achieve consensus on optimal dosing of HCQ, these data suggest that patients with low body weight should be targeted for toxicity monitoring regardless of the dosing cut-off used.

Disclaimer: This data was supported by the ACR's RISE Registry. However, the views expressed represent those of the authors, not necessarily those of the ACR.

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OP0264

REFINING THE PRIMARY CARE CCP+ PATIENT PATHWAY

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Background: It is known that the presence of anti-CCP antibodies (CCP+) is associated with the development of rheumatoid arthritis (RA). Between 0-9% of the general population test positive [1], but only a small percentage of them will develop the disease. Previous work [2] showed that the selection of individuals with non-specific musculoskeletal symptoms, without clinical synovitis enriched the prevalence of anti-CCP positivity and also the likelihood of imminent progression to inflammatory arthritis.

Objectives: To assess for other factors which are associated with disease progression in patients testing CCP+ in order to optimise primary care referrals to Rheumatology.

Methods: A prospective observational study recruiting patients over 18 years old with a new musculoskeletal complaint and no clinical synovitis was conducted. Patients were recruited from primary care centres across the UK from July 2007 until February 2018. Those testing CCP+ in anti-CCP2 assay (immunocap method, Phadia assay) were invited to come to Leeds for assessment and follow-up including a baseline musculoskeletal ultrasound. Patients unable to attend were sent questionnaires 12 months later and were contacted in January 2019 to assess their status.

Results: 5702 eligible patients were recruited from primary care. 2.99% (171/5702) patients tested CCP+ and data from 150 patients was available for analysis: 42.7% (64/150) progressed to inflammatory arthritis (IA), predominantly RA. The mean time of progression was 242 days and 91% progressed in less than 12 months. The absence of pain in the hands or feet had a negative predictive value of 91% for the development of IA ($p=0.001$) (fig.1); indeed, the RR for progression to IA in patients with a new complaint in hands or feet was 1.6 (95% CI 1.02-2.36, $p=0.025$). Regarding the presence of antibodies, CCP+ high titre patients had a RR of 2.1 (95% CI 1.63-2.68, $p<0.001$) for the development of IA and 93% of all progressors were CCP+ high titre.

Only 9% (4/43) of patients with CCP+ low titre progressed to IA vs the 57% (55/97) of patients with CCP+ high titre ($p<0.001$). All low titre progressors had pain in hands and feet and history of smoking exposure. 114 patients came to secondary care for assessment and a baseline musculoskeletal ultrasound scan was performed in 72 of them: the presence of PD in hands/feet was associated with progression to IA with a RR 2.4 (95% CI 1.27-4.58, $p=0.01$).

Conclusion: CCP+ patients without clinical synovitis who do not have pain in the hands or feet are unlikely to progress to IA especially if they have low titre antibodies. A high anti-CCP titre, new pain in hands/feet and PD in these joints are associated with rapid progression. These data may help optimise the primary care referrals to Rheumatology.

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OP0265

FRAILITY, DISABILITY, AND WORK DISABILITY IN PEOPLE WITH OSTEOARTHRITIS AND RHEUMATOID ARTHRITIS

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Background: Frailty is a clinical syndrome associated with adverse health outcomes. Frailty and disability can co-occur though are distinct entities. There are few prospective data looking at the occurrence and development of frailty, disability, and work disability in people with osteoarthritis (OA) and rheumatoid arthritis (RA).

Objectives: To determine the odds of prevalent and incident frailty, disability, and work disability in people with OA or RA, compared to people without these diseases.

Methods: Subjects aged 40-69 were recruited to the UK Biobank cohort. Data, including self-reported physician-diagnosed OA and RA, were collected at baseline (2007-10) and, in a subset, at follow up (2012-16). Frailty was measured using a modified Fried phenotype comprising five components: self-reported weight loss, exhaustion, low physical activity, slow usual walking pace, and low measured grip-strength (1). Participants were classified as robust if none of the components were present, pre-frail if 1-2 components were present and frail if ≥ 3 components were present. Participants were classified as having a disability if they indicated receiving a disability allowance/benefit. Participants indicating that they were unable to work due to disability or illness were classified as work disabled. Incident frailty was defined as frail at follow up and robust or pre-frail at baseline. Incident disability or work disability, respectively was defined as receiving a disability benefit or indicating work disability at follow up but not at baseline.

Results: The mean (SD) age of the 465,379 participants at baseline was 56.5 (8.1) years and 54.3% were female. At baseline, 8.0% of the cohort reported that they had OA and 1.1% RA. At baseline, the prevalence of pre-frailty and frailty was 45.9% and 3.1%, respectively. 3.4% of the cohort indicated receiving a disability benefit, and 3.6% being work disabled. In a model adjusted for age, sex, smoking status and deprivation, compared to those without OA, those with OA were more likely to be pre-frail, odds ratio (OR) (95% CI), 1.8 (1.7, 1.8), or frail, OR 4.5 (4.3, 4.7), than robust. The adjusted OR (95% CI) for pre-frailty and frailty in those with RA (vs no RA) was 2.8 (2.6, 3.0) and 10.6 (9.7, 11.6), respectively. The adjusted OR (95% CI) for disability benefit was 3.9 (3.8, 4.1) in people with OA (vs no OA) and 7.7 (7.2, 8.2) in people with RA (vs no RA). The adjusted OR (95% CI) for work disability at baseline was 3.5 (3.3, 3.6) in people with OA and 4.8 (4.4, 5.2) in people with RA.

Data were available for 26,932 participants at follow up. The mean (SD) follow up time was 5.3 (1.5) years. Of those without frailty at baseline, 573 participants developed frailty during follow up. There were 292 incident cases of disability benefit and 137 incident cases of work disability. The adjusted OR (95% CI) for incident frailty in people with OA and RA at baseline was 2.3 (1.8, 2.9) and 3.3 (1.9, 5.7), respectively. The adjusted OR (95% CI) for incident disability benefit in people with OA and RA at baseline was 2.7 (2.0, 3.6) and 3.2, (1.7, 6.2), respectively. The adjusted OR (95% CI) for incident work disability in people with OA and RA at baseline was 2.3 (1.3, 3.9) and 3.7 (1.3, 10.1), respectively.

Conclusion: People with OA and RA have an increased risk of being, or becoming, frail, disabled, or work disabled. Further work is needed to determine effective

strategies for preventing or delaying the occurrence of frailty, disability, and work disability in people with OA and RA.

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OP0266

RISK OF HOSPITALIZED INFECTION IN PATIENTS WITH CHRONIC INFLAMMATORY ARTHRITIS TREATED WITH BIOLOGICAL DRUGS – A MATCHED COHORT STUDY

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Background: Patients with rheumatoid arthritis (RA), axial spondyloarthritis (axSpA) and psoriatic arthritis (PsA) treated with biological drugs (bDMARDs) have increased risk of hospitalized infection (i.e. infection causing admission to hospital) compared to the general population. Since patients with RA, axSpA and PsA have different age distributions, and age is an important predictor for infection, we found it of interest to quantify the excess burden of hospitalized infection in patients with inflammatory arthritis treated with bDMARDs compared to the general population and to investigate whether risk depended on age and diagnosis.

Objectives: To compare the risk of hospitalized infection in bio-naïve patients with inflammatory arthritis, who started treatment with a bDMARD with that of the general population, and to explore how this risk was influenced by age and diagnosis.

Methods: Matched cohort study based on data from The Danish Rheumatology Register (DANBIO) linked with The Danish National Patient Register and The Danish National Prescription Register. Patients with a diagnosis of RA, PsA or axSpA in DANBIO initiating first bDMARD January 2006-December 2016 were included. For each patient, 10 controls from the general population, matched by age, sex, postal code and date were obtained. Infection risk in patients and matched controls were compared in analyses stratified by age and diagnosis, with Cox proportional hazards models accounting for matching. Follow-up time was 12 months irrespective of whether treatment was continued or changed during follow-up. Clinicaltrials.gov: NCT03496831.

Results: In total, 11,372 patients and 113,715 controls were included. Overall, hospitalized infection was observed during follow-up in 4.6% of patients and 1.3% of controls; hazard ratio 3.7 (95% confidence interval (CI): 3.4-4.1).

Table 1. Baseline characteristics and risk of hospitalized infection.

	RA		AxSpA		PsA	
	Patients (n=5985)	Matched cohort (n=59848)	Patients (n=2958)	Matched cohort (n=29579)	Patients (n=2429)	Matched cohort (n=24288)
Age <40	11.9%	11.9%	49.6%	49.6%	29.0%	29.0%
40-49	16.9%	16.9%	26.5%	26.5%	28.1%	28.1%
50-59	28.9%	28.9%	16.0%	16.0%	28.0%	28.0%
≥60	42.3%	42.3%	7.9%	7.9%	14.9%	14.9%
Men	25.0%	25.0%	60.9%	60.9%	45.6%	45.6%
No. of persons with hospitalized infection during 12 months of follow-up	352	880	81	292	89	262
Absolute risk of hospitalized infection during 12 months of follow-up (95% CI)	5.9% (5.3-6.5%)	1.5% (1.4-1.6%)	2.7% (2.2-3.4%)	1.0% (0.9-1.1%)	3.7% (3.0-4.5%)	1.1% (1.0-1.2%)

The absolute risk was highest in RA patients, followed by PsA, axSpA and controls (unadjusted comparison). When stratified by age, the absolute risk increased with age, but was largely similar across diagnoses (Figure). In the stratum ≥60 years, RA patients appeared to have higher risk than axSpA patients, but the subgroup of axSpA patients ≥60 years was small.

Conclusion: The risk of hospitalized infection during 12 months of follow-up was approximately four times higher in bio-naïve patients with inflammatory arthritis who started treatment with a biological drug (bDMARD) compared to matched controls from the general population. When stratified by age, the absolute risk was largely similar across the diagnoses RA, axSpA and PsA. Thus, attention to preventive strategies such as vaccination seems prudent in these patients, especially those ≥60 years of age.

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OP0267

INACTIVATED INFLUENZA VACCINATION DOES NOT ASSOCIATE WITH DISEASE FLARES IN AUTOIMMUNE RHEUMATIC DISEASES: A SELF-CONTROLLED CASE SERIES STUDY USING DATA FROM THE CLINICAL PRACTICE RESEARCH DATALINK

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Background: Concerns about vaccination with the seasonal flu vaccine associating with increased risk of autoimmune rheumatic disease (AIRD) activity, and anecdotal reports of the seasonal flu vaccine triggering diseases such as vasculitis are barriers to flu vaccination in this population¹⁻². This is despite reports of stable disease activity following flu vaccination provided disease modifying anti-rheumatic drug therapy is continued in the peri-vaccination period³. Previous studies generally include patients with stable disease activity, and as far as we are aware, a real world study evaluating the association between inactivated influenza vaccine (IIV) administration and AIRD activity has not been conducted.

Objectives: To examine the association between IIV administration and primary care consultation for joint pain, fatigue, rheumatoid arthritis (RA) flare, corticosteroid prescription, and incident vasculitis in people with AIRDs.