

Ps patients had dominantly (54%) low disease activity, in RA group mostly (51%) the moderate activity was observed, while the most frequent disease activity category for CD patients was remission (39%). Mean annual cost of overall work impairment (presenteeism and absenteeism cost together) amounted to PLN 29 727 for RA, PLN 24 434 for Ps and PLN 23 682 for CD. Cost of loss of productivity due to RA ranged from PLN 15 069 for patients in remission to PLN 41 296 for highly active disease. For Ps it was respectively PLN 13 846 and PLN 44 009 and for CD PLN 15 543 and PLN 63 771. **CONCLUSIONS:** Productivity loss among workers with CD, Ps and RA generates significant costs for society which rises with disease activity.

PMS58

LONG-TERM WORK PRODUCTIVITY COSTS AMONG SUBJECTS WITH EARLY RHEUMATOID ARTHRITIS - A NATIONWIDE ANALYSIS BASED ON 7,831 SUBJECTS' SICKNESS ABSENCE DAYS AND INCOME

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OBJECTIVES: To estimate the long-term productivity costs (PC) and their determinants associated with absenteeism and permanent work disability (WD) in Finnish patients with early rheumatoid arthritis (RA) available to workforce at baseline. **METHODS:** A cohort of subjects with early RA was created by identifying the new cases of RA from the national register of the Social Insurance Institution (SII) in Finland, who were granted a special reimbursement of anti-rheumatic medications for rheumatoid factor positive (ICD-10 code: M05) or negative RA (M06) in 2000–2007. The obtained dataset was enriched by cross-linking with the national databases about the subjects' annual incomes, WD days, and permanent disability pensions. The human capital approach was applied to estimate PC based on subjects' the annual number of absenteeism days and incomes. The PC were estimated and expressed as per patient-observation year. Hurdle regression analysis was applied to study the determinants of PC. Sensitivity analyses were conducted to test the robustness of the obtained results. **RESULTS:** The study cohort comprised 7,831 subjects with early RA in paid jobs. The mean age (SD) of subjects was 46 years (11) and 71 % were women. Mean (bootstrapped 95%CI) annual PC per patient-observation year was 4,574€ (95% CI 4,469€ to 4,680€). The PC increased progressively over the years. The use of methotrexate-based combination therapies during the first three months after RA diagnosis reduced significantly the cumulative PC during the follow-up. **CONCLUSIONS:** So far the majority of the productivity cost studies have been based on cross-sectional data. However, the results of the present study provide unique evidence about the longitudinal economic burden of RA over the course of disease. The results highlight the need for treatment strategies with predefined targets and tight control of disease activity in the early course of disease to reduce the long-term burden of RA.

PMS59

CHARACTERIZING WORK PRODUCTIVITY LOSS IN INCIDENT RHEUMATOID ARTHRITIS IN SWEDEN

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OBJECTIVES: To study the trends in work productivity loss pre- and post-diagnosis of incident rheumatoid arthritis (RA) and compare it to patients with osteoarthritis (OA) undergoing knee or hip replacement surgery. **METHODS:** Retrospective register study conducted using Swedish national registers. Patients of working age with an incident diagnosis of RA between 2003 and 2009 were identified in the National Patient Register (n=14900). OA patients undergoing surgery were identified during the same period and considered as a reference group (n=34240). Monthly productivity loss twelve months pre-diagnosis to twelve months post-diagnosis was evaluated in the base case. Productivity loss was defined as the sum of net sick leave days and net disability pension days as recorded in the Social Insurance Register. **RESULTS:** Monthly productivity loss gradually increased during the months leading up to RA diagnosis, peaking the month after diagnosis (mean 14.7 days/month). The same pattern was observed in the OA group in relation to time of surgery, although the increase in productivity loss the months post-surgery was considerably larger than the corresponding increase in the RA patients, peaking the second month following surgery (28.5 days/month). Twelve months post-surgery, the OA patients returned to levels of productivity loss similar to those seen six months pre-surgery (12.3 days/month vs. 12.7 days/month, respectively). This reversal was not mirrored by the RA patients, who stabilized at an elevated level of productivity loss post-compared to pre-diagnosis levels (12.1 days/month vs. 9.6 days/month). **CONCLUSIONS:** This study illustrates the unmet needs in RA. The partial reversal in work ability post-diagnosis, in contrast to the almost complete reversal seen in OA patients post-surgery, highlights the need for improved treatment options in RA; while the gradual loss of work ability leading up to diagnosis highlights the need for intervention earlier in the disease process.

PMS60

A COMPARISON OF THE IMPACT OF RHEUMATIC DISEASES AND OTHER CHRONIC DISEASES ON EARLY RETIREMENT IN PORTUGAL

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OBJECTIVES: Chronic diseases and in particular rheumatic diseases (RD) may lead to early retirement, generating substantial indirect costs to society. We compare RD to other major chronic diseases regarding their impact on the likelihood of early retirement in the Portuguese population. **METHODS:** The study population consisted of all people between 50 and 64 years of age (3,762 men and 4,241 women) who participated in the Portuguese National Health Survey, conducted in 2005/2006. Self-reported data were collected on health, sociodemographic and occupational factors. The effects of RD and other chronic diseases on the likelihood of early retirement and the population attributable fractions (PAF) estimates were obtained at the

individual level by logistic regression. **RESULTS:** At the time of the survey, 19.5% of the Portuguese population with ages between 50 and 64 years old were officially retired. A larger average number of major chronic diseases per capita was found among those with early retirement when compared to active workers in the same range of age (2.0 vs. 1.4 p<0.001). RD were particularly prevalent among early retirees when compared with employees (43.3% vs. 32.1%, p<0.001). The following OR and PAF (adjusted by age, sex and region and unadjusted) were obtained: RD (OR:1.3-1.4; PAF:7.3-9.7), chronic pain (OR:1.4-1.4; PAF:6.6-7.2), hypertension (OR:1 (NS) -1.3; PAF:1.1-7.1), diabetes (OR:1 (NS) -1.2 (NS); PAF:0-2.4), renal impairment (OR:3.3-3.4; PAF:2.7-3.2), respiratory diseases (OR:1.5-1.7; PAF:1.5-2.1), stroke (OR:3.2-3.6; PAF:2.6-3.2), myocardial infarction (OR:1.2 (NS) -1.9; PAF:0.3-1.1), cancer (OR:2.1-1.9; PAF:2.1-2.1), depression (OR:1.5-1.2 (NS); PAF:4.8-2.8) and anxiety (OR:1.6-1.5; PAF:3.7-3.5) with NS standing for not statically significant. **CONCLUSIONS:** From a public health angle, PAF is a good measure of the importance of a risk factor, taking into account both the strength of the association with the outcome and its prevalence in the population. Among all major chronic diseases, RD had the highest PAF estimates for early retirement in Portugal.

PMS61

COST OF PHARMACOTHERAPY IN POLISH PATIENTS WITH RHEUMATOID ARTHRITIS

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OBJECTIVES: To assess cost of pharmacotherapy in Polish patients with rheumatoid arthritis (RA) in relation to disease activity (DAS28-CRP) and disability (HAQ-DI). **METHODS:** Data on drug consumption was collected during a prospective one center cohort observational study of non-selected RA patients discharged from tertiary academic hospital. At enrollment patients were divided according to DAS28-CRP and HAQ-DI. Observational period was 6 months. Spearman rang correlation coefficient and test of its significance were used to investigate the relationship of cost of pharmacotherapy with disease activity and disability. Mean total cost of drugs and mean cost of drugs covered by public payer were calculated in PLN at 2014 prices (1 EURO=4.2 PLN in 2014). **RESULTS:** DAS28-CRP was ≤5.1 in 124 patients (group A) and >5.1 in 83 patients (group B). HAQ-DI was >2 in 51 patients (group I), >1 and ≤2 in 88 patients (group II), ≤1 in 66 patients (group III). Mean cost of pharmacotherapy per patient was 1010 PLN in group A and 858 PLN in group B, 1078 PLN in group I, 981 PLN in group II and 745 in group III. The differences between groups were not statistically significant. Public payer covers only 36-40% of the drugs cost. **CONCLUSIONS:** These results represent the current use of drugs in the population of Polish RA patients under real-life conditions and indicate that there is no impact of disease activity and disability on the cost of pharmacotherapy due to RA.

PMS62

ORGANIZATIONAL AND MANAGEMENT IMPACT ANALYSIS OF USING THE NEW SUBCUTANEOUS FORMULATION OF TOCILIZUMAB IN SELECTED ITALIAN RHEUMATOLOGY CENTERS

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OBJECTIVES: In the light of future arrival of subcutaneous (SC) formulation of tocilizumab for the treatment of moderate to severe active rheumatoid arthritis, a multidimensional analysis has been performed in order to evaluate potential impact of introducing SC formulation vs. intra-venous (IV) one from the perspective of both patients and hospitals in Italy. **METHODS:** The analysis was conducted in three Italian Rheumatology centers (AO-S. Anna-Ferrara, AO-Verona, UOS-Valeggio-sul-Mincio) through a questionnaire administered to clinicians and nurses. A 60 minutes day-hospital administration for IV and 20 seconds-1 minute administration for SC self-injector or pre-filled syringe administered at home (excluding the first administration) were assumed. Monitoring visits were considered as 1 per month for IV and 1 every three months for SC. Four impact areas were evaluated: patient's drug-administration time and costs (including transportation time and cost and loss of productivity), drug-administration related hospital-personnel time, drug wastage and patient risk profile evaluated through Failure Models and Effect Analysis. A one year time horizon was considered. **RESULTS:** The analysis showed that the new SC formulation, compared to IV, could have a significant impact in terms of: patient time saving (- 91% of the time for the administration of therapy), patient costs (-86%), clinicians and nurses time saving measured as Full Time Equivalent (- 59% for clinicians and -94 % for nurses), drug wastage (-100%), and patient risk profile (-93%). **CONCLUSIONS:** The subcutaneous formulation of tocilizumab could have several organizational and management impacts. From the hospital perspective it could lead to reduction of medical resources consumption with the possibility to re-allocate them in other medical activities. From the patient perspective the new SC formulation could lead to time savings and costs reduction with a potential improvement of patient quality of life.

MUSCULAR-SKELETAL DISORDERS – Patient-Reported Outcomes & Patient Preference Studies

PMS63

SYSTEMATIC REVIEW AND META-ANALYSIS OF PERSISTENCE WITH DENOSUMAB IN PATIENTS WITH OSTEOPOROSIS

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OBJECTIVES: Conduct a systematic review and meta-analysis of published literature on persistence with denosumab in patients with osteoporosis. **METHODS:**

A systematic review identified retrospective and prospective observational studies reporting 12-, 18-, or 24-month persistence with denosumab, an osteoporosis therapy approved in 2010. Searches covered the period January 2011–May 2014 and were conducted in the PubMed and EMBASE databases, and conference abstract supplements from ACR, AMCP, ASBMR, WCO-IOF-ESCEO, and ISPOR. To be eligible, studies needed to report at least one estimate of persistence with denosumab in patients with osteoporosis, have a clear definition of persistence, and be in English language. Using a random effects model, pooled estimates of denosumab persistence were calculated for retrospective and prospective studies separately. A subgroup analysis was conducted based on geographical regions. **RESULTS:** The search identified 338 unique citations in PubMed and EMBASE, and 200 conference abstracts. After applying the eligibility criteria, 11 studies were included in the final review and meta-analysis (7 retrospective; 4 prospective). All studies reported at least one estimate of 12-month persistence; 9 studies included females only. For retrospective studies, the pooled persistence estimates were 74.6% (95% CI: 65.4–82.9) at 12 months, 67.6% (65.2–70.0) at 18 months, and 57.2% (51.8–62.5) at 24 months. For prospective studies, the pooled estimate of 12-month persistence was 89.0% (95% CI: 84.6–92.7). In the subgroup analysis, European studies had higher pooled 12-month persistence estimates compared with North American studies (retrospective: 78.6% vs. 68.9%; prospective: 91.5% vs. 85.3%). **CONCLUSIONS:** To our knowledge, this is the first systematic review and meta-analysis of persistence with denosumab in patients with osteoporosis. We identified a growing body of evidence, both prospective and retrospective, suggesting persistence to denosumab is higher than previously reported for other OP therapies¹. Kothawala P, et al. Mayo Clinic. 2007; 82 (12): 1493–501.

PMS64

PERSISTENCE RATE WITH SUBCUTANEOUS BIOLOGIC THERAPIES IN PATIENTS WITH RHEUMATOID ARTHRITIS (RA)

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OBJECTIVES: This study examined persistence over 12 months for RA patients who were newly treated with subcutaneous biologics, and assessed if there are differences between patients with and without prior DMARDs experience. **METHODS:** In this retrospective cohort study using Electronic Medical Record database of IMS Disease Analyzer-Germany, adult (≥ 18 years old) RA patients with exposure to a subcutaneous biologic between January 1, 2009 and June 30, 2012 were identified. The first prescription date for the subcutaneous biologic agent was defined as their index date. Patients were excluded from the study if they were prescribed a biologic agent during the pre-index period, and/or diagnosed with ankylosing spondylitis, psoriatic arthritis, or other conditions treated with subcutaneous biologics either pre- or post-index. A chi-square test was used to assess significant differences in the percentage of persistent patients between those with and without DMARD use and a logistic regression model was used to control for differences in baseline demographic and clinical characteristics. **RESULTS:** A total of 576 RA patients without prior biologic experience met the study selection criteria; 471 were DMARD experienced and 105 were DMARD naïve. The mean (SD) age of the patients was 57 (13), with 75% being female. The majority of patients indexed on etanercept (46%) or adalimumab (40%). Forty eight percent of the patients persisted on their index biologic over the 12 months post-index period, with the rate significantly higher among those with pre-index DMARD use (51% vs. 31%; $p=0.0012$). After controlling for pre-index characteristics, patients with pre-index DMARD had 2.23 times the odds of being persistent compared to those without pre-index DMARDs (OR: 2.23, 95% CI: 1.37–3.62). **CONCLUSIONS:** Approximately half of biologic naïve RA patients were persistent over a 12-month period with their index subcutaneous biologic, with rates significantly higher among patients with pre-index DMARD.

PMS65

PERSISTENCE RATE WITH SUBCUTANEOUS BIOLOGIC THERAPIES IN PATIENTS WITH ANKYLOSING SPONDYLITIS (AS)

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OBJECTIVES: This study aimed to describe persistence with subcutaneous biologics among biologic naïve AS patients over 12 months, and to identify differences among patients with and without NSAID drug experience. **METHODS:** This retrospective study used IMS Disease Analyzer-Germany, an electronic medical records database. Data for adult (≥ 18 years of age) AS patients with a prescription for subcutaneous biologic between January 1, 2009 and June 30, 2012 were used for this analysis. The index date was the date of the first subcutaneous biologic prescription. Prescription for any biologic during the pre-index period or diagnosis for rheumatoid arthritis, psoriatic arthritis or other conditions treated with subcutaneous biologics either in pre- or post-index qualified patients for exclusion from the study. Differences between pre-index NSAID naïve and experienced patients were measured using a chi-square test. A logistic regression model was used to further assess the impact of NSAID use on persistence, controlling for baseline characteristics. **RESULTS:** The study cohort included a total of 108 biologic naïve AS patients, 72 with use of NSAIDs in the pre-index period. The mean age of the AS cohort was 42 years, with 70% of patients being male. Adalimumab, etanercept, and golimumab were initiated by 61%, 28%, and 11% of patients, respectively. Persistence for at least 12 months with the index subcutaneous biologic was observed in 46.3% of the overall cohort, with similar results among those with and without NSAID use (47% vs 44%, respectively). Multivariate analysis confirmed similar persistence between those with and without pre-index NSAID (OR: 0.97; 95% CI: 0.39–2.44). **CONCLUSIONS:** Findings from this German study showed that less than half of AS patients are persistent with the index subcutaneous biologic over a 12 month period. Results were similar irrespective of prior use of NSAIDs.

PMS66

DETERMINANTS OF NON-PERSISTENCE TO ANTI-OSTEOPOROTIC DRUGS BY USING ADMINISTRATIVE DATABASE

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OBJECTIVES: Osteoporosis treatment involves several therapeutic tools, including long-term drug therapy. Subjects with chronic disorders are more likely to be non-adherent and/or non-persistent to treatment than those with other diseases. Adherence is the extent to which patients take medication as prescribed by their physicians, whereas persistence is the time from treatment initiation to discontinuation. Lack of persistence is common among subjects using oral anti-osteoporotic drugs, and leads to increased risk of fragility fracture. The aim of our study is to analyze the rates and reasons for discontinuation of anti-osteoporotic drugs in the Campania Region. **METHODS:** The study was a retrospective cohort study. Patients, aged ≥ 40 years, were enrolled if at least one prescription for any antiosteoporotic drugs had been filled from July 1, 2009 through June 30, 2010. Data were retrieved from an administrative database of medications prescription in Campania region. Patients were followed from the index date until the antiosteoporotic therapy discontinuation or end of the observation period (June, 30, 2011). **RESULTS:** A total of 30,048 were incident users of anti-osteoporotic drugs: 1,731 (5.8%) males and 28,317 (94.2%) females. The mean age [SD] of the cohort was 69.0 [10.0] years. Weekly bisphosphonate (51.1%), was the most commonly prescribed drug. In the overall cohort study, persistence rates were 34, 8% after 6 months, 13, 4% at one year. A multivariate Cox proportional hazard analysis showed that daily regimen (HR 1.9) treatments remained at a higher risk of early discontinuation compared to weekly regimen therapies. Patients who started treatment with a co-prescription with calcium and vitamin D had a lower risk of early discontinuation (HR 0.7). **CONCLUSIONS:** Our data showed that the persistence to osteoporosis therapy is significantly worse than reported in literature. A better osteoporosis management should include drugs with less frequent dosing, to obtain both an increase in rate of persistence and a reduction in side-effect.

PMS67

USE OF MEDICATION REMINDERS IN PATIENTS WITH RHEUMATOID ARTHRITIS

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OBJECTIVES: In this study we determined the characteristics of patients with RA who used these aids, and the association of reminder use with adherence. **METHODS:** 201 patients with RA were included in this prospective cohort study examining treatment adherence. At baseline patients were asked if they used any special reminders such as pill containers, calendars, or diaries. Patients completed two self-reported adherence questionnaires: the Compliance Questionnaire Rheumatology and the Adult AIDS Clinical Trials Group adherence questionnaire. Disease activity measures included number of swollen joints, number of tender joints, disease activity score (DAS28), and patient global assessment. Functional status was evaluated with the modified Health Assessment Questionnaire (MHAQ). **RESULTS:** Mean age of the patients was 51 years, 75% were female, 53% were Hispanic, 25% white, and 21% African American. Sixty-eight (34%) patients reported using a reminder: 53 (26%) used special pill containers, 12 (6%) used calendars, and 3 (1%) diaries. Factors associated with the use of reminders were older age ($p=0.004$), being white vs. Hispanic or African American ($p=0.003$), being male vs. female ($p=0.005$). Working patients were less likely to report using reminders ($p=0.006$). No association was observed between education levels and use of aids. Use of reminders was associated with domains of self-reported adherence: adherence while away from home ($r=0.16$, $p=0.03$), when busy ($r=0.16$, $p=0.03$), and when running out of pills ($r=0.15$, $p=0.04$). **CONCLUSIONS:** Older patients, males, and whites were more likely to use these aids, more often pill containers. Our study shows that reminders can assist patients with RA in taking their medications, particularly in situations when they are most prone to forget including being away from home or busy. Use of reminders should be encouraged by providers as a low cost aid to enhance adherence.

PMS68

TREATMENT PERSISTENCE WITH SUBCUTANEOUS BIOLOGIC THERAPIES IN PATIENTS WITH PSORIATIC ARTHRITIS (PSA)

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OBJECTIVES: The objective of this study was to describe persistence with subcutaneous biologic over 12 months for newly treated PsA patients and evaluate the impact of prior DMARD use. **METHODS:** This was a retrospective analysis using IMS Disease Analyzer-Germany, an electronic medical records database. Adult (≥ 18 years of age) PsA patients who initiated therapy with subcutaneous biologics between January 1, 2009 and June 30, 2012 were included in the analysis. The first subcutaneous biologic prescription date served as their index date. Continuous observation of at least 12 months pre- and post-index date was required. Patients who were prescribed any biologic during the pre-index period or diagnosed with rheumatoid arthritis, ankylosing spondylitis, crohn's disease, or ulcerative colitis during the study period were excluded from the study population. A chi-square test was used to measure differences between patients with and without use of pre-index DMARD. A multivariate logistic regression was created to assess the impact of DMARD use on persistence, controlling for baseline characteristics. **RESULTS:** A total of 197 biologic-naïve PsA patients were selected. Of these, 89 were free of PsO. The mean (SD) age of the patients was 49 (11) years, with 50% being female. The majority of patients (61%) indexed on adalimumab, while the remainder indexed on etanercept (35%) and golimumab (4%). In the overall PsA population, the persistence rate with the index subcutaneous biologic was 54.3%, with similar results among those with and without DMARD use (53% vs 56%, respectively). Multivariate analysis did not identify any significant predictors for persistence, including DMARD use (OR: 1.05;