and SCOPUS in June 2014. The cost-utility analyses of biologics for IBDs in adults were included in the review. Biologics were compared with conventional medical treatment, another biologic treatment, placebo and surgery. Data extraction form was designed beforehand. All costs were converted to 2014 euro. The methodological quality of the included studies was assessed by Drummond´s checklist, Philips´ checklist and Consolidated Health Economic Evaluation Reporting Standards (CHEERS) guideline. **RESULTS:** Of the 1828 references found in the literature search, 25 studies were included in the final review. The main causes affected the cost-effectiveness of the biologics are the activity of the disease, the duration of the biological treatment and the treatment strategy. Among patients refractory to conventional medical treatment (CMT) for IBD, incremental cost-effectiveness ratio (ICER) ranged from dominance to €549,335 per Quality-Adjusted Life Year (QALY) compared with CMT. Adalimumab produced more frequently lower ICERs than infliximab in comparison with CMT for CD. When compared biologics with another biologic treatment for CD, ICER ranged from dominance to €24,012,483/QALY. A study including both direct and indirect costs produced more favorable ICERs than studies including only direct costs. **CONCLUSIONS:** With a threshold of €35,000/QALY, current evidence showed that biologics are cost-effective for the induction treatment of active and severe IBD. Biologics were not cost-effective for moderate IBD. Between biologics the cost-effectiveness remains unclear.

PSY58

IS REGENERATIVE MEDICINE COST-EFFECTIVE? EVIDENCES FROM THE FIRST APPROVED STEM CELL BASED PRODUCT

Fordham R[1], Ciminata G[1], Madoni A[2], Magni T[2], Sarnelli V[3], Domini B[3]

[1]*University of East Anglia, Norwich, UK,* [2]*Chiesi Farmaceutici Spa, Parma, Italy,* [3]*Ernst & Young, Milano, Italy*

OBJECTIVES: A cost-effectiveness analysis (CEA) has been performed, from an Italian public payer perspective, to compare the first advanced therapy medici-nal product (ATMP) containing stem cells for the treatment of Limbal Stem Cell Deficiency (LSCD) with conservative treatment, a standard alternative pathway. LSCD is a rare condition characterized by the shortage of limbal stem cells in the eye resulting in corneal conjunctivalization, corneal opacity, visual impairment and even blindness. A medicinal product has been recently approved by EMA as the first treatment in moderate-severe LSCD due to chemical or physical burn. **METHODS:** Efficacy data derive from a retrospective, case-series, non-randomized, non-con-

trolled, multicenter clinical study in which patients have been treated with ex-vivo expanded autologous human corneal epithelial cells containing stem cells. Symptoms like pain, photophobia and burning, together with visual impairment, contributed to assess quality of life associated with the condition, while Quality Adjusted Life Years (QALYs) have been used to compare the outcomes of the recent approved product with conservative management, in a comparable patient pool. The considered cost data have been obtained from Italian tariff nomenclature databases. **RESULTS:** Patients treated with conservative management presented QALY values between 6.51 and 9.71, depending on LSCD severity, whereas treatments with ATMP ensured to patients between 10.22 and 13.60 QALY, with a total utility gain between 3.71 and 4.60 QALYs (result being discounted by 3.5% yearly). As a result of this utility gain, the approved product would meet an ICER threshold of 40,000 €/QALY cost of around €160,000 per treatment. **CONCLUSIONS:** Offering long-term, potentially life-long, effectiveness after single treatment, ATMP analyzed delivers cost reduction in the long term management of LSCD, despite higher initial costs compared to conservative approach. The CEA of the product demonstrated a significant gain in terms of QALYs, amortizing the initial outlay for the treatment.

PSY59
ECONOMIC EVALUATION OF LIDOCAINE/TETRACAINE PATCH VERSUS LIDOCAINE/PRILOCAINE CREAM FOR TOPICAL ANAESTHESIA BEFORE VASCULAR ACCESS IN EGYPT

Elsisi G[1], Mohamed Abdallah H[1], Elmansy H[2]

[1]Central Administration for Pharmaceutical Affairs (CAPA), Ministry of Health., Cairo, Egypt, [2]Canadian international college, Cairo, Egypt

OBJECTIVES: The aim of this study was to estimate the cost-effectiveness of lidocaine/tetracaine patch versus lidocaine/prilocaine cream for topical anaesthesia before vascular access. **METHODS:** A decision analytic model comparing lidocaine/tetracaine patch versus lidocaine/prilocaine cream for topical anaesthesia before vascular access was constructed based on the current clinical practice in Egypt and was derived from published sources. The clinical parameters were derived from a double-blind, randomized, paired study. The utility of the health states was derived using the available published data. Direct medical costs were obtained from the Ministry of health tariff in Egypt. No discounting was performed. Probabilistic sensitivity analysis (PSA) was conducted. **RESULTS:** The total quality-adjusted life-years (QALYs) of Lidocaine/Tetracaine patch was estimated to be 0.914147, whereas that of the lidocaine/prilocaine was estimated to be 0.826098 (with a net difference of 0.088049 QALYs). The total costs for Lidocaine/Tetracaine and lidocaine/prilocaine were EGP 93.19 and EGP 60.00 respectively (with a net difference of 33.19 EGP). Thus the incremental cost-effectiveness ratio (ICER) for Lidocaine/Tetracaine was EGP 376.95 /quality-adjusted life year. Results from PSA indicate that Lidocaine/Tetracaine had an 100% chance of being cost-effective at our EGP 70,000 per QALY threshold. **CONCLUSIONS:** The present study concludes that Lidocaine/Tetracaine (Heated Patch Delivery System) is cost effective option for topical anaesthesia before vascular access when compared with lidocaine/prilocaine (Cream) based on the threshold stated by world health organization (3xGDP/capita) for low and middle-income countries.

PSY60
AN IN SILICO HEALTH ECONOMIC MODEL APPLIED TO CRYOPYRIN ASSOCIATED PERIODIC SYNDROMES (CAPS): COST EFFECTIVENESS OF PREVENTION EFFECTS OF ULTRA-ORPHAN DRUGS FOR RARE DISEASES

Trieste L[1], Della Casa Alberighi O[2], Accame L[2], Lorenzoni V[1], Frenkel J[3], Gattorno M[2], Quartier P[4], Martini A[2], Turchetti G[1]

[1]Scuola Superiore Sant'Anna, Pisa, Italy, [2]Institute Giannina Gaslini, Genova, Italy, [3]University Medical Center Utrecht, Utrecht, The Netherlands, [4]Assistance Publique-Hopitaux de ParisHopital Necker, Paris, France

OBJECTIVES: This three-year, international, multicentre, longitudinal, observational, cost-effectiveness study named RaDiCEA (RareDisease &Cost-EffectivenessAnalysis) will assess the economic evaluation (cost of illness - COI and cost-effectiveness analisys - CEA) of innovative therapies (i.e., anti IL-1 agents), quality of life (QoL) and effects of the prevention of otherwise irreversible central nervous system, eye, ear, kidney, and cartilage damages of different treatment strategies for cryopyrin-associated periodic syndromes (CAPS) of adults and children. **METHODS:** A virtual time-cohort approach and a Markov model simulating health states corresponding to different CAPS severity will be developed to assess the cost-effectiveness of either anti IL-1 agents or other than anti IL-1. Due to the lack of a CAPS-specific severity index/damage score, a linear combination of existing indexes and damage scores related to specific organs and systems will be used to rank patient's health statu. Coefficients of the resulting function will be assigned following a top-down (Delphi) approach and an interim-ex post principal component analysis. The model quantifies resource utilization for patients' care in the National Health Systems' perspectives and a broader societal perspective. QoL will be evaluated using EQ-5D questionnaires. Robustness of outcomes wil be tested through univariate and probabilistic sensitivity analyses. **RESULTS:** The RaDiCEA project will assess the long-term effectiveness of different potentially life-long treatment strategies and COI, while exploring the feasibility of a new CEA model to be generated from a rare disease (CAPS) observational study. The economic outcomes will be given as the number of years spent in each health state, the related yearly costs and QoL. **CONCLUSIONS:** The importance and novelty of the model is twofold: i) in its application, adopting the cost-effectiveness approach for assessing the impact of CAPS therapies, and ii) in the methods, extending the analyses of the impact of CAPS therapies in reducing the speed of disease progression.

PSY61
PHARMACOECONOMIC ANALYSIS OF TREATMENT PATIENTS WITH CRANIOCEREBRAL INJURY IN UKRAINE

Solobiukova N[1], Yakovleva LV[2], Sur SV[1], Makarov O[1]

[1]Arterium Corporation, Kyiv, Ukraine, [2]National Pharmaceutical University, Kharkiv, Ukraine

OBJECTIVES: Comparative evaluation of the cost effectiveness of treatment of patients with acute craniocerebral injury (CCI) efficiency using two therapy schemes in Ukraine. **METHODS:** "The cost-efficiency" method was used to carrying out the research. Analysis was based on the results of opened randomized trial on the efficacy of L-Lysine Aescinat in patients with craniocerebral injury, carried out in the department of anesthesiology and intensive care at Regional hospital in Dnepropetrovsk. The clinical trial involved 38 patients randomized to main and control group (each group contained 19 patients). Standard therapy (fentanyl, diazepam, tramadol, adrenaline, furosemide, mannitol) and injections of L-Lysine Aescinat were administrated in main group; only standard therapy was administrated in the control group. Treatment of patients was carried out during 7 days. Direct costs were taken into account for therapy course expenditures schemes studying. Drugs prices were taken from Morion`s information system (May, 2015). As an indicator of the effectiveness after treatment were considered the following: decreasing of intracranial hypertension, degree of brain perifocal edema and degree of conscious disturbance (Glasgow Coma Scale). **RESULTS:** The treatment efficiency in main group patients was 73,68 % and 15.79 % in controls. Treatment costs were € 55,86 and € 31,84 correspondingly. "The cost-efficiency" analysis demonstrated that CER in main group was € 75,81and CER in control group was € 201,65. **CONCLUSIONS:** The "cost-efficiency" analysis showed the use of L-Lysine Aescinat in combination with standard therapy to be more effective and less expensive for treatment of 1 patient with craniocerebral injury in Ukraine The obtained results of pharmacoeconomic analysis will allow to optimize the costs of disease treatment by a state, insurance companies and patients.

PSY62
COST-EFFECTIVENESS OF RUXOLITINIB FOR THE TREATMENT OF MYELOFIBROSIS IN FINLAND. ECONOMIC EVALUATION BASED ON FINNISH AURIA BIOBANK DATA ON HEALTH CARE RESOURCE UTILIZATION

Hahl J[1], Kurki S[2], Miettinen T[1], Snicker K[3]

[1]AT Medical Affairs Consulting Oy (Medaffcon), Espoo, Finland, [2]Auria Biobank, Turku University Hospital and University of Turku, Turku, Finland, [3]Novartis Finland Oy, Espoo, Finland

OBJECTIVES: Myelofibrosis (MF) is a rare and life-threatening myeloproliferative disorder characterized by progressive scarring of the bone marrow and a number of severely debilitating symptoms. The objective of this analysis was to estimate cost-effectiveness of ruxolitinib (RUX) in a treatment of MF patients compared with best available therapy (BAT) in Finland. **METHODS:** Efficacy data from RUX pivotal trial COMFORT-II was used as the most relevant clinical evidence of RUX versus BAT. A survival-based decision model with health states On-Treatment, Off-Treatment and Dead was constructed. Transitions between the health states were determined by overall survival (OS) and treatment discontinuation collected in COMFORT-II. Treatment discontinuation was used a proxy for progression. The model was calculated as a cohort expected value analysis with each health state having associated costs and utilities. Costs for health states included drug acquisition costs and health care resource use (HRU) classified by MF risk status (high or intermediate-2) and leukemia. HRU estimates are based on patient level data (n=88) from Auria Biobank, and utility values were based on a standard gamble study. Finnish health care payer perspective was employed. The time horizon in the base case was a lifetime with 3 % discounting for costs and outcomes. **RESULTS:** Treatment with RUX produced 2.43 incremental QALYs with the incremental cost of €102,802 compared to BAT, resulting incremental cost-effectiveness ratio 42,367€/QALY. Sensitivity analyses showed that the model was robust to changes in model inputs. The most impactful parameters were the disease management costs and the hazard ratio for OS. **CONCLUSIONS:** The results suggest that the improvements in OS provided by RUX translate into long term gains in QALYs with reasonable incremental costs. The use of robust real-life data from Auria Biobank is beneficial in managing uncertainty that relates to assumptions and data inputs of the model.

PSY63
COST-EFFECTIVENESS OF MANUAL THERAPY VERSUS PHYSICAL THERAPY IN PATIENTS WITH SUB-ACUTE AND CHRONIC NECK PAIN: A RANDOMIZED CONTROLLED TRIAL

van Dongen JM[1], Groeneweg R[1], Rubinstein SM[1], Bosmans JE[1], Oostendorp RA[2], Ostelo RW[1], van Tulder MW[1]

[1]VU University Amsterdam, Amsterdam, The Netherlands, [2]Radboud University Nijmegen Medical Centre, Nijmegen, The Netherlands

OBJECTIVES: To assess the societal cost-effectiveness of manual therapy (MT) in comparison with physical therapy (PT) among Dutch sub-acute and chronic non-specific neck pain patients. **METHODS:** An economic evaluation was conducted alongside a 52-week randomized controlled trial (RCT). In this RCT, 181 patients were randomized to the MT group (n=90; mainly receiving mobilization) and PT group (n=91; mainly receiving exercise therapy). Clinical outcomes included perceived recovery (yes/no), functional status (continuous and clinically relevant improvement - yes/no), and quality-adjusted life-years (QALYs). Societal costs were measured using self-reported questionnaires at three, 7, 13, 26, 39, and 52 weeks. Missing data were handled using multiple imputation. Bootstrapping techniques were used to assess the uncertainty of the results. **RESULTS:** After 52 weeks, there were no significant between-group differences in clinical outcomes. During follow-up, intervention costs (€-32; 95%CI:-54 to -10) and healthcare costs (€-126; 95%CI:-235 to -32) were significantly lower in the MT group than in the PT group, whereas unpaid productivity costs were significantly higher (€186; 95%CI:19 to 557). Societal costs did not significantly differ between groups (€-96; 95%CI:-1975 to 2022). For QALYs and clinically relevant improvement in functional status, the maximum probability of MT being cost-effective in comparison with PT was low (≤0.54). For perceived recovery and continuous improvement in functional status, results showed that a large amount of money must be paid per additional unit of effect to reach a reasonable probability of cost-effectiveness. **CONCLUSIONS:** The findings indicate that MT was not cost-effective in comparison with PT in patients with sub-acute and chronic non-specific neck pain for perceived recovery, functional status, and QALYs.