Conclusions: The current PSC models revealed a specific ROS-mediated inflammatory pathway and provide a platform for studying the pathophysiology of NNS and searching for the alternative therapeutic options for NNS and related immunoproteasome disorders.

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Statistics made simple: a practical approach to complex concepts

OP0009 RISING PREVALENCE OF FUNCTIONAL DISABILITY IN PATIENTS WITH RHEUMATOID ARTHRITIS OVER 20 YEARS

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Background: Despite the advances in treatment of rheumatoid arthritis (RA) over the recent decades many patients with RA do not achieve remission or full physical functioning. The trends in prevalence of functional disability (FD) in patients with RA are not fully understood.

Objectives: To assess the prevalence of patient-reported FD in patients with RA compared to subjects without RA over the past two decades of calendar time, across different age categories and over the duration of RA disease.

Methods: This retrospective population-based cohort study included Olmsted County, MN residents who met 1987 ACR criteria for RA from 1/5/1999 to 12/31/2013 and a cohort of subjects without RA matched by age and sex from the same underlying population. Each non-RA subject was assigned an index date matching RA incidence date of a corresponding RA patient. Activities of Daily Living (ADL) were recorded annually over the past 20 years at patients' routine medical care visits based on patient provided information about performing six ADL without assistance including feeding oneself, dressing, using the toilet, bathing, walking, housekeeping. FD was defined as having difficulty with ≥ 1 of the six ADLs. Analyses were performed using age- and sex-adjusted logistic regression models with random subject effects to account for multiple measures per patient.

Results: Five hundred eighty-six patients with RA (mean age 55, 70% females) and 531 non-RA subjects (mean age 56, 70% females) have completed 7446 questionnaires (4,301 RA and 3145 non-RA) from 1/5/1999 to 1/5/2018 on or

following their RA incidence/index date. There has been a significant increase in the prevalence of FD among patients with RA compared to the non-RA cohort over the past two decades ($p=0.003$, figure 1). When analysing by age group, patients with RA compared to the non-RA subjects had at least a 15% excess in the proportion of FD at any given age up to the 8–9th decade of life while the proportions were similar in both cohorts. When analysing FD over the duration of RA disease, its prevalence was significantly higher in the RA compared to non-RA subjects, starting at RA incidence/index date (26% in RA vs 11% in non-RA subjects, $p<0.001$), with persistent excess in prevalence over the entire follow-up time. When FD was defined as having difficulty with ≥ 2 of the six ADLs the trends were similar for calendar year, age categories and RA disease duration, although the proportion of patients affected with functional disability was smaller.

Conclusions: Patients with RA have significantly higher prevalence of FD compared to their non-RA counterparts. The prevalence of FD in RA has increased in the recent decades with a persistent excess in the proportion of affected patients in the RA compared to the non-RA cohort across the age-range and over RA disease duration. This substantial and growing FD burden is despite the recent advances in controlling RA disease activity with modern antirheumatic therapies. More studies are needed to understand the underlying causes for these trends in FD and to improve outcomes in patients with RA.

Disclosure of Interest: None declared

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OP0010 USE OF CLAIMS AND ELECTRONIC MEDICAL RECORD DATA TO PREDICT RA DISEASE ACTIVITY

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Background: Prior studies have demonstrated challenges in developing and validating claims-based algorithms that accurately predict RA disease activity.^{1,2} The ability to adjust for and predict RA disease activity would be a powerful epidemiological tool for studies that lack direct disease activity measures such as the DAS28.

Objectives: We used machine-learning methods to incorporate claims and electronic medical record (EMR) data to develop models to predict DAS28 (CRP) as a continuous measure, and to distinguish moderate-to-high disease activity from low activity/remission.

Methods: We identified 300 adults (≥ 18 years of age) with RA enrolled in a single academic centre cohort with ≥ 1 year of linked Medicare insurance claims preceding a DAS28 (CRP) measurement between 2006 and 2010. Of these, 95 had Medicare Part D pharmacy data. From claims we included demographics, co-morbidities, joint replacement surgery, physical therapy visits, numbers of RA-related codes, laboratory values and imaging studies, and healthcare utilisation. For those with Part D pharmacy data we included medications (steroids, analgesics, DMARDs) and switches between drugs. From the EMRs we obtained smoking status, BMI, blood pressure, medication use, laboratory values for seropositivity (RF or anti-cyclic citrullinated peptide antibodies), haematocrit, ESR and CRP. We constructed models with claims only, claims with medications and claims with EMR data. We examined these models with DAS28 (CRP) as a continuous measure and as a binary outcome (moderate/high activity vs low activity/remission). We used adaptive least absolute shrinkage and selection operator (LASSO), which avoids model overfitting by penalising large coefficients and selects a subset of variables by shrinking some coefficients to zero. We used adjusted R^2 to compare continuous model fit and C-statistics to compare binary models.

Results: In models that included DAS28 as a continuous measure, using claims alone explained 11% of the DAS28 variability. Adding medications and EMR data to claims improved the adjusted R^2 by 6% (table 1). In models that included DAS28 as a binary outcome (moderate/high activity vs low activity/remission), our claims-only model yielded a C-statistic of 0.68, which increased to 0.79 after inclusion of medications and EMR data.

Abstract OP0010 – Table 1. Model Fit Statistics for Continuous DAS28 (CRP) (Adjusted R^2) and Binary Categories (Moderate/High vs Low/Remission; C-Statistic)*

	Model 1: claims only	Model 2: claims +Medicare medications	Model 3: claims +Medicare and EMR medications	Model 4: EMR data**	Model 5: claims +Medicare medications +EMR data**
Adjusted R^2	0.11	0.12	0.14	0.16	0.17
C-statistic	0.68	0.74	0.77	0.76	0.79

*n=300 except for Model 2 (n=95)

**EMR data includes medications, laboratory tests, BMI, blood pressure and smoking status

Conclusions: Incorporating medications, EMR data and laboratory values into a claims-based index did not significantly improve the ability to predict DAS28 scores as a continuous measure. However, models that include claims, medications and EMR data may be used to reasonably distinguish moderate-to-high disease activity from low disease activity/remission.

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E-health for better care

OP0011-PARE A WEEK TO TWEET: FINDINGS FROM YOUNG PARE'S ONLINE COURSE FOR TWITTER NOVICES

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Background: Twitter is a social networking platform that enables individuals to publish short posts called tweets. Twitter enables individuals to reach over 270 million active users on the platform each month.¹ A useful way to develop individuals' confidence on Twitter can be through participating in tweet chats and by conversing at conferences through the use of a preselected hashtag.² Young PARE identified a need among the patient community to provide some training for individuals to get started on Twitter. This mirrored the ongoing work provided by EMEUNET for rheumatology professionals.

Objectives: The aim of the course was to deliver a structured online Twitter learning experience, and to evaluate participants' use and perceptions of the course.

Methods: The course was hosted on Mailchimp over a period of seven days, from Thursday 16 until Wednesday 22 February 2017. Participants wishing to take part signed up to the course via a form advertised by email and online. Participants received an email with a task to complete at 09:00 each day. Despite the daily prompt, the course was self-paced, enabling participants to participate at their own convenience. An anonymous evaluation survey, hosted by bos, was distributed to participants immediately after the course. A combination of 5-point Likert scales, multiple allowable answers and open-ended comments were employed.

Results: A total of 95 individuals subscribed to the course, with 11% responding to the survey (n=11). Of the respondents, 63.7% were aged 35 years or older. The course was rated as either good (63.6%) or excellent (36.4%), with 63.6% stating that the course met their expectations. The most favoured topics rated as strongly liked or liked by 90.9% of respondents were: (i) Using twitter at conferences; (ii) Public and protected tweets; (iii) Embedding Twitter feeds; (iv) Hashtags; and (v) Sending tweets. However, some participants felt that Twitter was not applicable to their country. Participants also provided constructive feedback for future courses; including more screenshots to guide textual prompts, and the option to house the course in a single, online location that can be accessible at any time.

Conclusions: 'A week to tweet' challenged the misconception that social media is just for young people under 35. The course provided a simplified account of Twitter, from the basics of getting started, through to more complex functions. It appeared to be a welcomed resource for twitter novices, though the instructional content could be simplified, particularly for participants whose first language is not English. Cultural issues were also raised, with some participants feeling that Twitter wasn't relevant in their country. This highlights the need for better awareness of the global functionality of Twitter, and the capabilities of this social networking platform. For future instances, course content should be accessible from an online repository, so that participants can access the course at their own pace. There may be scope for the course to be hosted under the EULAR School of Rheumatology in the future.

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OP0012-HPR CREATION OF THE FIRST DIGITAL TRAINING DESIGNED FOR PATIENTS WITH RHEUMATOID ARTHRITIS BY PATIENT ORGANISATION IN RHEUMATOLOGY

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Background: People with chronic conditions face the disease more effectively when they develop psychosocial skills and self-care. Health authorities thus recommend the organisation of therapeutic patient education (TPE)... suffering from different limitations.

Objectives: A patient organisation had the idea to develop a digital training solution, accessible everywhere, complementary to TPE, for patients with rheumatoid arthritis.

Methods: The choice was made for an online training program such as Massive Open Online Courses (MOOC).

A preliminary survey was carried out among the patients via an electronic questionnaire via social networks and an emailing to the organisation members.

A steering committee (COPIL) made up of representatives of the patients' association, expert patients and rheumatologists with the support of a specialised agency, determined the timetable, the educational objectives, the contents, the speakers and the evaluations.

Results: The initial investigation was stopped at 100 responses, obtained in 3 days. 85.9% planned to follow the MOOC on their computer, but to meet the needs of all, the device is responsive. 61% had never participated in a TPE program and 94% were interested in joining MOOC to learn new information about the disease (78.8%), treatments (71.7%), have expert views (67.7%), share experience with other patients (56.6%), and better live with the disease (50.5%).

The MOOC: Using the Learning Management System platform drspoc.com, Intervention of the experts via videos and live courses, evaluation of the achievements and, during two annual sessions, tutoring by patients trained specifically. At the beginning and end of the session, learners are invited to answer different questionnaires (knowledge, skills, satisfaction).

COPIL identified 15 experts (patient-experts, rheumatologists, occupational therapist, physiotherapist, nutritionist, social worker, psychologist, sexologist, nurse) who wrote the content of their speech. All texts have been validated by a pedagogical engineer and the director of the association.

215 people pre-registered during the month preceding the launch, 154 persons active and 446 posts shared during the first session. 217 pre-registered, 238