Conclusion: This is the largest study ever conducted to evaluate the impact of IA on male fertility. We demonstrated that men diagnosed with IA before and during their reproductive years have a lower fertility rate than those men diagnosed with IA after their reproductive years. Multiple mechanisms (biological and non-biological) can be responsible for this association. More research is needed to identify the causes of these lower fertility rates in men with IA.

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Figure 1. Total number of biological children (mean and SD) per group.

Acknowledgements: The authors would like to acknowledge Ron Buijs, data manager of the Department of Rheumatology of the Erasmus MC, for his technical support with regards to data collection.

Disclosure of Interests: Luis Fernando Perez-Garcia Consultant of: Galapagos, Esther Röder: None declared, Robbert Goekoop: None declared, Johanna Hazes: None declared, Marc R Kok Consultant of: Novartis, Grant/research support from: Novartis, Petra Kok: None declared, Hieronymus TW Smele: None declared, Ilja Tchetverikov: None declared, J.H. van der Kaap: None declared, Annette van der Helm - van Mil: None declared, Bouwe Krijthe: None declared, Radboud Dolhain Speakers bureau: UCB, Roche, Abbvie, Genzyme, Novartis, Consultant of: Galapagos, Grant/research support from: UCB

DOI: 10.1136/annrheumdis-2021-eular.639

OP0213

SEX DIFFERENCES IN MULTIMORBIDITY BETWEEN PATIENTS WITH RHEUMATOID ARTHRITIS AND COMPARATORS IN A LARGE NATIONWIDE US STUDY

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Background: Patients with rheumatoid arthritis (RA) have an increased burden of multimorbidity. Although many comorbidities vary by sex, sex differences in multimorbidity among individuals with RA have not been examined.

Objectives: We aimed to compare multimorbidity between women and men with RA and comparators without RA.

Methods: We used a large longitudinal, real-world data warehouse with de-identified administrative claims for commercial and Medicare Advantage enrollees, to identify cases of RA and matched controls. Cases were defined as patients aged ≥18 years with ≥2 diagnoses of RA in January 1, 2010 - June 30, 2019 and ≥1 prescription fill for methotrexate in the year after the first RA diagnosis. Controls were persons without RA matched 1:1 to RA cases on age, sex, census region, calendar year of index date (corresponding to the date of second diagnosis code for RA), and length of prior medical/pharmacy coverage. Race was classified as non-Hispanic White (White), non-Hispanic Black (Black), Asian, Hispanic, or other/unknown, based on self-report or derived rule sets. Multimorbidity (2 or more comorbidities) was defined using 25 chronic comorbidities from a combination of the Charlson and Elixhauser Comorbidity Indices assessed during the year prior to index date. Rheumatic comorbidities were not included. Logistic regression models were used to estimate odds ratios (OR) with 95% confidence intervals (CI).

Results: The study included 16,363 cases with RA and 16,363 matched non-RA comparators (mean age 58.2 years, 70.7% female for both cohorts). In both cohorts, women were slightly younger (mean age 57.5 vs. 59.8 years). Among RA patients, women were more racially/ethnically diverse than men, with 72% of women (78% men) being White, 12% (10%) Hispanic, 11% (7%) Black, 3% (3%) Asian, and 3% (3%) other/unknown. Racial/ethnic diversity was similar among non-RA women and men with 74% women (75% men) being White, 9% (9%) Hispanic, 10% (8%) Black, 4% (4%) Asian, and 3% (4%) other/unknown. Patients with RA had more multimorbidity than non-RA subjects (51.3% vs 44.8%). Observed rates of multimorbidity were similar in women and men with RA (51.6% vs 50.5%, $p=0.18$), but among non-RA patients, women had lower observed rates of multimorbidity than men (43.7% vs 47.4%, $p<0.0001$). However, following adjustment for age, race/ethnicity, and geographic region, multimorbidity among RA patients was greater in women versus men (OR: 1.19; 95% CI: 1.11-1.28) and similar among non-RA women and men (OR: 0.97 for females; 95% CI: 0.90-1.05). Examination of individual comorbidities showed that women with RA had more depression, hypothyroidism, diabetes mellitus, and chronic pulmonary disease compared to men with RA and women without RA.

Conclusion: This large nationwide study showed increased occurrence of multimorbidity in women with RA compared to men with RA, while women and men without RA had similar levels of multimorbidity following adjustment for age, race/ethnicity, and geographic region. The underlying mechanisms for these sex differences require further investigation.

Disclosure of Interests: Hayley J. Dyckhoff: None declared, Elena Myasoedova: None declared, Madeline Peterson: None declared, John M Davis III Grant/research support from: Research grant from Pfizer, Vanessa Kronzer: None declared, Caitrin Coffey: None declared, Tina Gunderson: None declared, Cynthia S. Crowson: None declared

DOI: 10.1136/annrheumdis-2021-eular.1625

OP0214

IMPACT OF A MULTI-MORBIDITY SCREENING AND PREVENTION PROGRAM IN CHRONIC INFLAMMATORY RHEUMATIC DISEASES ON THE ONE-YEAR HOSPITALIZATION RATE BASED ON AN ANALYSIS OF THE FRENCH NATIONAL HEALTH DATABASE

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Background: A screening program for multimorbidities started in 2014 at the Montpellier University Hospital for primary prevention in patients with chronic inflammatory rheumatic diseases (IRD).

Objectives: The objective of this work was to assess the impact of this program on morbidity by comparing the hospitalization rate of those patients in the year following the screening to the one of patients with IRD who did not benefit from this program.

Methods: Patients with IRD who benefit from the screening program in 2015, 2016 and 2017 were identified in the French national health database PMSI and matched to 3 controls living in the same area on age, sex, type of IRD, use of intravenous (IV) biologic (b) DMARDs and index date. The exclusion criteria were subjects in secondary prevention identified as history of myocardial infarction in the previous 5 years or use of antiplatelet therapy. The primary outcome was the rate of all-cause hospitalization in the following year. The secondary endpoints were hospitalizations for another reason than IRD ("non-IRD") including those for cardiovascular [CV] events and major fractures. Hospitalization rates were compared between the two groups in the year after screening (or index date) and also between the year preceding screening and the year after for each group. Univariate and multivariate odds ratios (CI95%) were calculated, taking into account the medical history (hypertension, diabetes, heart failure, CV disease, COPD, major fractures in the 5 years preceding the index date) and hospitalizations in the previous year.

Results: 486 patients were identified and matched with 1458 controls. 67.08% had rheumatoid arthritis and 21.81% spondyloarthritis; 7% of them had IV bDMARDs. Unscreened patients had more hypertension (19% vs 10.1%), diabetes (9% vs 4.9%), heart failure (2.3% vs 0.4%) and "non-IRD" hospitalizations (78.5% vs 72.2%) in the 5 years preceding the index date. In the year following the index date, the percentages of "all causes" and "non-IRD" hospitalizations were significantly higher in non-screened than in screened patients ($n = 1944$, 64.8% versus 51%, Chi2 test, $p < 0.001$; and 47.1% versus 37.9%, $p < 0.001$ respectively). 17 (1.17%) cardiovascular events occurred in non-screened versus 2 (0.41%) in screened patients ($n = 1944$, Chi2 test, $p = 0.14$). There was no difference in the occurrence of CV events or major fractures between the 2 groups. In multivariate analysis, screening was associated with a 49% (0.51 [0.41-0.64]) reduction in "all causes" hospitalization and a 27% (0.73 [0.58-0.91]) decrease in "non-IRD" hospitalization, with no difference for CV or fracture cardiologic events. The risk factors associated with "non-IRD" hospitalization were: history of "non-IRD" hospitalization in the previous year (2.26 [1.63-3.13]), IV bDMARDs (1.69 [1.14-2.53]) and age > 70 years (1.44 [1.02-2.03] vs <50 years). Hospitalization in the previous year for "all causes" or "non-IRD" was associated with

rehospitalization in the following year in the non-screened group ($p < 0.001$), but not in the screened group ($p = 0.750$ and $p = 0.066$ respectively).

Conclusion: Our screening and prevention program was associated with a reduction in hospitalizations in the following year and a decrease in the risk of re-hospitalization compared to unscreened patients with IRD. This suggests a positive impact of performing systematic screening for multi-morbidities in IRD patients.

Acknowledgements: We thank Pfizer for their financial support

Disclosure of Interests: guillaume decarriere: None declared, Jenica PASTOR: None declared, David DEMOULIN: None declared, Gael Mouterde Speakers bureau: Bristol-Myers Squibb; Gilead; Janssen; Lilly; Merck; Novartis; Pfizer; Roche-Chugai; and Sanofi, Grant/research support from: Pfizer, Cédric Lukas Speakers bureau: Abbvie, Amgen, Janssen, Lilly, MSD, Novartis, Pfizer, Roche-Chugai, UCB, Consultant of: Abbvie, Amgen, Janssen, Lilly, MSD, Novartis, Pfizer, Roche-Chugai, UCB, Grant/research support from: Pfizer, Novartis and Roche-Chugai, Bernard Combe Speakers bureau: Abbvie; Bristol-Myers Squibb; Gilead; Janssen; Lilly; Merck; Novartis; Pfizer; Roche-Chugai; and Sanofi, Consultant of: Abbvie; Bristol-Myers Squibb; Gilead; Janssen; Lilly; Merck; Novartis; Pfizer; Roche-Chugai; and Sanofi, Grant/research support from: Novartis, Pfizer, and Roche-Chugai, Grégoire Mercier: None declared, Jacques Morel Speakers bureau: Abbvie; Bristol-Myers Squibb; Gilead; Janssen; Lilly; Merck; Novartis; Pfizer; Roche-Chugai; and Sanofi, Consultant of: Abbvie; Bristol-Myers Squibb; Gilead; Janssen; Lilly; Merck; Novartis; Pfizer; Roche-Chugai; and Sanofi, Grant/research support from: Novartis, Pfizer, and Roche-Chugai, Claire Daïen Speakers bureau: Pfizer, Roche-Chugai, Fresenius, BMS, MSD, Lilly, Novartis, Galapagos, Consultant of: Abivax, Abbvie, BMS, Roche-Chugai, Grant/research support from: Pfizer, roche-chugai, fresenius, MSD
DOI: 10.1136/annrheumdis-2021-eular.3454

OP0215

MENTAL HEALTH, SLEEP AND COGNITION CHARACTERISTICS IN RHEUMATOID ARTHRITIS AND ASSOCIATIONS WITH RHEUMATOID FACTOR STATUS IN THE UK BIOBANK

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Background: There are significant gaps in the literature regarding sleep, mental health, and cognition for people with rheumatoid arthritis (RA) despite being important aspects of patients' overall quality of life. Similarly, there is a lack of understanding about the role of rheumatoid factor (RF) on these domains.

Objectives: The aim of the current study was to characterize mental health, cognition, and sleep variables in people with RA and to compare these associations in people with positive RF (RF+) and negative RF (RF-) in a large population cohort.

Methods: This cross-sectional study used baseline data from the UK Biobank cohort ($n = 502,506$) to compare people with and without RA and people that are RF+ versus RF- on a variety of sociodemographic, lifestyle, illness-related factors and depression, neuroticism, performance on cognitive tests and sleep-related factors. Logistic regression analyses were also performed to determine whether RF seropositivity was associated with mental health, cognition, and sleep variables. We adjusted for the covariates of age, sex, ethnicity, deprivation index, smoking status, BMI and alcohol intake.

Results: In this sample 5,907 people self-reported having RA (1.17%), of which 74% were RF- and 26% were RF+. There were significant differences ($p < 0.05$) between people with and without RA for depression, neuroticism, nap during the day, getting up in the morning, insomnia, reaction time, fluid intelligence and prospective memory. There were significant differences ($p < 0.05$) between RF+ and RF- people for depression, neuroticism, sleep duration, nap during the day, getting up in the morning, insomnia, and reaction time. In the unadjusted regression analyses neuroticism ($B = -0.06$, $SE = 0.01$, $p < 0.001$), sleep duration ($B = 0.02$, $SE = 0.005$, $p < 0.001$), nap during the day ($OR = 1.28$, 95% CI: 1.02-1.65, $p < 0.05$) and reaction time ($B = 4.55$, $SE = 0.53$, $p < 0.001$) were significantly associated with RF status. After adjusting for covariates, only sleep duration ($B = 0.01$, $SE = 0.005$, $p < 0.01$) remained significant.

Conclusion: The current study suggests that RA diagnosis and RF status are associated with differences in mental health, sleep, and cognition, highlighting the importance of addressing these aspects in clinical settings and future research.

Disclosure of Interests: None declared

DOI: 10.1136/annrheumdis-2021-eular.1767

OP0216

TRENDS IN OCCURRENCE OF DEMENTIA IN PATIENTS WITH RHEUMATOID ARTHRITIS: A POPULATION-BASED COHORT STUDY, 1980-2009

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Background: Some cross-sectional studies show increased odds of cognitive impairment and dementia in patients with rheumatoid arthritis (RA) compared to

the general population, while others show the reverse. Furthermore, existing studies have not evaluated trends in incidence of dementia on a longitudinal basis.

Objectives: We aimed to assess the incidence of dementia over time in patients with incident RA and to compare it to those of population-based comparators.

Methods: This population-based, retrospective cohort study included Olmsted County residents with incident RA and non-RA individuals matched on age, sex, and calendar year. All RA cases met 1987 ACR criteria for RA between 1980 and 2009. Index date was the date of RA criteria fulfillment or a corresponding date for referents. All individuals were followed until death, migration, or 12/31/2019. For sensitivity analyses, follow-up of each decade was truncated at eleven years to make the length of follow-up comparable (e.g., the 1980-89 cohort was truncated at 12/31/1999). Incident dementia was defined as an ICD-9/10 code for dementia. Patients with dementia prior to RA incidence/index date were excluded. Cox proportional hazards models calculated hazard ratios (HR) with 95% confidence intervals (CI) for incident dementia by decade, adjusting for age and sex. The cumulative incidence of dementia was assessed, adjusting for the competing risk of death.

Results: The study included 895 persons with RA (mean age 55.3 years; 69% female) followed up for a median of 15.2 years. The 10-year cumulative incidence of dementia in these individuals during the 1980s was 12.7% (95%CI 7.9-15.7%), 1990s was 7.2% (95%CI 3.7-9.4%), and 2000s was 6.2% (95%CI 3.6-7.8%). Patients with incident RA in 2000-09 had markedly lower cumulative incidence of dementia than patients diagnosed in the 1980s (HR 0.57; 95%CI 0.33-0.98). Patients with incident RA were then compared to population-based comparators without RA ($N = 880$, mean age 55.2 years; 68% female) followed up for a median of 16.4 years. The 10-year cumulative incidence of dementia in these individuals in the 1980s was 9.3% (95%CI 4.6-11.9%), in the 1990s was 5.0% (95%CI 2.2-6.3%) and in the 2000s was 7.1% (95%CI 4.3-8.9%). Overall, the risk of dementia in RA patients was significantly higher than in the non-RA persons (HR 1.38; 95%CI 1.04-1.83). When subdivided by decade, the risk of dementia in patients diagnosed with RA was higher than non-RA comparators in the 1980s and 1990s but not 2000s (Figure 1). Sensitivity analysis with truncated follow-up yielded similar results.

Figure 1. Cumulative incidence of dementia (based on ICD 9/10 codes) versus age-and sex-matched non-RA comparators by decade of RA incidence/index.