main contributors to this extra cost were pharmaceuticals (+1,687€; 50.2%) and in-patient care (+903€; 26.9%). The proportion of patients with other co-morbidities leading to full coverage was not significantly different in the RA group versus control (39.4% versus 41.8% p=0.134) although Hypertension (7.8% versus 6.7% p=0.44) was significantly more frequent. Differences for Ischemic Heart Disease (3.0% versus 2.5%) and Depression (1.9% versus 1.4%) were positive but did not reach statistical significance. **CONCLUSIONS:** The economic burden of RA in France to the health care system is significant and apparently not associated to the presence of severe co-morbidity as identified in this database.

PMS27

THE METHOD FOR REVERSING ANTICOAGULATION AFFECTS TREATMENT COSTS AND MAY DECREASE MORTALITY AMONG HIP FRACTURE PATIENTS USING WARFARIN

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OBJECTIVES: There are 6,000 hip fractures annually in Finland with a population of 5.4 million. These elderly patients (average 80y) almost always require surgery. Among elderly, 14% are using warfarin, and the anticoagulation effect should be reversed prior to surgery. The four approaches commonly used are: cessation of warfarin therapy, administration of vitamin-K, Fresh Frozen Plasma (FFP) or Prothrombin Complex Concentrate (PCC). These approaches have different onset times and thus, the choice of the method used influences the delay before the surgery can safely be performed. Delay of the operation increases the number of preoperative hospital days, and is associated with increased mortality. PCC acts as an antidote, and thus enables immediate operation. **METHODS:** There were 232 patients with acute hip fracture in Kuopio University Hospital (KUH) in 2009 with a 30 days mortality of 18 patients and delay of 16 operations. Patients in need for warfarin reversal were estimated, as well as additional hospital days caused by the possible delay of surgery. Medication, laboratory costs, and cost of hospitalization due to the delay were estimated for a one year perspective. Mortality rate w/wo delay was estimated. **RESULTS:** There were estimated to be 29 patients with acute hip fracture requiring warfarin reversal in KUH annually. Among these patients, the reversal of anticoagulation with FPP, vitamin K, or cessation of warfarin leads to 30, 30 and 116 additional hospital days per year compared to PCC. The total costs were 22 700€, 10200 €, 156 900€ and 20 300€ with FFP, vitamin-K, cessation of warfarin and PCC, respectively. Mortality rate was estimated to be 10.6% and 7.5% w/wo delay, respectively. **CONCLUSIONS:** Delay of the acute surgical intervention increases health care costs. The use of antidote (PCC) decreases this delay among warfarin users, and may lead to cost savings and decrease in mortality.

PMS28

COST-BENEFIT-ANALYSIS OF THROMBOPROPHYLAXIS WITH RIVAROXABAN AND CERTOPARIN-SODIUM IN PATIENTS AFTER TOTAL HIP OR KNEE REPLACEMENT

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OBJECTIVES: Postoperative thrombosis is a common complication after major orthopaedic surgery. Standard prophylaxis is done with subcutaneous injections of low molecular heparin. Oral anticoagulants became available for this indication in the last years. It was the aim of this study to develop a modelling matrix considering all types of costs in order to allow for a cost-benefit-analysis comparing anticoagulants in the post-operative setting. **METHODS:** This study is a prospective, comparing clinical observation study. 90 patients after total hip/knee replacement were included. Quality of life (QOL) was measured by an specific score (PACT-Q®). Also the compliance was analyzed (Morisky). Clinical/labdata as well as information on occurrence and reason of readmittance to the hospital were collected. This analysis evaluates the cost-benefit-ratio of the oral anticoagulant rivaroxaban compared with subcutaneous low molecular weight heparin certoparin-sodium from the German patients' and society's perspective. **RESULTS:** For this study a new method was developed. The result is a matrix, which calculates the corrected total costs (Cc) by multiplication of direct costs (CD) with a factor FQOL representing QOL. FQOLis the difference between optimal and actual quality of life (in). By this method, the effect of QOL and compliance on total costs and on the value of a therapy becomes visible. By application of two anticoagulants it became apparent, that the corrected costs for rivaroxaban where lower (22,1%) than its direct costs, resulting in a sum advantage for the innovative drug, although direct costs were higher (9,7%) for the oral drug. **CONCLUSIONS:** Medicaments enter the market with mostly higher prices compared to the standard. The payers should evaluate, if the more expensive pharmaceutical product saves costs during the therapeutical pathway or if the result generates a higher quality of life for the patients which could mean better compliance with less costs for following treatments.

PMS29

COST EFFECTIVENESS OF ADALIMUMAB VERSUS GOLIMUMAB AND PLACEBO IN ANKYLOSING SPONDYLITIS IN ITALY

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OBJECTIVES: Ankylosing spondylitis (AS) is an inflammatory disease of unknown cause. The study evaluated the cost effectiveness of adalimumab vs. placebo, golimumab vs. placebo, and adalimumab vs. golimumab in patients with active AS from the Italian payer perspective. **METHODS:** A cohort Markov model was developed to estimate over a time horizon of 40 years costs and QALYs associated with adalimumab or golimumab, when used according to existing treatment guidelines. The analysis was based on data from two Phase III studies of adalimumab and golimumab in active AS (combined ATLAS and Canadian trials, and GO-RAISE, respectively). Using the trial information, patients were categorized into responders and non-responders at week 12. In the base case model, response was defined using the ASAS 20 criterion. A univariate and probabilistic sensitivity analyses was performed to assess the robustness of the results. **RESULTS:** In the base case adalimumab therapy estimate 1.29 more discounted QALYs per patient vs. conventional therapy anda total net cost (adalimumab vs. placebo) of € 43,617 per patient resulting in an ICER of € 33,704/QALY. The analysis performed between golimumab vs placebo led to ICER of € 39,149 per QALY gained. Comparing adalimumab to golimumab, adalimumab resulted in 0.12 additional QALYs and € 2,350 in savings and is therefore considered dominant. These results were sensitive to whether the proportion of responders were adjusted for age or non-response imputation between trials and the proportion of patients who weighed over 100 kg and would therefore require a higher dose of golimumab to reach similar effectiveness. The results further favored adalimumab when indirect costs were included. **CONCLUSIONS:** From the Italian payer and societal (in sensitivity analysis) perspectives, treatment of AS with adalimumab is cost saving and more effective compared to golimumab, and thus is dominant versus golimumab, when used according to the general treatment guidelines.

PMS30

PHARMACOECONOMIC EVALUATION OF TOCILIZUMAB MONOTHERAPY VERSUS ADALIMUMAB MONOTHERAPY IN REDUCING DISEASE ACTIVITY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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OBJECTIVES: ADACTA trial (Gabay C et al EULAR June 2012) showed that tocilizumab (TCZ) monotherapy was superior to adalimumab (ADA) monotherapy in reducing signs and symptoms of adult rheumatoid arthritis (RA) patients who were either intolerant to methotrexate (MTX) or for whom continued MTX treatment was inappropriate. The aim of the current study was to develop a cost-effectiveness analysis of TCZ vs. ADA in MTX-intolerant/contraindicated patients. **METHODS:** Economic evaluation based on ADACTA study was conducted to estimate the incremental cost-effectiveness ratio (ICER) of TCZ vs. ADA. Time horizon was 24 weeks. Patient's response in the model was measured through ACR response (ACR20/ACR50/ACR70) and DAS28 remission. Results were presented as incremental cost of TCZ vs. ADA per response. The analysis was conducted from the perspective of the Spanish National Healthcare System, considering drug costs. Unitary costs (€, 2012) were obtained from a Spanish database. Simple univariate sensitivity analyses were performed. **RESULTS:** ACR20 response rates were achieved in 65% and 49.4% in the TCZ and ADA group respectively ($p<0.01$). ACR50 response rates were achieved in 47.2% and 27.8% in TCZ and ADA group ($p<0.01$) and ACR70 response rates in 32.5% and 17.9% in TCZ and ADA group ($p<0.01$) respectively. DAS28 Remission was achieved in 39.9% and 10.5% in TCZ and ADA group ($p<0.0001$). Treatment with TCZ provided better results in cost per response than ADA over 24 weeks in terms of ACR response (ACR20 €8,105 and €11,553; ACR50 €11,162 and €20,382; ACR70 €15,965 and €31,705) and DAS 28 remission €13,509 and €54,352 respectively. TCZ was dominant over ADA in ACR response and DAS28 remission. Sensitivity analysis confirmed the stability of the results. **CONCLUSIONS:** The results of this analysis suggest that TCZ monotherapy represents an efficient and cost-effective strategy vs. ADA in Spain, for treating RA patients who are MTX intolerant/contraindicated.

PMS31

ECONOMIC EVALUATION OF ADALIMUMAB VERSUS OTHER BIOLOGIC TREATMENTS FOR MODERATE TO SEVERE PSORIATIC ARTHRITIS IN ITALY

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OBJECTIVES: The introduction of new biologic treatments has therefore dramatically changed the therapeutic management of PsAThe objective of this study was to determine the cost-effectiveness of biologic drugs for patients with moderate to severe psoriatic arthritis (PsA) in Italy. **METHODS:** ACR and PASI response rates from 8 randomized controlled trials were considered as indicators for clinical efficacy. Short-term efficacy was based on relative probabilities of achieving ACR20 and PASI75 response in a meta-analysis. Published evidence and assumptions were used to predict long-term efficacy. Treatment benefits were determined by the relationship between HAQ and PASI with the EuroQoL 5D. Costs included drug acquisition, administration, monitoring and hospitalisation. ICERs were calculated by ordering treatments by QALYs, and comparing each treatment sequentially. A 40 year time horizon was considered, looking at the Italian perspective. **RESULTS:** After palliative care, Golimumab was estimated to produce the next most QALYs. However, in comparison to Golimumab, Adalimumab was estimated to provide an additional 0.074 QALYs at less cost and so is a dominating strategy. In comparison to palliative care, Adalimumab had an ICER of € 15,970 per QALY. Etanercept was estimated to give similar additional QALYs and costs to Adalimumab. Infliximab was estimated to provide 0.057 QALYs more than Etanercept, but this came with € 6,938 additional cost, giving Infliximab an ICER of € 121,806 per QALY versus Etanercept. A number of one-way sensitivity analyses were performed finding various

parameters (e.g. rate of HAQ progression and baseline demographics) and assumptions (e.g. extent to which HAQ improvement diminishes on withdrawal from therapy) are influential on the ICER. **CONCLUSIONS:** Our results indicate that Adalimumab, and also Etanercept, have the highest probability of being the most cost-effective of the biologic strategies at typical values of WTP.

PMS32

COST-EFECTIVENESS ANALYSIS OF ANTI-OSTEOPOROTIC THERAPY AMONG KOREAN WOMEN WITH POSTMENOPAUSAL OSTEOPOROSIS

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OBJECTIVES: Although osteoporosis is well recognized as a risk factor for fractures among postmenopausal women, there has been no appraisal of the economic impact of anti-osteoporotic therapy in Korea. Cost-effectiveness and cost-utility analyses of anti-osteoporotic therapy were performed from the Korea National Health Insurer perspective **METHODS:** Markov cohort simulation was performed to compare the impact of bisphosphonates therapy to placebo in terms of incremental cost per fracture averted and incremental cost per quality-adjusted life year (QALY) saved for a hypothetical cohort of 1,000 Korean elderly osteoporotic women. Within each health intervention strategy, all individuals began the simulation in the health state '*healthy*' and moved among the 5 health states (*healthy, healthy post-vertebral fracture, healthy post-hip fracture, healthy post 2nd hip fracture, and death*) in yearly cycles until 99 years old or death. To obtain transition probability of having fractures, age-specific incidence rate of fracture was derived from published literature. The combined weighted mean efficacy of alendronate and risedronate , which are the most widely used bisphosphonates in Korea, for reducing the risk of fracture was calculated from efficacy measures drawn from a meta-analysis. Data regarding utilities and costs of fractures were derived from published local sources. **RESULTS:** In the base case, the estimated incremental cost-utility ratio (ICUR) was 35 million Korean won (KRW) per quality-adjusted life-year (QALY) gained, and the estimated incremental cost-effectiveness ratio was 15 million KRW per fracture averted. According to the sensitivity analysis results, the efficacy of bisphosphonates therapy and the starting age of therapy had the biggest impact on the estimated ICUR. **CONCLUSIONS:** Based on this analysis, bisphosphonates therapy is likely to be cost-effective for the primary prevention of fracture among Korean elderly women at a willingness-to-pay threshold of 40-60 million KRW (i.e., 2-3 times per-capita gross domestic product) per QALY.

PMS33

COST-EFFICACY ANALYSIS OF BIOLOGIC DRUGS IN COMBINATION WITH DMARDS IN PATIENTS WITH ACTIVE RHEUMATOID ARTHRITIS AND INADEQUATE RESPONSE TO TRADITIONAL DMARDS IN PORTUGAL – A SIMPLIFIED APPROACH

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OBJECTIVES: To evaluate the cost per ACR70 response rate of biologic disease-modifying antirheumatic drugs (bDMARDs) in the treatment of patients with active rheumatoid arthritis (RA) and inadequate response to traditional DMARDs (DMARD-IR) from the perspective of the Portuguese public health service. **METHODS:** A systematic literature review considering randomized, controlled, double-blind, multicentric clinical trials that evaluated the efficacy of bDMARDs' - abatacept, adalimumab, etanercept, golimumab, infliximab and tocilizumab – in combination with DMARDs in the treatment of patients with active RA and DMARD-IR, was performed, and 22 clinical trials were identified. ACR70 response rates in each trial were adjusted for a placebo reference rate, which incorporated the placebo response rates observed in all the trials. Odds ratio between the placebo group and the placebo reference group was thus assumed to reflect the baseline differences between each trial results and a global reference population. Meta-analyses were then performed to obtain the adjusted ACR70 response rate for each bDMARD. The analysis considered drug and administration costs, obtained from Portuguese official sources, and a 6-month time horizon. **RESULTS:** The highest adjusted ACR70 response rate was obtained with tocilizumab (31,3%) followed by adalimumab (25%), golimumab (20,2%), infliximab (19,6%), etanercept (15,5%) and abatacept (11,7%), which is in line with earlier published evidence. Treatment costs were lower with infliximab (4.577€) followed by tocilizumab (5.366€), etanercept (5.695€), golimumab (5.921€), adalimumab (6104€) and abatacept (7.764€). The lowest mean treatment cost to achieve an ACR70 response was obtained with tocilizumab (17.143€) followed by infliximab (23.354€), adalimumab (24.414€), golimumab (29.311€), etanercept (36.743€) and abatacept (66.356€). **CONCLUSIONS:** Due to the higher predicted ACR70 response rate, using tocilizumab for the treatment of adult RA DMARD-IR patients provides the lowest cost per 70% or higher improvement in disease activity among bDMARDs.

PMS34

COST-EFFECTIVENESS ANALYSIS OF BEMIPARIN AS PROPHYLAXIS FOR VENOUS THROMBOEMBOLISM IN TOTAL KNEE REPLACEMENT SURGERY IN MEXICO

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Venous thromboembolism (VTE) is a disease that includes both deep vein thrombosis (DVT) and pulmonary embolism (PE), representing a serious public health concern due to its impact in morbidity and mortality, and higher costs. Without any prophylaxis, the incidence of DVT in patients undergoing total knee replacement surgery (TKRS) ranges 40-84%. **OBJECTIVES:** To assess the cost and effectiveness of bemiparin and enoxaparin when used as prophylaxis for VTE in TKRS under the perspective of the Mexican public health care system. **METHODS:** We conducted an economic evaluation based in a decision tree. Competing interventions were bemiparin 3.500 IU/d started 6 hours after surgery and enoxaparin 40 mg/d started 12 hours before surgery, for 10±2 days. Time horizon covered prophylaxis plus 6 weeks of follow-up after hospital discharge. Probabilities of VTE events (proximal DVT and symptomatic PE) as well as complications (major/minor bleeding and thrombocytopenia) were derived from a head-to-head randomized double-blind clinical trial. Only direct medical costs, comprising the acquisition cost of agents used as prophylaxis besides the medical attention of VTE events and complications, were analyzed. Resource use was determined by a Delphi Panel and published literature. Unit costs were gathered from The Mexican Social Security Institute (IMSS). Diagnosis-related groups' costs at IMSS were also included into the analysis. All costs are expressed in 2011 Mexican pesos (MXN). The efficacy measure was the proportion of patients free of VTE events. **RESULTS:** Selected VTE events were 70% lower with bemiparin than with enoxaparin (18 vs. 60 cases per 1000 patients). Bemiparin also provided savings of 3521 MXN (47.4%) per patient when used instead of enoxaparin for prophylaxis of VTE in TKRS. Model was robust. **CONCLUSIONS:** Bemiparin is a dominant (both less costly and more effective) intervention over enoxaparin for the prophylaxis for VTE in TKRS in the Mexican public health care setting.

PMS35

COST-EFFECTIVENESS OF TOCILIZUMAB FOR THE TREATMENT OF ACTIVE RHEUMATOID ARTHRITIS (RA) PATIENTS WITH INADEQUATE RESPONSE TO ANTI-TNF TREATMENT IN TURKEY

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OBJECTIVES: RA prevalence is <0.5% in Turkey. This rate, as those in other Mediterranean countries, is lower compared with other European countries,. Initial RA treatment consists of using Disease Modifying Anti-Rheumatic Drugs (DMARDs). Following inadequate response to DMARDs patients may switch to biologic treatment options including tumour-necrosis factor (TNF) inhibitors. Tocilizumab is approved by Turkish Ministry of Health for the treatment of active RA patients who have responded inadequately to previous anti-TNF therapy. The study aimed to assess tocilizumab's cost-effectiveness for treatment of active RA patients with inadequate response to previous anti-TNF treatment in Turkey. **METHODS:** Cost-effectiveness analysis performed from payer's perspective considered direct medical costs. Markov model was used to compare two treatment sequences:1) tocilizumab, rituximab, abatacept, leflunomide, cyclosporin, palliative care, and 2) rituximab, abatacept, leflunomide, cyclosporin, palliative care. Time horizon was end of life. Patient characteristics were based on phase III study data (RADIATE). Mixed treatment comparison was used to adjust ACR response rates for each of the treatments in both sequences. Relationship between HAQ-DI scores and EuroQol (EQ-5D) utilities was modeled by using patient data from trials. Resource use was estimated based on expert opinion. Treatment costs (drug acquisition, administration, monitoring) were obtained from official lists published by Turkish Ministry of Health and public payer. Costs and effects were not discounted. Results were tested using deterministic and probabilistic sensitivity analyses. **RESULTS:** Treatment sequence initiated with tocilizumab resulted in 0,528 life years gained and 1,873 QALYs more than alternative sequence at an additional cost of TRY63.788. ICER was TRY34.052/QALY, which is below the threshold (TRY53.000/QALY based on WHO recommendation). Sensitivity analyses confirmed that ICER was below the threshold in 97% of the samples. **CONCLUSIONS:** Treatment initiated with tocilizumab in active RA patients with inadequate response to previous anti-TNF treatment is cost-effective compared to alternative treatment sequence in Turkey.

PMS36

COST-EFFECTIVENESS OF DENOSUMAB FOR THE TREATMENT OF ELDERLY WOMEN WITH POST-MENOPAUSAL OSTEOPOROSIS IN SWEDEN

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OBJECTIVES: To evaluate the cost-effectiveness of denosumab compared to alendronate, zoledronic acid and no active osteoporosis treatment, for the treatment of post-menopausal osteoporosis (PMO) in elderly women aged 75 years and older in Sweden. **METHODS:** A previously developed Markov cohort model was updated and used to estimate costs and effects, i.e. reductions in fracture occurrence, of denosumab vs. comparators in that elderly population. The model was populated with Swedish data on cost and fracture risks, and available clinical trial evidence on treatment fracture risk reduction for hip, vertebral and other fractures in an elderly population aged 75 years or older, where available. A life-time perspective was applied and analysis were performed both with the assumption that all patients stay on therapy for all 5 years and that some patients drop out of treatment over time (i.e. adjusting for imperfect treatment persistence). **RESULTS:** The base-case analysis showed that denosumab was cost-saving and more effective (i.e. dominant) versus all three comparators. The cost savings without adjustment for imperfect treatment persistence amounted to €4,500, €4,800 and €500 per patient, compared to no treatment, zoledronate and alendronate, respectively. Hip fracture is the most common fracture type in the elderly population, and denosumab treatment for 5 years avoided 140, 100 and 55 hip fractures per 1,000 treated patients, compared to no treatment, zoledronate and alendronate, respectively. Univariate and probabilistic sensitivity analyses showed that results were stable; denosumab dominated all comparators if consequences of imperfect treatment persistence were included or if comparator treatment costs were set to zero. **CONCLUSIONS:**