Significant correlations were revealed between the occurrence of osteonecrosis and age, gender, HR = 0.974, female gender (female/male, HR = 2.970), fracture displacement (displaced/non-displaced, HR = 1.998) and the season of surgery (fall/winter, HR = 0.372; spring/summer, HR = 0.602, summer/winter, HR = 0.455). CONCLUSIONS: Wintertime osteosynthesis increases the risk of osteonecrosis. The findings raise the possibility of interaction between seasonal changes and impaired fracture healing of femoral neck fracture. The results may help establish an effective strategy for the prevention of serious complications.

PMS24 PREDICTORS OF 10-YEAR MORTALITY AFTER PRIMARY FEMORAL NECK FRACTURE IN ELDERLY PATIENTS
Julian Berk1, Kjell Gudnason2, Pål Møller3, Ronce4, Sebastian5
1National Health Insurance Fund Administration, Pécs, Hungary, 2National Health Insurance Fund Administration, Budapest, Hungary, 3University of Pécs, Pécs, Hungary, 4University of Pécs, Pécs, Hungary, 5Department of Radiology, University of Pécs, Hungary
OBJECTIVES: Hip fractures are followed by increased mortality in the elderly. The study was carried out to analyse the mortality rate and predictors for mortality over 10 year periods in patients over 60 years suffered from primary femoral neck fractures. Patients aged 60 years and over undergoing primary surgical treatment after femoral neck fractures in the year 2000 were collected from database of Hungarian National Health Insurance Fund. The mortality was analysed for the period 2000-2010. The following risk factors were investigated: age, gender, type of fracture, comorbidities, type of surgery, time to surgery and further surgical treatment. Predictors for mortality were evaluated by Cox proportional hazard model and logistic regression analysis using yearly intervals. The patients survived 2 or less years after hip fracture and Kaplan-Meier’s log-rank test. RESULTS: 3783 patients were included the study. The mortality rate was 30.76% in the first year, and 80.65% at 10 years. The mortality showed a tendency to decrease during the following years. Cox regression identified higher age (years, HR = 1.024), male gender (female/male, HR = 0.776), fracture type (extracapsular/Garden-II, HR = 1.276, and GardenII-IV/Garden-II, HR = 1.194), comorbidities (presence/absence, HR = 1.931), type of surgical methods (arthroplasty/osteosynthesis, HR = 1.186) and more than 12 hours (12-24/0-6 hours, HR = 1.188) and absence of further surgical treatment (presence/absence, HR = 0.756) as significant risk factors for overall mortality. Logistic regression analysis showed significantly higher risk of men up to 5 years, higher age up to 10 years, comorbidities up to 4 years, type of fracture and surgical delay of the primary treatment up to 2 years. Kaplan-Meier method gave parallel results with risk factor analysis. CONCLUSIONS: Assessing the impact of risk factors on 10 year mortality after primary femoral neck fracture is difficult. We found associations between clinical determinants and late mortality, which require further investigations regarding the long period of time until death.

PMS25 RELATIONSHIP BETWEEN GPX1 PRO198LEU POLYMORPHISM AND SUSCEPTIBILITY OF KASHIN-BECK DISEASE
Xiong YM1, Zou XZ2, Chen Q1, Du XL3, Liu JF
Institute of Endemic Diseases, Xi’an, China
OBJECTIVES: Glutathione peroxidase 1 (GPx1) is a ubiquitously expressed selenium-dependent enzyme that protects cells against oxidative damage by reducing hydroperoxides. It is suggested that GPx1 is associated with the development of Kashin-Beck disease (KBD) in the Chinese population. Meanwhile, we detected the mRNA expression of GPx1 in blood and cartilage tissues between KBD and controls in order to analyze the transcriptional activity of GPx1 and explore molecular mechanism of KBD. The GPx1 Pro198Leu polymorphism was then determined in KBD cases and 312 control individuals with polymerase chain reaction-restriction fragment length polymorphism assay (PCR-RFLP). The mRNA expression level of GPx1 was detected by Real-time PCR. RESULTS: The genotypic and allelic frequency of GPx1 were different statistically between KBD patients and healthy controls (P = 0.016, 0.043, respectively). We found an overall protective effect of the Pro/Pro genotype on the risk of KBD. Carriers of Pro/Leu had a significantly lower risk of KBD compared with homozygous wild-type (Pro/Pro) individuals (OR, 1.781; 95% CI, 1.210–2.622; 0.016, respectively). We found an overall protective effect of the Pro/Pro genotype on the risk of KBD. Carriers of Pro/Leu and Leu/Leu had an increased risk of KBD compared with homozygous wild-type (Pro/Pro) individuals (OR, 1.781; 95% CI, 1.210–2.622; 0.016, respectively). We found an overall protective effect of the Pro/Leu polymorphism compared with homozygous wild-type (Pro/Pro) individuals (OR, 1.781; 95% CI, 1.210–2.622; 0.016, respectively). We found an overall protective effect of the Pro/Pro genotype on the risk of KBD. Carriers of Pro/Leu and Leu/Leu had an increased risk of KBD compared with homozygous wild-type (Pro/Pro) individuals (OR, 1.781; 95% CI, 1.210–2.622; 0.016, respectively).

PMS26 THE RESEARCH ON THE INCIDENCE OF KASHIN-BECK DISEASE AND THE SELENIUM LEVEL IN CHILDREN OF XUNYI COUNTY
Chen Q1, Wang ZL2, Xiong YM2, Liu D1, Chen GX1
1Key Laboratory of Trace Elements and Endemic Diseases, National Health and Family Planning Commission (Xi’an Jiaotong University), Xi’an, China, 2The 5th hospital of Xi’an, Xi’an, China
OBJECTIVES: Kashin-Beck disease (KBD) is a chronic osteoarthropathy, prevailing in selenium (Se)-deficiency areas, while its etiopathogenesis maintains obscure. The study was designed to investigate the relationship between Se and the incidence of KBD compared with children of the control area. METHODS: And Se was tested with Atomic Fluorescence Spectrophotometer. RESULTS: About 65 children which the total number of children was 1743 were KBD X-ray positive. The selenium level in hair of children from xunyi county was significantly lower than that in children from Xi’an city (0.24 and 0.62 g/g respectively, P < 0.05). No difference was found in selenium level of staple food between children from xunyi county and the control group (P > 0.05). CONCLUSIONS: The abnormal ratio of X-ray in children from xunyi county was lower than 5%. Although Se and osteonecrosis have been implicated, the selenium level in hair of children from xunyi county was still lower. Children lived in xunyi county should intake more Se to prevent KBD. This research is supported by National Natural Science Foundation of China (81172610), Ministry of Health (No. 2012G610101), Science and technology projects of Shaanxi province health department (No. 2014ZD002) and projects of Shaanxi Province Administration of traditional Chinese Medicine (13-LC085).

MUSCULAR-SKELETAL DISORDERS – Cost Studies

PMS28 BUDGET IMPACT ANALYSIS OF TOFACITINIB FOR RHEUMATOID ARTHRITIS IN GREECE
Tzanetakos C1, Vasilopoulou D2, Kourla D3, Christos P4, Maniadakis N1
1Key Laboratory of Trace Elements and Endemic Diseases, National Health and Family Planning Commission (Xi’an Jiaotong University), Xi’an, China, 2The 5th hospital of Xi’an, Xi’an, China
OBJECTIVES: To assess the budget impact of tofacitinib standardization in Brazilian private healthcare system for the treatment of moderate to severe Rheumatoid Arthritis (RA) METHODS: An analytical decision-making model was developed in order to simulate the costs of standardization of tofacitinib in the list of therapies available for the treatment of moderate to severe RA in the supplemental healthcare system (SS) in a time horizon of five years. The reference population was composed by applying the RA prevalence in the Brazilian population to the number of SS beneficiaries for the year 2015 which result n=233,722 beneficiaries. For the analysis, the tofacitinib cost of treatment was compared to the average cost of the therapy with a biological DARD. For both, the following were also taken into consideration: (i) drug cost – an estimate through the technology list price, (ii) assumed projection for tofacitinib diffusion rate in the private healthcare system; (iii) market share of biological therapies in the Brazilian market, for which projection was obtained from IMS Health data (2014). All monetary units were in BRL. RESULTS: The total cost of tofacitinib treatment is lower than the mean total cost of treatment with biological DARDs, with an approximate reduc- tion of 20%. Considering a diffusion time horizon of 2 years, we estimated diffusion rate for tofacitinib in relation to the biological therapy for SS beneficiaries in 2015, tofacitinib may yield savings of approximately 2% in 2015, 5% in 2016, 4% in 2017, 4% in 2018, 6% in 2019, adding up an accrued of approximately 20% in the first five years of its standardization in the SS. CONCLUSIONS: The use of tofacitinib may decrease the total treatment costs in the Brazilian private healthcare system for patients with moderate to severe RA.

PMS29 BUDGET IMPACT ANALYSIS OF CERTOLIZUMAB PEGOL FOR THE TREATMENT OF ACTIVE PSORIATIC ARTHRITIS IN GREECE
Tzanetakos C1, Vasilopoulou D2, Kourla D3, Christos P4, Maniadakis N1
1Key Laboratory of Trace Elements and Endemic Diseases, National Health and Family Planning Commission (Xi’an Jiaotong University), Xi’an, China, 2The 5th hospital of Xi’an, Xi’an, China
OBJECTIVES: To assess the budget impact of certolizumab pegol, a monoclonal antibody against TNF-alpha, in the treatment of active psoriatic arthritis (PsA) in the Greek public health system. METHODS: A cost-utility analysis was conducted using a decision analytic model that simulated the course of PsA for patients treated with certolizumab pegol. Sensitivity analysis was performed considering different treatment strategies, including the use of concomitant non-steroidal anti-inflammatory drugs (NSAIDs). RESULTS: The cost-effectiveness of certolizumab pegol treatment was found to be dominated by the comparator arm, with lower total costs and higher quality-adjusted life-years (QALYs) gained. Sensitivity analysis indicated that the cost-effectiveness of certolizumab pegol was sensitive to the effectiveness of the comparator arm and the additional costs of certolizumab pegol treatment. CONCLUSIONS: The use of certolizumab pegol may lead to a decrease in the total treatment costs of active PsA in Greece, but further studies are needed to assess the effectiveness and safety of this treatment in the local context.
OBJECTIVES: To estimate the incremental total and per-patient budget impact of adopting certolizumab pegol (CZP) for the recently indicated treatment of active peripheral seronegative arthritis in Greece. METHODS: A budget-impact model was developed from a third-party payer perspective (EOPPY) to delineate the financial implications of introducing CZP for the treatment of PsA alongside currently indicated biologics infliximab, adalimumab, and ustekinumab, over the next 5 years (2014–2018). The model framework considered market share scenarios with and without CZP, and directly reimbursed costs of treatment and disease management, applied to the prevalent and eligible Greek patient population. Quarterly treatment discontinuations was geared to enable tracking of patients, so that the model could apply different costs to patients at different stages of treatment. Costs pertaining to drug acquisition, administration and monitoring as well as for both the therapy and management of patients’ treatment and corresponded to current costing year. Resource unit costs and epidemiological data were retrieved from officially published sources. The measured outcomes were incremental costs per treated patient per year (PTPP) and total budget impact, calculated by comparing the respective patient and total budget expenditures with and without CZP in the market share mix scenarios.

RESULTS: The incremental total and PTPP costs resulting from the addition of CZP to the original treatment mix were estimated at €22.8 and €25.0 per patient treated with EOPPY (€122.6 and €129.2 per year). Cost-savings were driven by reduced drug and administration costs. CONCLUSIONS: The inclusion of CZP for active PsA treatment was predicted to be associated with short- and long-term cost-savings in Greece.

PMS30
BUDGET IMPACT ANALYSIS OF IMPLEMENTING TENDERS BETWEEN THE BRANDED INFILXIMAB AND ITS BIOSIMILARS IN THE PUBLIC HOSPITALS OF PARIS
Bouquet F1, Fusier I1, Cordannier A2, Lefort P1, Paulot P3
1AP-HP, France, 2Centre Hospitalier de l’Hôpital Européen Georges Pompidou, France
OBJECTIVES: To analyze the budgetary impact of different scenario of tenders between the branded infliximab (BRANDED-INFILX) and its biosimilars (BIOSIM-INFILX) that might be implemented in the 37 public hospitals of Paris (AP-HP). METHODS: Data collected: 1) branded infliximab expenditures over the 2012-2014 period, 2) 2014 medical information from PMSI hospital database (French medical information system program) to determine for which therapeutics indications (mainly gastroenterology, rheumatology, dermatology or others) by distinguishing infliximab-naïve patients (INFLIX-NAIVE) and infliximab-experienced patients (INFLIX-EXPERIENCED). Three scenarios have been considered for the budget impact analysis: tender between BRANDED-INFILX and BIOSIM-INFILX to list only one infliximab in the hospital drug formulary with a hypothetical price decline of 20% (S1) or 30% (S2); tender between BRANDED-INFILX and BIOSIM-INFILX only for INFLIX-NAIVE and no tender for INFLIX-EXPERIENCED (S3) and who remain treated by BRANDED-INFILX with a price decline of 20% and a proportion of INFLIX-NAIVE treated by BIOSIM-INFILX of 10% (S3). RESULTS: The branded infliximab represented €42.1 million expenditures in 2014 compared to €381.6 and €366.5 million in 2012 and 2013, respectively. In 2012-2013, 5,482 patients were treated with the branded infliximab for several therapeutic indications: gastroenterology (61.9%), rheumatology (26.4%), dermatology (1.4%) and others (10.3%). The proportions of INFLIX-NAIVE by indication were: 35.9% in rheumatology, 32.5% in gastroenterology, 9.3% in dermatology and 12.3% in others. CONCLUSIONS: If the Committee on Medicinal Products (COMED) of AP-HP decides to implement tenders between BRANDED-INFILX and BIOSIM-INFILX the savings will be largely dependent on the scope of these tenders. These results could be considered by the COMED in its decision-making process.

PMS31
BUDGET IMPACT ANALYSIS OF AN ETANERCEPT BIOSIMILAR FOR THE TREATMENT OF RHEUMATOID ARTHRITIS IN EUROPE
Ruff L1, Rezk MP2, Uhlig T3, Commers JW4
1Covance Inc., London, UK, 2BioGen International GmbH, Zug, Switzerland, 3Diakoniehospital Oslo, Oslo, Norway
OBJECTIVES: Rheumatoid arthritis (RA) has considerable impact on physical function and reduces quality of life. Biosimilars, such as etanercept, can be efficacious in reducing disease activity in their authorised indications. However, these treatment options can be very costly and present economic pressures on healthcare funding. The objective of this study was to assess budget-impact of introducing an etanercept biosimilar in the first-line treatment setting for patients with RA in Europe (EU). A budget-impact model (BIM) was developed to estimate the impact of the hypothetical introduction of an etanercept biosimilar on the healthcare budget in EU5 over a five-year horizon (2016-2020) from the perspective of a single third-party payer. A local adaptation of the BIM was developed to estimate the impact of introducing an etanercept biosimilar on the healthcare budget in Greece. Statistical service, published literature and expert opinion. It was assumed that the share of CZP will increase steadily from 5% in the first year to 13% in the fifth year of adopting equal market share from S3.

RESULTS: On average, the use of CZP is estimated to decrease the mean annual budget per AS patient in Europe from €3,219 to €2,527 (€692; -2.2%). Cost-savings were driven by improved drug and medical care reimbursement prices are net and reflect 2015 prices. CONCLUSIONS: The introduction of an etanercept biosimilar could represent a substantial cost-saving potential for EU healthcare systems; budget-impact was sensitive to market uptake-rates and discounts versus etanercept. These savings could be used to treat additional RA patients with a biosimilar.

PMS32
BUDGET IMPACT ANALYSIS OF CERTOLIZUMAB PEGOL IN THE TREATMENT OF AXIAL SPONDYLOARTHROPSIS IN GREECE
Yialiakos P1, Patirtis DP1, Koutraki M1, Christou H1, Maniadakis N2
1National School of Public Health, Athens, Greece, 2Metropolitan Hospital, Athens, Greece
OBJECTIVES: To estimate, from a Greek payer perspective, the budget impact of adopting certolizumab pegol (CZP) for the treatment of axial spondyloarthritis (axSpA), including ankylosing spondylitis (AS) and non-radiographic axSpA (nr-axSpA) in Greece.

METHODS: A budget-impact model (BIM) was developed to estimate the impact of potentially introducing an etanercept biosimilar in the biologic treatment setting for scenarios with a 10% or 25% cost reduction were applied. (1) uptake of 5% to 40% from S3; (2) France – 42–105, (3) Germany – 76–187, (4) Italy – €46–111 and (5) Spain – €26–62. On average, the use of CZP is estimated to decrease the mean annual budget per axSpA patient in Greece from €893 to €727 (€166; -18.9%). On the other hand, CZP is anticipated to increase the annual budget per nr-axSpA patient by between €809 to €827 (8.6% to 8.8%), as it costs slightly more than ADA. As a result, axSpA population, the average annual increase per patient range from 3.9% to 3.7%, which is below a reserve permitting thresholds set by the main health insurance fund. CONCLUSIONS: The reimbursement of CZP for the treatment of axSpA patients in Greece will, on aggregate, result in a modest and acceptable increase in the total therapy cost.

PMS33
BUDGET IMPACT ANALYSIS OF AN ETANERCEPT BIOSIMILAR FOR THE TREATMENT OF ALL LICENSED ETANERCEPT INDICATIONS FOR ADULTS IN EUROPE
Ruff L1, Rezk MP2, Uhlig T3, Commers JW4
1Covance Inc., London, UK, 2BioGen International GmbH, Zug, Switzerland, 3Diakoniehospital Oslo, Oslo, Norway
OBJECTIVES: Biologics such as etanercept, can be efficacious in reducing disease activity in their authorised indications, but are considered costly. The objective of this study was to assess future budget-impact of introducing an etanercept biosimilar in the first-line treatment setting for scenarios with a 10% or 25% cost reduction compared with innovator etanercept results in projected net budget-savings of: (1) UK £111–284, (2) France €35–81, (3) Germany €76–187, (4) Italy €46–111 and (5) Spain €26–65. Such savings, could be used to fund treatment for an additional 3,180 (UK) to 17,130 (Germany) patients with etanercept biosimilar over five years. CONCLUSIONS: The introduction of an etanercept biosimilar could represent substantial cost-saving potential for EUS healthcare systems; budget-impact was sensitive to market uptake-rates and discounts versus etanercept. These savings could be used to treat additional patients with a biosimilar.