Abstract SAT0697 – Table 1. Conditional logistic regression analyses for the association between covariates with AS risk

Covariate	Univariate analysis OR (95% CI)	Multivariable aOR (95% CI)	Multivariable aOR (95% CI)	Multivariable aOR (95% CI)	Multivariable aOR (95% CI)	Multivariable aOR (95% CI)	Multivariable aOR (95% CI)	Multivariable aOR (95% CI)
Tonsillitis	1.96 (1.68–2.28)	1.80 (1.55–2.10)						
Chronic tonsillitis and adenoiditis	1.99 (1.38–2.86)		1.83 (1.26–2.64)					
Acute tonsillitis	1.96 (1.67–2.31)			1.81 (1.53–2.13)				
Tonsillectomy	1.89 (1.36–2.61)				1.66 (1.19–2.31)			
Tonsillitis with tonsillectomy	2.06 (1.33–3.19)					1.90 (1.22–2.97)		
Chronic tonsillitis and adenoiditis with tonsillectomy	1.90 (1.19–3.03)						1.73 (1.08–2.79)	
Acute tonsillitis with tonsillectomy	4.00 (1.13–14.18)							4.10 (1.15–14.63)
Periodontitis	1.42 (1.38–1.45)	1.32 (1.29–1.36)	1.32 (1.29–1.36)	1.32 (1.29–1.36)	1.32 (1.29–1.36)	1.32 (1.29–1.36)	1.32 (1.29–1.36)	1.32 (1.29–1.36)
CCI ≥ 1	2.22 (2.15–2.29)	2.19 (2.12–2.26)	2.19 (2.13–2.26)	2.19 (2.12–2.26)	2.19 (2.12–2.26)	2.19 (2.13–2.26)	2.19 (2.13–2.26)	2.19 (2.13–2.26)
Appendicitis	1.36 (1.19–1.56)	1.31 (1.14–1.50)	1.31 (1.15–1.50)	1.31 (1.15–1.50)	1.31 (1.15–1.50)	1.31 (1.15–1.50)	1.31 (1.15–1.50)	1.31 (1.15–1.50)

estimate excess mortality of diseased people compared to non-diseased people if prevalence and incidence are known.

Objectives: To compute the mortality in RA patients in comparison to the population without RA in Germany, utilising claims data from 60 million people.

Methods: We used a mathematical relation between the age-specific prevalence, incidence and mortality to estimate the age- and sex-specific hazard ratio (HR) of mortality rates for patients with diagnosed RA compared to patients without RA.² Standardised mortality ratios (SMRs) for men and women were calculated using the sex-specific age distributions in Germany in 2012. In addition, we calculated years of lost life (YLL) for men and women aged 40 and 60 years with diagnosed RA.

Results: Estimation of sex-specific HR in the age range of 40 to 95 years is possible from the data in.¹ The age-specific HRs are elevated in both male and female RA patients (figure 1, left panel and right panel, respectively) with a particular increase in the younger. SMRs in the age range of 40 to 95 are 1.93 and 2.15 for men and women, respectively. YLL at age 40 are 12.0 and 7.5 years for men and women with RA, respectively. The associated YLLs at age 60 are 5.2 and 4.7 years.

Abstract SAT0698 – Figure 1. Age-specific HR for men (left) and women (right) in Germany 2012. Grey regions indicate the range of possible values.

Conclusions: Despite the limitation of the data source (claims data), an estimation of excess mortality in terms of the HR is possible and yields plausible results. The obtained SMRs are similar to comparable populations.³ At age 40 men with RA suffer more from reduced life expectancy than women with RA. At age 60 the difference in YLL between men and women with RA is virtually vanished.

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SAT0699

PREDICTION OF CARDIOVASCULAR EVENTS IN RHEUMATOID ARTHRITIS PATIENTS USING A MULTI-BIOMARKER OF DISEASE ACTIVITY

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Background: The ACC/AHA recommends preventive strategies for patients with a high predicted risk of atherosclerotic cardiovascular disease (CVD). RA patients are at higher risk for CVD events, yet the role of systemic inflammation and the influence of traditional CVD risk factors is unclear with respect to risk prediction in RA.

Objectives: A simple and accurate algorithm for predicting CVD event risk that includes systemic inflammation might help risk assessment for RA patients and optimise preventive care.

Methods: We derived a U.S. cohort of RA patients with multi-biomarker disease activity (MBDA) test results linked to Medicare claims data. Patients had to have ≥ 1 year baseline with Medicare coverage prior to the first MBDA test. Exclusions were past MI, PCI/CABG, stroke, or cancer. Follow-up ended at the earliest of 1) CVD event; 2) other than CVD cause of death; 3) loss of coverage; or 4) 12/31/2014. The composite CVD event comprised of incident MI, stroke or fatal CVD event, using validated algorithms. MBDA scores were grouped as low (<30), moderate,^{30–44} and high (>44). Other predictors included demographics, healthcare utilisation, and comorbidities. Three separate models were developed using Cox regression. Model 1 included age, sex and race. Model 2 included age, sex, race, 9 comorbidities and CVD medication classes, plus interaction terms. Model 3 included age, sex, and race plus categorised MBDA score. We calculated the net reclassification index (NRI) for model 2 and 3 compared to model 1. We also plotted the observed vs. predicted probability of CVD event for each model, with risk categorised as low (<7.5), moderate ($7.5–15$) and high (≥ 15) per 1000 person-years based upon annualised ACC/AHA cutpoints.

Results: A total of 15,757 RA patients were included; mean (SD) age 68.6 (10.8) years, 80% female, 80% white. A total 209 CVD events occurred in 14 843 person years (1.41/100 py). The median (IQR) follow up time was 0.84 (0.41, 1.27) year. The maximum event time was at 2.7 year. All models had reasonable discrimination and calibration; model 3 was better than models 1 and 2 and observed vs predicted risk is shown (figure 1). The sum of the absolute difference between observed and predicted probability was 0.56, 0.57 and 0.33 for models 1, 2 and 3 respectively.

Compared to model 1, model 2 resulted in a positive overall NRI of 0.214 (non-event NRI=0.173, event NRI=0.041); model 3 resulted in positive overall NRI of 0.279 (non-event NRI=0.092, event NRI=0.187), consistent with more accurate CVD event classification.

Abstract SAT0699 – Figure 1. Observed vs. Predicted One-Year CVD Risk per 1000 person-years in RA Patients, using only Age, Sex, Race, and MBDA score (Model 3)

Conclusions: Preliminary results from this analysis suggest that a simple algorithm consisting only of age, sex and race plus a multi-biomarker score can provide an accurate method to predict short term CVD risk in RA. Further validation with more extended time frames should improve the utility of this approach.

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SAT0700 THE RELATIONSHIP BETWEEN MUSCULOSKELETAL PAIN, INFLAMMATION AND DEPRESSION IN MEN

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Background: Up to 40% of persons with musculoskeletal (MSK) pain report depression. High sensitivity C-reactive protein (hsCRP), a sensitive marker of chronic low grade inflammation, is elevated in persons with MSK pain when compared to those who are pain free, and in those with MSK pain is positively associated with increasing pain severity. High levels of hsCRP are also associated with depression. Whether hsCRP is the mechanism linking MSK pain to depression has not been tested.

Objectives: To test the hypothesis that MSK pain predicts depression and the relationship would at least in part be explained by hsCRP.

Methods: 3309 men aged 40–79 in the multicentre European Male Ageing Study completed a postal questionnaire asking about MSK pain (classified as chronic widespread pain^{American College of Rheumatology 1990} criteria) (CWP), some pain that was not CWP (SP), or no pain (NP)) and depression (Beck Depression Inventory-II (BDI-II), score range 0–21). At a research clinic, fasting morning blood samples were shipped to one Centre where hsCRP was measured using a solid-phase, chemiluminescent immunometric assay with a sensitivity of 0.01 mg/dL. Covariates were date of birth, education level, body mass index (BMI), tobacco use, and frequency of alcohol consumption. Participants were followed up (mean 4.4 (SD 0.3) years) and completed the BDI-II. Linear regression tested the association between baseline pain and follow up BDI score (outcome), with adjustments for age, centre and baseline BDI. In a final model hsCRP and covariates were added and the impact on the relationship between pain and BDI-II examined. Results are expressed as β coefficients with 95% confidence intervals (CI).

Results: 2404 (72.7%) men had complete baseline and follow-up data. At baseline 1003 (41.7%) reported NP, 1205 (50.1%) SP, and 196 (8.2%) CWP. Mean (SD) age was 59.3 (10.6), CRP 0.41 (0.74) mg/l, and BDI 6.6 (6.2). Mean BMI was 27.8 (10.6), 30.1% were current smokers, 23.6% drank alcohol 5–7 days/week and 53.9% had gone on to further education. After adjusting for age, Centre and baseline BDI-II when compared to those with NP having SP ($\beta=0.7$, 95% CI (0.3, 1.1)) or CWP (1.3 (0.5, 2.0)) at baseline was associated with higher BDI-II scores at follow-up. Baseline hs-CRP did not predict follow up BDI-II (0.05 (-0.2, 0.3)). The relationship between SP (0.7 (0.2, 1.1)) or CWP (1.5 (0.7, 2.3)) and follow up BDI-II persisted after adjustment for hs-CRP and all covariates.

Conclusions: The excess rate of depression in men with MSK pain remains to be explained. A broader assessment of inflammatory markers (e.g. TNF- α , Interleukins, and IFN- γ) may identify mechanisms linking MSK pain with subsequent depression.

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SAT0701 PREGNANCY OUTCOME IS IMPROVED AND SIMILAR TO THAT OF THE GENERAL OBSTETRIC POPULATION IN PATIENTS WITH RHEUMATOID ARTHRITIS WHO FOLLOW THE “IDEAL CLINICAL PATHWAY” BEFORE AND DURING PREGNANCY

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Background: With the therapeutic advances of the last decades yielding to stable disease remission in the majority of patients, the goal of a successful pregnancy appears to be attainable for women affected by Rheumatoid Arthritis (RA). However, individual risk stratification and measures to minimise it (e.g. withdrawal and wash-out of teratogenic drugs) are essential for the management of pregnancy in RA.⁽¹⁾

Objectives: This analysis aims to evaluate the adherence to a reference clinical pathway of diagnostic, pharmacological and follow-up management in women with RA, and the influence of the adherence to this pathway on the outcome of pregnancy.

Methods: Data were extracted from the Lombardy Region's (Italy) health databases for the period between 2004–2013. Patients with RA were identified through the chronic disease certification by rheumatologist (ICD9-CM code 714.0). Among these, women between the ages of 18 and 51 were selected. Data of controls from general population were also extracted. Conception has been approximated from the date of delivery or abortion. Seven healthcare quality indicators have been constructed: 1) screening of blood chemistry tests, 2) pre-conception musculoskeletal imaging, 3) pre-pregnancy antiphospholipid antibody tests, 4) ANA test and anti-ENA (antiRo/SSA) test, 5) no exposure or wash-out from teratogenic drugs (MTX/LEF); 6) no exposure to biological drugs; 7) rheumatological follow-up in outpatient visits. These 7 indicators were then summarised in 3 pathway indicators: 1) diagnostic pathway, 2) therapeutic pathway, 3) follow-up. The pregnancy outcome was defined on the basis of the DRG of complicated birth or abortion. Subanalysis on abortion was also done. The relationship between quality indicators and outcome variables was analysed using logistic models crude and adjusted for age and comorbidities, and the results presented as odds ratios (OR) and 95% confidence intervals (95% CI).

Results: 443 pregnancies of patients with RA were identified, with median age of 34 (IQR 31–37), median disease duration at conception of 3.8 years (IQR 1.83–6.19), 157 (35.4%) of which with unfavourable outcome pregnancy outcome, of which 115 pregnancy losses. The increase or decrease of risk for those who meet specific quality indicators and pathway indicators showed a better outcome for patients screened for autoantibodies and with no exposure or washout from MTX/LEF (Table). The comparisons of those who followed the ideal pathway or not compared to the general population showed a significant increase of risk only for patients not following the ideal pathway (Table).