

scenario, with adoption of the most persistent biologic (ustekinumab), can lead to valuable savings through lower cost of maintenance phase, avoided re-inductions, and reduced visits.

#### PSY31

##### PHARMACOECONOMIC ANALYSIS OF USING GOLIMUMAB IN THE CARE OF PATIENTS WITH ULCERATIVE COLITIS

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**OBJECTIVES:** Rare diseases such as ulcerative colitis (UC) have significant impact on patients and their families, as well as the healthcare systems and societies. The high costs of medicines makes actual researches in this field. The main aim of this study was to perform budget impact analysis of using combination of biologics - infliximab + golimumab in equal proportions. **METHODS:** Analysis of the published clinical trials was conducted to evaluate comparative efficacy and safety of the using of different types of biologics therapies - infliximab, golimumab. To measure costs of ulcerative colitis for the state budget were used "cost of illness" and "budget impact" analyses. Direct medical costs included diagnosis, treatments, medications, blood and its components, nutrient mixture and were calculated for 1 year-therapy. In this study were performed 2 variants of UC treatment costs, in 1st variant was used infliximab, in 2nd variant - infliximab + golimumab in equal proportions. **RESULTS:** According to published trials golimumab was provided efficacy similar to infliximab in inducing and maintaining clinical remission, clinical response, and mucosal healing. Loss of response was occurred in approximately 30% of patients, leading to discontinuation of biologic therapy and/or colectomy. So using the combination of biologics was preferred. The mean annual overall direct health care cost of UC treatment for 1 patient with infliximab was estimated to be 456 000 rubles (\$ 8 514), and with infliximab + golimumab in equal proportions - 533 256 rubles (\$9 957). Thus budget impact of using combination of 2 biologics - infliximab + golimumab in equal proportions was estimated to be 14%. **CONCLUSIONS:** Golimumab was provided efficacy similar to infliximab and the use combination of 2 biologics infliximab + golimumab in equal proportions for treatment UC has little effect on the budget.

#### PSY32

##### ECONOMIC EVALUATION OF THE ARANESP APPLICATION FOR ANEMIA CORRECTION IN PATIENTS WITH CHRONICAL RENAL FAILURE ON HEMODIALYSIS OR PERITONEAL DIALYSIS IN RUSSIA

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**OBJECTIVES:** to assess the cost effectiveness of the application of darbepoetin alfa vs other erythropoiesis-stimulating agents for anemia correction in patients on hemodialysis or peritoneal dialysis. **METHODS:** The pharmacoeconomic model, providing the construction of decision tree, under which patients are treated by different ESP to achieve various levels of hemoglobin, was designed. To assess of the dosing schedule actual practice in the Russian healthcare system was perform a retrospective observational study (date from the 11 hospitals of Russia). The main method of pharmacoeconomic analysis was "cost-consequence" method and the analysis of the "impact on the budget". A multivariant sensitivity analysis of the model relative to the cost of darbepoetin alfa  $\pm 10\%$ , relative to the dose of darbepoetin alfa reduction at a level of 20% and 47% (based expert data) and relative to changes in hospitalization costs was performed. **RESULTS:** The data on actual practice of darbepoetin alfa dosage in Russia indicate on a possible reduction of the dose during treatment an average of 47%. The total economy of budget per year (with respect to 1 patient) to hemodialysis patients may reach from 223,6 \$ (for target hemoglobin values 11 ( $\pm 1$ ) g/dL) to 616,47 \$ (for hemoglobin values 9 ( $\pm 1$ ) g/dL). The total economy of budget per year for patients on peritoneal dialysis may reach from 216,32 \$ (for 11 ( $\pm 1$ ) g/dL) to 345,41 \$ (for 9 ( $\pm 1$ ) g/dL). **CONCLUSIONS:** The darbepoetin alfa application for anemia correction in patients on hemodialysis or peritoneal dialysis is more cost-effective treatment option compared with other alternative erythropoiesis-stimulating drugs.

#### PSY33

##### EVICEL AND BLOODLESS PROTOCOL IN ORTHOPAEDICS SURGERY CLINICAL EVIDENCE AND COST- ANALYSIS : ITALIAN EXPERIENCE HUMANITAS RESEARCH HOSPITAL

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**OBJECTIVES:** Blood transfusion and hemostasis are becoming an important aspect of preoperative planning and intraoperative decision making in orthopaedic surgery. Total hip arthroplasty (THA), place patients at risk of significant blood loss, which can result in the need for transfusion, risk of postoperative anemia and infection, and increase hospital stay. Humanitas Hospital (ICH) use a new protocol "without blood" perioperative strategies include the use of autologous blood donation and administration of erythropoietin; intraoperative measures include acute normovolemic hemodilution, anesthesia, use of tranexamic acid, intraoperative and postoperative blood salvage, specialized cautery, and a new topical hemostatic agents (EVICEL). Evicel is a fibrin sealant (fibrinogen and high concentration of thrombin) hemostatic agent, facilitates hemostasis, reduce the volume of blood loss in postoperative. The potential role and cost saving generated from use of EVICEL in the "protocol without blood" to control blood loss, number of avoid blood transfusions and reduction of length of hospital stay in patients undergoing THA revisions. **METHODS:** was evaluated in a retrospective observational controlled study in patients undergoing THA revision: one group was treated with EVICEL and a control group with the same protocol but without EVICEL. The outcomes measured (t

test, Wilcoxon test, Chi-square test) were: number of patients exposed to allogeneic red cells, amount of blood transfusions, and the number of length of stay in hospital. An economic model was quantified the cost saving of EVICEL® in ICH. **RESULTS:** preliminary results showed that application of EVICEL reduce number of transfused RBC, postoperative haemoglobin loss, and days of hospital stay. In the hospital cost analysis EVICEL® predicts resource reduction with average cost-savings of € 1.227 per patient. **CONCLUSIONS:** Overall, the results suggest that EVICEL are efficacious in reducing both post-operative blood loss, and hospital stay. The protocol with EVICEL® produce clinical appropriateness and important cost savings for hospital.

#### PSY34

##### ECONOMIC EVALUATION AND ADDED VALUE FOR STAKEHOLDERS OF SWITCHING FROM RITUXIMAB INTRAVENOUS INJECTION TO RITUXIMAB SUBCUTANEOUS INJECTION IN FRANCE

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**OBJECTIVES:** A pilot project concerning the evaluation of potential cost-saving for switching from chemotherapy (rituximab) intravenous injection (IV) to chemotherapy subcutaneous injection (SC) at national level in France" was selected to demonstrate added benefits beyond clinical effectiveness. **METHODS:** To define the added value of rituximab SC injection improvement a 5-step methodology was defined as follow: 1) Define the key value drivers (cost/benefits), 2) Implement decision tree, 3) Estimate the associated patient flow, 4) Evaluate the direct and indirect costs of patient flow including hospital and insurance perspectives, 5) Communication to the stakeholders. For rituximab SC injection versus rituximab IV injection the decision tree model was developed using the French health care with rituximab marketing authorizations. Epidemiologic data were estimated with internal market share data and the French health watch institute. **RESULTS:** Four main benefits emerged at national level: (i) A reduction in staff time was observed for nurses, pharmacists and technicians leading to a potential saving at 300 000€ per year. (ii) A potential saving of 500 000€ per year was observed for the reduction in consumables. (iii) The shorter occupancy of chair for SC injection was led to a potential saving of 700 000€ per year. (iv) Reduction in wastage was 300 000€ per year thanks to sub-cutaneous injection. **CONCLUSIONS:** Results showed that cost-saving from switching for IV to SC exist. Other potential benefits should be investigated to demonstrate all value of medicine product. Therefore, a quality of life study is planned to demonstrate potential added value of rituximab SC vs. rituximab IV in France. Cost-effectiveness study should be also performed to demonstrate potential cost saving per quality adjusted life year.

#### PSY35

##### HEALTH CARE COST AND UTILIZATION ASSOCIATED WITH ALPHA-1 ANTITRYPSIN DEFICIENCY AMONG A COHORT OF MEDICARE BENEFICIARIES WITH COPD

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**OBJECTIVES:** Alpha-1 antitrypsin deficiency (AATD) is a rare, under-diagnosed disease that may predispose an individual to chronic obstructive pulmonary disease (COPD) early in life. Affected individuals often undergo long delays between symptomatology and diagnosis, and are commonly treated like standard COPD patients before receiving proper treatment with expensive AAT inhibitors. Recognizing the differences between these conditions may speed identification of AATD patients and prevent misdiagnosis. This study's objective was to define differences between individuals with AATD and non-AATD associated COPD. **METHODS:** Patient demographics, emergency room (ER) and inpatient visits, and costs (ER, inpatient, outpatient) between AATD and COPD patients were assessed using 2011-2013 Medicare data. ER and inpatient visits, and costs were assessed during a 1-year post period following confirmed COPD or AATD diagnosis. **RESULTS:** Mean age of COPD (n=183,832) and AATD (n=279) cohorts were 72.6 $\pm$ 11.3 and 64.6 $\pm$ 11.7 years, respectively (p<0.001). Among COPD patients, 20.3% were receiving disability benefits, which was significantly less than AATD patients (40.1%; p<0.001). COPD mean Charlson Comorbidity Index (CCI) score was 3.7 $\pm$ 2.7, while AATD was 2.4 $\pm$ 2.0 (p<0.001). AATD patients had more ER (58.4%) and inpatient (58.0%) visits than COPD patients (42.5% and 19.5%, respectively; p<0.001). Despite the fact that only 13% of AATD patients were receiving AAT inhibitors, AATD total healthcare costs (per patient) were still \$27,674 greater than COPD total costs (p<0.001). **CONCLUSIONS:** Our results show that even though our AATD Medicare patients are younger and have lower CCI scores, they experience more ER and inpatient visits, and cost more to the healthcare system compared to older, less healthy COPD patients. Identifying the medical burden of AATD, raises attention to the need for an effective screening tool for identifying AATD patients among those who have COPD as well as better understanding AATD disease progression.

#### PSY36

##### ECONOMIC IMPACT OF EMPLOYMENT STATUS ON THE SOCIAL COST OF MORBID OBESE PATIENTS SUBMITTED TO BARIATRIC SURGERY

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**OBJECTIVES:** The aim of the longitudinal multicenter study is to estimate the economic impact of employment status on the social cost of a patient submitted to bariatric surgery techniques. **METHODS:** Individual socio-economic and clinical data have been collected for adult patients in charge to 6 Hospital in Italy at time of intervention of gastric banding, gastric by-pass and sleeve gastrectomy and followed up to 1 year. Direct medical costs were estimated using tariffs for laboratory tests, diagnostic exams, visits, and prices for drugs. Procedure and inpatient cost data were collected at Center level. Non medical costs included costs for travel and accommodation, domestic help and informal care. The human capital approach has been used for estimating the loss of productivity of patients. The incremental effects of employment status on social cost were estimated by multivariate

Generalized Linear Models (log link, Gamma family) adjusting for gender, age, BMI, type of intervention, complications and comorbidities. Costs are expressed in Euro 2013. **RESULTS:** 280 patients (171 workers, 61%, and 109 no-workers including people out of work, students, housewives and retirees, 39%) have been submitted to bariatric surgery and followed up to 1 year after the intervention. The overall social cost, including costs of intervention and 1-year follow up, was €11,310 (± €3,778). Direct medical costs amounted to €8,737 (± 2,527), representing the 77% of the overall cost, while direct non medical costs and indirect costs accounted for 13% and 10% (€1.497 ± €1,928 and €1,076 ± €1,675). No working conditions had an incremental effect on direct non-medical costs of €676 (95% CI: €212-€1,140, p=0.004). Working conditions increased indirect costs by €1,384 (95% CI: €1,002-€1,766, p=0.000). **CONCLUSIONS:** Socio-economic determinant such as employment status of patient led to significant impacts on direct non medical costs and indirect costs of a patient submitted to bariatric surgery.

### PSY37

#### THE INDIRECT COSTS OF INFLAMMATORY BOWEL DISEASE (CROHN'S DISEASE AND ULCERATIVE COLITIS) ASSOCIATED WITH ABSENTEEISM IN POLAND IN 2013

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**OBJECTIVES:** The aim of this study was to assess the indirect costs caused by absenteeism associated with inflammatory bowel disease (IBD) - (Crohn's disease - CD; and ulcerative colitis - UC) from the perspective of the Social Insurance Institution (ZUS) in Poland **METHODS:** The estimates were based on data provided by ZUS referring to year 2013 and concerning absence from work due to the illness (sick leave), the amount of short-term disability, the sufferers of which claim rehabilitation benefit, and the amount of permanent (or long-term) disability, the sufferers of which claim disability pension. Costs were calculated with Human Capital Approach methodology taking into account Gross Domestic Product (GDP) per capita equalled €10 278. **RESULTS:** Total indirect costs of CD, UC in the year 2013 calculated using GDP per capita in Poland were €7 817 156 and €8 990 313, respectively. Total indirect costs of IBD in the year 2012 and 2013 in Poland were €14 220 181 and €16 807 469, respectively (an increase of nearly 15% because of substantial growth short-term disabilities). The highest component of indirect costs of IBD was sick leave (51%). Long and short-term disability costs constitute 39% (limited period - 19% and unlimited period 20%) and 10% of total indirect costs of IBD, respectively. One sick leave of person with IBD generated the cost of lost productivity equal €779 calculated using GDP per capita. Indirect cost of short-term disability for one entitlement to the benefit of rehabilitation were €7 314. Cost of one long-term benefit were much higher than short-term benefit and equalled for limited period €36 714 and unlimited period €941. Total long-term disability costs amounted €676 651. **CONCLUSIONS:** IBD in Poland generated high indirect costs. The main component was sick leave; rehabilitation benefit and disability pension generated lower costs of lost productivity.

### PSY38

#### IDIOPATHIC PULMONARY FIBROSIS: HOSPITAL DISEASE MANAGEMENT AND ASSOCIATED COSTS

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**OBJECTIVES:** Idiopathic pulmonary fibrosis (IPF) is a chronic, fibro-proliferative and fatal lung disease. A study was conducted to describe the causes and main comorbidities of hospitalized patients and associated costs in France. **METHODS:** A retrospective, observational study was set up using the French hospital discharge database (PMSI). Patients with a first hospitalization for IPF (ICD-10 code: J841) in 2008 were identified and followed during a 5-year period. As J841 code includes other fibrotic pulmonary diseases, an algorithm for data extraction was defined, with exclusion of age <50 and presence of a differential diagnosis in the following year (connective disease or pneumoconiosis). Patient characteristics, first stay and occurrence of events of special interest were described as well as associated costs. **RESULTS:** In 2008, 6,476 patients newly hospitalized for IPF were identified, with a mean age of 75.4±10.3 years, and 56% were men. The mean total cost of hospitalizations per patient for the 5-year follow-up period was €15,532±15,973. Main cost drivers were the serious events related to the disease, specifically acute exacerbation (37% of patients, with a 10% in-hospital mortality rate and a cost of €4,091±4,429/event), cardiac events (48% of patients with a 14% in-hospital mortality rate and a cost of €5,731±5,463/event), acute respiratory infections (44% of patients with a 18% in-hospital mortality rate and a cost of €7,471±7,981/event) and arterial thrombosis (12% of patients with a 20% in-hospital mortality rate and a cost of €7,467±7,216/event). Finally, 11% of patients received palliative care with a mean cost for the last year of life of €14,807±11,979 per deceased patient. **CONCLUSIONS:** This study is the first providing extensive data on hospital management for patients with IPF in France, demonstrating high burden and hospital cost, especially for acute respiratory deteriorations. These results could be used in economic evaluations for IPF patients in France.

### PSY39

#### DIRECT MEDICAL COSTS ASSOCIATED WITH ANKYLOSING SPONDYLITIS IN CHINESE PATIENTS: ESTIMATIONS FROM CHINA PUBLIC HEALTH INSURANCE CLAIM DATA

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**OBJECTIVES:** To estimate direct medical costs associated with ankylosing spondylitis (AS) in publicly insured Chinese patients. **METHODS:** China Health Insurance Research Association (CHIRA) claim data containing patients randomly selected from publicly insured urban residents and workers across China was used as the

data source to identify patients with AS and their insurance claim records in 2013 for in-patient care and out-patient care. The identified patients were stratified by AS-related medications for the comparisons on drug costs and non-drug medical costs. Generalized linear model (GLM) was conducted to assess the impact of the classified medications on on-drug medical costs after full adjustment of patient baseline characteristics including demography, AS-related to complications, and comorbidities. **RESULTS:** Among the identified 1299 patients with diagnosed AS, the AS-related medications included nonsteroidal anti-inflammatory drugs (NSAIDs) (n=234), immunosuppressant (n=146), combination of NSAID and immunosuppressant (n=62), biologics (n=60), and Chinese medications (n=233). The total medical costs associated with AE-related treatments ranged from RMB 4,565 for Chinese medication to RMB 24,585 for biologics treatment (1 RMB = 0.16 US\$). However, biologics treatment and the combination treatment of NSAID and immunosuppressant had similar non-drug medical costs (RMB 7,039 versus RMB 7,450, p=0.164). GLM regression analysis further confirmed highly comparable non-drug medical costs associated with biologics (coefficient: 0.0639, p=0.741) relative to the combination treatment of NSAID and immunosuppressant. **CONCLUSIONS:** Among publically insured Chinese patients with AS, biologics treatments were associated with highly comparable non-drug medical costs as the combination treatment of NSAID and immunosuppressant. This finding suggests that biologics may effectively control health resource utilization through their superior treatment effects.

### PSY40

#### COSTS OF ABSENTEEISM IN PSORIATIC AND ENTEROPATHIC ARTHROPATHIES BASED ON REAL-LIFE DATA FROM POLAND'S SOCIAL INSURANCE INSTITUTION DATABASE IN 2013

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**OBJECTIVES:** The aim of this study was to assess the indirect costs caused by absenteeism associated with psoriatic and enteropathic arthropathies from the perspective of the Social Insurance Institution (ZUS) in Poland. **METHODS:** The estimates were based on data from the year 2013 concerning sick leave and the amount of short-term disability, the sufferers of which claim rehabilitation benefit, and the amount of long-term disability (permanent or fixed time), the sufferers of which claim disability pension. Costs calculated taking into account Gross Domestic Product (GDP) per capita equalled €10 278, Gross Value Added (GVA) per worker equalled €24 680 and Gross Income (GI) per worker equalled €7 339 were presented in 2013 prices. **RESULTS:** Total indirect costs of psoriatic and enteropathic arthropathies in the year 2013 calculated using GDP per capita, GVA and GI per worker in Poland were €7 341 217, €17 628 441 and €5 242 346, respectively. The highest component of indirect costs was permanent long-term disability (43%). Fixed period long-term disability and short-term disability costs constitute 20% and 9% of total indirect costs, respectively. In 2013 Poland's Social Insurance Institution database reported 2 100 patients that had 4 922 sick leave episodes, 180 short-term disability episodes and 80 long-term disability episodes. Indirect costs per patient associated with sick leave were €1 030, €2 474 and €736 calculated using GDP, GVA and GI, respectively. Indirect costs per patient associated with short-term disability were €298, €715 and €212 respectively and associated with long-term disability were as high as €2 168, €5 206 and €1 548, respectively. **CONCLUSIONS:** Psoriatic and enteropathic arthropathies in Poland generated high indirect costs. The main component was permanent long-term disability; short-term disability generated lower costs of lost productivity. The highest cost per patient was generated by permanent long-term disability.

### PSY41

#### DIRECT COST OF MYELODYSPLASTIC SYNDROMES ASSOCIATED WITH A DELETION 5Q CYTOGENETIC ABNORMALITY (DEL5Q MDS) IN PATIENTS WHO ARE RED BLOOD CELL TRANSFUSION DEPENDENT IN MEXICO

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**OBJECTIVES:** To estimate the direct cost of Del5q MDS from the perspective of the public healthcare system in Mexico **METHODS:** We evaluated the amount of resources utilized by patients with Del5q MDS from an expert panel of eight hematologist through the Delphi technique. Consensus was reached after two expert panel rounds and patterns of use were analyzed statistically. Unit costs of resources were extracted from institutional catalogues and annual cost estimations were performed for different health states. All values were expressed in US dollars of 2015 **RESULTS:** From the consensus of panel experts we found that management of patients with Del5q MDS at Mexican public healthcare institutions consisted of best supportive care with red blood cell (RBC) transfusions and erythropoiesis-stimulating agents, and since these patients are RBC-transfusion dependent, they receive 33 units of RBC per year resulting in a cost of US\$5,265.60. Iron overload is the main complication of transfusion dependency resulting in an annual cost of US\$1,782.11 attributable to congestive heart failure. Other resources used to the treatment of the disease are drugs, labs, and visits that contribute to the total annual cost of US\$30,647.78 per patient **CONCLUSIONS:** MDS patients with 5q deletion impose a high economic burden to the public healthcare system in Mexico, although the incidence is lower than other hematological malignancies

### PSY42

#### PHARMACOECONOMIC CONSIDERATIONS ABOUT BREAKTHROUGH CANCER PAIN

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