or as SS associated with another autoimmune disorder (SS+AID).¹ Reported prevalence of pSS in the French general population is 1.02–1.52 cases/10,000 people.³

Objectives: To estimate prevalence, incidence and healthcare costs of SS in France using national health insurance claims data.

Methods: Claims from 2011–2018 from the Système National des Données de Santé (SNDS), comprised of data from 99% of the French population, were analysed. Patients (pts) with SS were identified using an algorithm.⁴ Inclusion criteria: International Classification of Diseases, Tenth Revision code M35.0 (Sicca syndrome [Sjögren]) or M35 (other systemic involvement of connective tissue), and ≥ 2 drug reimbursements for SS-related treatments. Key exclusion criteria: amyloidosis, sarcoidosis, HIV, and head and neck radiotherapy. Denominators for estimated prevalence rates were derived from French population census data. Healthcare costs were based on Assurance Maladie rates.

Results: 23,152 pts with pSS and 15,462 with SS+AID were identified during the study period. Estimated prevalence of SS (2011–2018) per 100,000 persons ranged from 22–32 (pSS) and 17–22 (SS+AID) and was stable over time; proportion of female pts was 90–91% (pSS) and 92–93% (SS+AID); mean age ranged from 63–66 (pSS) and 58–63 (SS+AID) years. Estimated incidence of SS (2012–2018) per 100,000 persons ranged from 4.1–0.3 (pSS) and 2.1–0.1 (SS+AID); proportion of female pts was 76–87% (pSS) and 74–90% (SS+AID); mean age ranged from 53–64 (pSS) and 50–62 (SS+AID) years. RA was the most frequently associated autoimmune disorder (32%) in pts with SS+AID. In the first year, artificial tears was the most frequently reimbursed drug (66% [pSS], 55% [SS+AID]), followed by hydroxychloroquine (19% [pSS], 35% [SS+AID]). From 2014–2018, ~30% of men and ~22% of women with pSS reported no drug reimbursement; ~20% of men and ~15% of women with SS+AID reported no drug reimbursement during the same time frame. From 2013–2018, ~50% of all pts had consultations with a dentist or an ophthalmologist. Mean healthcare costs increased over the study period: from €5836 to €9618 (pSS) and €8905 to €13,271 (SS+AID). Pt characteristics and healthcare consumption data are presented (Table 1).

Conclusion: Prevalence of pSS in this French claims data study was stable over time and consistent with previous reports.³ Based on these results, SS may be considered an orphan disease. Overall costs for pts with SS were higher than previously estimated.⁵ Results may help inform and optimise specialist care for pts with SS in France.

REFERENCES:

- [1] Patel R, Shahane A. *Clin Epidemiol* 2014;6:247–255.
- [2] Mariette X, Criswell LA. *N Engl J Med* 2018;378:931–939.
- [3] Maldini C, et al. *Arthritis Care Res (Hoboken)* 2014;66:454–463.
- [4] Devauchelle Pensec V, et al. *Arthritis Rheumatol* 2019;71(suppl 10):abstract 1101.
- [5] l'Assurance Maladie. Améliorer la qualité du système de santé et maîtriser les dépenses. July 2019.

Acknowledgements: This study was sponsored by Bristol Myers Squibb. Professional medical writing assistance was provided by Lindsay Craik at Caudex and was funded by Bristol Myers Squibb.

Disclosure of Interests: Raphaële Seror Consultant of: Amgen, Boehringer Ingelheim, Bristol Myers Squibb, Fresenius Kabi, GlaxoSmithKline, Janssen, Pfizer, Roche, Laurent Chiche: None declared, Guillaume Desjeux: None declared, Joe Zhuo Shareholder of: Bristol Myers Squibb, Employee of: Bristol Myers Squibb, Bruno Bregman Shareholder of: Bristol Myers Squibb, Employee of: Bristol Myers Squibb, Virginie Vannier-Moreau Shareholder of: Bristol Myers Squibb, Employee of: Bristol Myers Squibb, Valerie Devauchelle-Pensec Consultant of: AbbVie, Bristol Myers Squibb, Novartis, Grant/research support from: Bristol Myers Squibb, Lilly, Roche-Chugai.

DOI: 10.1136/annrheumdis-2021-eular.78

POS0025

INCIDENCE RATES AND POINT PREVALENCE OF SEROPOSITIVE AND SERONEGATIVE RHEUMATOID ARTHRITIS IN DENMARK: A NATIONWIDE REGISTER-BASED STUDY FROM 1998 TO 2018 USING FOUR DIFFERENT CASE CRITERIA

B. G. Soussi¹, R. L. Cordtz¹, S. Kristensen^{1,2}, C. S. Bork³, J. Christensen^{2,4}, E. B. Schmidt^{2,3}, D. Prieto-Alhambra⁵, L. Dreyer^{1,2}. ¹Aalborg University Hospital, Department of Rheumatology, Aalborg, Denmark; ²Aalborg University, Department of Clinical Medicine, Aalborg, Denmark; ³Aalborg University Hospital, Department of Cardiology, Aalborg, Denmark; ⁴Aalborg University Hospital, Department of Nephrology, Aalborg, Denmark; ⁵University of Oxford, CSM-NDORMS, Oxford, United Kingdom

Background: Few previous studies have investigated the incidence rate (IR) and point prevalence (PP) of seropositive and seronegative rheumatoid arthritis (RA), and further, the estimates remain unknown in the Danish population.

Objectives: To investigate the IR and PP of seropositive and seronegative RA in the adult Danish population from 1998 to 2018 using four register-based case definitions of RA.

Methods: Nationwide register-based cohort study. Using the Danish administrative registers, patients with RA between 1998 and end of 2018 were identified. ICD-10 codes for RA were identified in the Danish National Patient Registry and information on DMARD prescriptions were obtained through the Danish National Prescription Registry using ATC codes. The used case definitions were¹: Criteria A, first time M05/M06 RA diagnosis and redemption of a DMARD in the following year; Criteria B, two RA diagnoses within 90 days of each other, originating from department of rheumatology or general internal medicine, where the latest registered M05/M06 diagnosis defined the serologic status; Criteria C, a M05/M06 diagnosis recorded at any time preceded or followed by redemption of a DMARD prescription within one year, where the M05/M06 diagnosis recorded determined the serologic status; Criteria D, as Criteria A, but with the additional requirements that cases had no registration for other selected inflammatory diseases.

In calculation of IRs the total Danish population from 1998 to 2018 was used as reference population for standardisation. The PP was calculated for years 2000, 2009, 2011 and 2018.

Results: From 1998 to 2018 the overall IR was 18.0 (95%CI 17.7 to 18.3) per 100,000 person years (PY) for seropositive RA and 16.7 (95%CI 16.4 to 16.9) per 100,000 PY for seronegative RA using Criteria A. A higher IR for seropositive RA than for seronegative RA was found regardless of the case criteria used. Figure 1 shows the temporal IRs of seropositive and seronegative RA.

Regardless of case criteria used, the PP increased from 2000 to 2018 for both seropositive and seronegative RA, and the estimates were higher for seropositive RA than for seronegative RA (Table 1).

Table 1. Characteristics and healthcare consumption data for pts with SS in the SNDS (2011–2018)

	pSS			SS+AID		
Age at disease onset, overall and by sex						
	M (n=2515)	F (n=20,637)	All (n=23,152)	M (n=1350)	F (n=14,112)	All (n=15,462)
Mean (SD)	62 (15)	60 (15)	60 (15)	59 (14)	56 (15)	56 (15)
Age, yrs, n (%)						
<50	480 (19)	4948 (24)	5428 (23)	328 (24)	4507 (32)	4835 (31)
50–74	1471 (59)	11,567 (56)	13,038 (56)	852 (63)	7887 (56)	8739 (57)
≥ 75	564 (22)	4122 (20)	4686 (20)	170 (13)	1718 (12)	1888 (12)
Healthcare consumption						
Mean (IQR) no. prescriptions for treatment of interest		37 (9–58)			52 (20–78)	
≥ 1 Schirmer's test, n (%)		2409 (10)			1303 (8)	
Reimbursement for antinuclear antibody test, n (%)		13,312 (58)			9587 (62)	
Mean no. dental reimbursements/yr		2			1	
Mean no. ophthalmologist reimbursements/yr		1			1	

F=female; IQR=interquartile range; M=male; yr=year.

Table 1. Point prevalence of rheumatoid arthritis in Denmark in year 2000, 2009, 2011 and 2018 using four different case definitions

		2000		2009		2011		2018	
		Seropositive	Seronegative	Seropositive	Seronegative	Seropositive	Seronegative	Seropositive	Seronegative
Criteria A	N	3029	2741	7474	7127	8712	8121	12437	11662
	Population	3964040		4166298		4202891		4269677	
	PP, % (95%CI)	0.08 (0.08 to 0.08)	0.07 (0.07 to 0.07)	0.18 (0.18 to 0.19)	0.17 (0.17 to 0.18)	0.21 (0.20 to 0.21)	0.19 (0.19 to 0.20)	0.27 (0.27 to 0.28)	0.26 (0.25 to 0.26)
Criteria B	N	7507	4893	11565	9033	12710	10011	16334	13340
	PP, % (95%CI)	0.20 (0.19 to 0.20)	0.13 (0.12 to 0.13)	0.28 (0.28 to 0.29)	0.22 (0.21 to 0.22)	0.30 (0.30 to 0.31)	0.24 (0.23 to 0.24)	0.36 (0.35 to 0.36)	0.29 (0.29 to 0.30)
Criteria C	N	6701	4570	11174	9125	12417	10149	15881	13712
	PP, % (95%CI)	0.18 (0.17 to 0.18)	0.12 (0.12 to 0.12)	0.27 (0.27 to 0.28)	0.22 (0.22 to 0.23)	0.29 (0.29 to 0.30)	0.24 (0.24 to 0.25)	0.35 (0.34 to 0.35)	0.30 (0.30 to 0.31)
Criteria D	N	2724	2390	6612	5984	7695	6759	10830	9452
	PP, % (95%CI)	0.07 (0.07 to 0.07)	0.06 (0.06 to 0.07)	0.16 (0.16 to 0.16)	0.15 (0.14 to 0.15)	0.18 (0.18 to 0.19)	0.16 (0.16 to 0.17)	0.24 (0.23 to 0.24)	0.21 (0.20 to 0.21)

PP = Point prevalence

Conclusion: In Denmark, the IR and PP estimates were higher for seropositive compared to seronegative RA during the study period. However, when applying stricter case criteria for RA (Criteria A and D) the differences in IR and PP estimates were smaller, than when using less strict criteria (Criteria B and C). The findings of such small differences between seropositive and seronegative IRs warrant further investigation.

REFERENCES:

[1] Soussi BG et al. Incidence and prevalence of rheumatoid arthritis in Denmark: a nationwide population based study investigating the effect of four different case definitions [abstract]. *Ann Rheum Dis.* 2020;79(supplement 1):46

Acknowledgements: The authors will like to thank The Danish Rheumatism Association for supporting this work.

Disclosure of Interests: Bolette Gylden Soussi: None declared, René Lindholm Cordtz: None declared, Salome Kristensen: None declared, Christian Sørensen Bork: None declared, Jeppe Christensen: None declared, Erik Berg Schmidt: None declared, Daniel Prieto-Alhambra Grant/research support from: Grants from AMGEN, UCB Biopharma and Les Laboratoires Servier; and Janssen, on behalf of IMI-funded EHDEN and EMIF consortiums, and Synapse Management Partners have supported training programmes organised by DPA's department and open for external participants, Lene Dreyer Grant/research support from: Grants from BMS, Galderma and Eli Lilly.

DOI: 10.1136/annrheumdis-2021-eular.131

POS0026

ASSOCIATION BETWEEN RA DISEASE ACTIVITY AND TOOTH LOSS: RESULTS OF TWO NATIONAL COHORTS

K. Albrecht¹, P. De Pablo², T. Eidner³, G. Hoese⁴, S. Wassenberg⁵, A. Zink¹, J. Callhoff^{1,6}. ¹German Rheumatism Research Centre, Epidemiology, Berlin, Germany; ²University of Birmingham, Rheumatology Research Group, Institute of Inflammation & Ageing, College of Medical & Dental Sciences, Birmingham, United Kingdom; ³Jena University Hospital, Department of Internal Medicine III, Division of Rheumatology & Osteology, Jena, Germany; ⁴Practice of Rheumatology, Stadthagen, Stadthagen, Germany; ⁵Rheumazentrum Ratingen, Ratingen, Germany; ⁶Charité - Universitätsmedizin Berlin, Institute for Social Medicine, Epidemiology and Health Economics, Berlin, Germany

Background: Cross-sectional studies suggest an association between the presence of tooth loss and/or periodontitis, cytokine levels and disease activity in patients with rheumatoid arthritis (RA) (1).

Objectives: To analyze the association between tooth loss and disease activity/inflammatory activity in patients with early arthritis and established RA.

Methods: Two data sources were used for analysis. Participants of the early arthritis cohort study CAPEA, conducted between 2010 and 2013, reported their number of teeth present at baseline and were followed over 2 years. Tooth loss categories were defined according to the number of teeth present, as follows: 0, 1-19, 19-27, and all 28 teeth. Disease activity/inflammatory activity data, such as disease activity scores (DAS28-ESR) and disease activity parameters, including swollen joint count (SJC) and inflammatory markers, i.e. erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), were collected longitudinally at baseline, 3, 6, 12, 18, and 24 months. We used linear mixed regression models (with negative binomial distribution for SJC) to estimate the association between tooth loss and disease activity scores, SJC and inflammatory markers (ESR, CRP), over time. We also investigated the association between tooth loss and disease activity/inflammatory markers in patients with established RA, using cross-sectional data from the German National database (NDB) collected between 2015 and 2018. All models were adjusted for age, sex, smoking (ever vs. never), rheumatoid factor and education level, defined as years in education. Models with the NDB data were additionally adjusted for disease duration, missing data were imputed using multiple imputation. In all models, number of teeth was entered as a continuous variable.

Results: Of a total of 1,124 CAPEA participants included, those with higher tooth loss were older, more often smokers, had a lower level of education, higher inflammatory markers and higher disease activity scores at baseline (Table 1). Inflammatory markers decreased comparably across all categories of tooth loss over time (Figure 1), in particular CRP. Tooth loss was not significantly associated with CRP or SJC alone. Glucocorticoid use was higher among those with more tooth loss, however dose reduction was similar across tooth loss categories. Among 7,179 NDB participants, adjusted disease activity scores and inflammatory markers were higher across tooth loss categories (DAS28 no teeth: 2.7, all teeth: 2.4; ESR no teeth: 23mm/h, all teeth: 17mm/h). SJC was not relevantly associated with tooth loss (no teeth: 1.2, all teeth: 1.2). Mean disease duration in the NDB sample was 13 years.

Table 1. Early arthritis cohort (CAPEA) baseline characteristics, stratified by number of teeth

	Number of teeth present				Total	n
	0	1-19	20-27	All 28		
N	89	315	452	268	1,124	1,124
Female, %	57	65	64	69	65	1,124
Age (years), mean	69	64	54	45	56	1,124
ESR (mm), mean	42	38	28	24	31	1,074
CRP (mg/l), mean	25	24	15	15	19	1,069
SJC, mean	6.1	6.9	5.6	5.2	5.9	1,120
DAS28-ESR, mean	5.5	5.2	4.7	4.5	4.9	983
RF positive, %	63	53	52	54	54	1,124
Education, %						1,020
<=8 years	80	58	35	21	42	
9-10 years	16	30	43	46	38	
11-13 years	4	12	22	33	20	
Smoking (ever), %	73	64	61	56	61	1,102

ESR: erythrocyte sedimentation rate, CRP: C-reactive protein, DAS28: disease activity score, RF: rheumatoid factor, SJC: swollen joint count

Figure 1. Disease activity parameters during the 24-months follow-up, stratified by the number of teeth at baseline: results from mixed models, adjusted for age, sex, smoking and education level.

Conclusion: While we observed a significant association between tooth loss and disease activity and inflammation markers in both early arthritis and established RA, our longitudinal results suggest that tooth loss has no influence on response to therapy.