Table 1

	Negative n=35	CCP n=65	CCP_Carb n=36	CCP_Carb_Acet n=76
Female (%)	74.1	72.3	66.75	52.6
Age, mean	64.1	54.9	60.5	56.7
Disease duration, mean, months	6.6	14.7	11.7	13.2
Smoked (%)	54.3	67.7	77.8	67.1
DAS28-ESR, mean (complete data)	5.5 (30)	4.7 (56)	5.1 (30)	5.2 (64)
Radiographic Scores				
Baseline Erosion score, mean	2.9	2.8	7.2	3.3
Baseline JSN score, mean	3.3	3.4	6.6	3.5
Baseline Total SvH Score, mean	6.2	6.2	13.8	6.8
Mean change in Total SvH score over 12 months	0.5	0.5	1	1.8

with anti CCP antibodies (n=65), antibodies to anti CCP and anti Carb (n=36), antibodies to all three PTM (n=76) and antibody negative patients (n=35). Overall there was low radiographic progression in this sample of the SERA cohort. EULAR non-responders had greater progression compared to good responders (Least square mean difference in SvH over 12 m of 1.6, $p=0.019$). Baseline SvH erosion scores are 4.4 points higher in the CCP_Carb group compared to CCP alone ($p=0.009$) (Table 2 + Fig 1).

Table 2

Comparison	LS mean difference in baseline erosion score	P value
CCP_Carb vs CCP	4.4	0.009
CCP_Carb vs CCP_Carb_Acet	3.9	0.017
CCP_Carb vs Negative	4.3	0.026

Comparison	LS mean difference in SvH change over 12 months	P value
CCP_Carb_Acet vs CCP	1.3	0.016
CCP_Carb_Acet vs Negative	1.3	0.046

Total SvH 12m progression is 1.3 points higher in the triple positive group compared to the CCP group alone ($p=0.016$) (Table 2 + Fig 2). Total SvH progression is also higher when comparing the triple positive to the negative group ($p=0.046$).

Fig 1

Fig 2

Conclusions: RA patients with antibodies to citrullinated peptides only have lower baseline erosions and less radiographic progression over 12m compared to those with a wider autoantibody repertoire. Baseline differences in erosion suggest that these antibodies may be pathogenic during the pre-RA disease process. Radiographic progression increases with autoantibody repertoire suggesting ongoing immune activation.

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THU0112 STRESS AND DEPRESSION IN PATIENTS WITH EARLY INFLAMMATORY POLYARTHRITIS: NATURAL HISTORY AND ASSOCIATIONS WITH DISEASE ACTIVITY, DISABILITY AND PAIN OVER FIVE YEARS

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Background: Stress and depression are common in patients with inflammatory polyarthritis (IP). There is little research on long term patterns of depression and stress or how these variables relate to disease activity, disability and pain.

Objectives: To describe the natural history of stress and depression over five years and to assess the association of baseline, one year prior and current disease activity, disability and pain with longitudinal stress and depression.

Methods: Patients recruited to the Norfolk Arthritis Register (NOAR) (inclusion criteria: ≥ 2 swollen joints for ≥ 4 weeks) from 2005–2008 were included in this analysis. Demographics, medication use, 51 swollen/tender joint counts (SJC51/TJC51), pain visual analogue scale, HAQ, comorbidities and the Arthritis Impact Measurement Scales 2 (AIMS2) depression and stress subscales (range 0–10; high score = worse health status) were collected at baseline and years 1, 2, 3 and 5. Rheumatoid factor (RF), anti-cyclic citrullinated peptide antibodies (anti-CCP2) and C-reactive protein (CRP) were measured in baseline blood samples. ACR/EULAR 2010 RA criteria were applied to baseline characteristics. Depression and stress over five years were described using descriptive statistics. Multivariate random effects models were applied to assess the association of baseline disease activity (SJC51/TJC51), pain and disability with depression and stress over time adjusting for baseline age, gender, RF, anti-CCP2, CRP, sDMARD use, comorbidities, depression and stress. Similar methods were used to assess one year prior and current disease activity, pain and disability's association with stress and depression. Missing data were imputed using multiple imputation.

Results: 509 patients were included (median (IQR) age: 57 (45, 68) years; 321 (63.1%) female; 305 (59.9%) ACR/EULAR RA). Baseline median (IQR) depression and stress were 2.5 (1.5, 4.5) and 4.0 (2.5, 5.5) respectively and remained constant over five years. Baseline SJC51, TJC51, pain and HAQ were not independently associated with depression or stress over five years. Current HAQ and pain, but not SJC51/TJC51, were independently associated with depression and stress (per unit increase in HAQ: depression β 0.83, 95% CI 0.69, 0.97; stress β 0.76, 95% CI 0.61, 0.90; per 1cm increase in pain: depression β 0.09, 95% CI 0.06, 0.12; stress β 0.09, 95% CI 0.05, 0.12). Higher HAQ was independently associated with increased depression and stress one assessment later (per unit increase in HAQ: depression β 0.21, 95% CI 0.09, 0.32; stress β 0.21, 95% CI 0.10, 0.33) but not pain, SJC51 or TJC51.

Conclusions: There were no associations between measures of disease activity and depression or stress. Prospectively higher HAQ scores were associated with worse psychological health a year later. This may have implications for holistic management of IP.

Disclosure of Interest: None declared

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THU0113 SERUM CALPROTECTIN MAY REFLECT INFLAMMATORY ACTIVITY IN PATIENTS WITH ACTIVE RHEUMATOID ARTHRITIS DESPITE NORMAL C-REACTIVE PROTEIN

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Background: About a half of patients with rheumatoid arthritis (RA) have normal or low C-reactive protein (CRP) levels^{1–3}. Calprotectin is a promising and probably more specific biomarker of disease activity than conventionally used acute phase reactants.

Objectives: The aim of this study was to analyse levels of serum calprotectin in RA patients with clinically active disease and with low CRP (<10 mg/L).

Methods: A total of 160 RA patients and 32 healthy subjects were enrolled in this study. All patients underwent clinical examination (DAS28). The levels of calprotectin were analyzed in patients with moderate to high disease activity with low CRP levels and in healthy subjects. The discriminatory capacity of calprotectin to identify clinically active patients in spite of normal CRP was assessed using ROC curves.

Results: Out of all RA patients, 74/160 (46.3%) had low CRP and were in remission or had low activity at the same time. However, 51/160 (32%) had low CRP levels despite moderate to high disease activity according to DAS28. In these patients, calprotectin levels were significantly higher than in patients with low CRP in remission or with low disease activity at the same time (mean 2.7 ± 1.5 vs. 2.1 ± 1.2 $\mu\text{g/mL}$, $p=0.043$) and differed from that in healthy subjects (mean 2.7 ± 1.5 vs. $\pm 1.9 \pm 1.2$ $\mu\text{g/mL}$, $p=0.011$) (Figure 1). The discriminatory capacity for calprotectin to distinguish clinically active vs. inactive patients in spite of low CRP

using AUC of the DAS28 was 0.607 (95% CI 0.503 to 0.711, $p=0.043$) with an optimal cut-off 2.5 $\mu\text{g/mL}$.

Conclusions: The present study demonstrates that calprotectin may reflect inflammatory activity in RA patients where CRP fails to do so.

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THU0114 EFFECTS OF SMOKING ON BARICITINIB EFFICACY IN PATIENTS WITH RHEUMATOID ARTHRITIS: POOLED ANALYSIS FROM TWO PHASE 3 CLINICAL TRIALS

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Background: The efficacy of some rheumatoid arthritis (RA) therapies is reduced among patients who are smokers.

Objectives: This post-hoc analysis of two phase 3 studies assessed the effects of patient smoking status on the response to baricitinib treatment in patients with RA.

Methods: In RA-BEAM (NCT01710358), patients with inadequate response to methotrexate were randomized to placebo once-daily (QD) (N=488), baricitinib 4 mg QD (N=487), or adalimumab 40 mg biweekly (N=330).¹ In RA-BUILD (NCT01721057), patients with inadequate response to conventional synthetic disease modifying antirheumatic drugs (csDMARDs) were randomized to placebo (N=228) or baricitinib (2 mg, N=229; or 4 mg, N=227) QD.² Patients continued background csDMARD therapy in both studies. This post-hoc analysis was conducted in the placebo (N=716) and baricitinib 4 mg (N=714) patients. Patient-reported smoking status was categorized as current (smokers) or not current (non-smokers).

Results: Among 1,430 evaluable patients who received placebo or baricitinib 4 mg, 290 (20.3%) were smokers. Smoking status at baseline did not affect the clinical results of treatment with baricitinib for 24 weeks; smokers who received

placebo were numerically less likely than non-smokers receiving placebo to achieve most clinical outcomes (Table). Baricitinib's effect on modified total Sharp score was more pronounced among nonsmokers (interaction p -value = 0.07). ACR20/50/70=20%, 50%, and 70% improvement in American College of Rheumatology criteria; CDAI=Clinical Disease Activity Index; DAS28-hsCRP=Disease Activity Score 28-high sensitivity C-reactive protein; HAQ-DI=Health Assessment Questionnaire-Disability Index; mTSS=modified total Sharp score; SDAI=Simple Disease Activity Index.

Conclusions: This analysis of smokers and non-smokers in two RA trials demonstrated that the beneficial effect of baricitinib treatment versus placebo was similar on all clinical endpoints, but may differ for structural damage progression.

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THU0115 DISABILITY (HAQ) AND QUALITY OF LIFE (SF-12) AS RELATED TO ADHERENCE AND HEALTH LITERACY IN PATIENTS WITH RHEUMATOID ARTHRITIS

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Background: Disabilities in daily living and quality of life are key endpoints to evaluate the outcome of treatment for rheumatoid arthritis (RA). Among factors that may contribute to good outcome are adherence (i.e., the extent to which patients' behaviors corresponds with agreed recommendations from their doctor) and health literacy (patients' understanding and use of health information).

Objectives: The survey included a representative, nationwide sample of German physicians specialized in RA and patients with RA. The physician questionnaire included the disease activity score (DAS28) and medical prescriptions. The patient questionnaire included fatigue (EORTC QLQ-FA13), health assessment questionnaire (HAQ), quality of life (SF-12), health education literacy (HELP), and patients' listings of their medications.

Methods: Adherence was operationalized in various ways: patient-reported (CQR5), behavioral (correspondence between physicians and patients listings of medications), physician-assessed (five-point rating scale ranging from 1=very adherent to 5=not at all adherent) and a combined measure of physician rating (1= very adherent, 0 = less adherent) and the match between physicians' prescriptions and patients' accounts of their medications (1 = perfect match, 0 = no perfect match), leading to three categories of adherence: high, medium and low. Linear regressions were calculated using HAQ and SF-12 (physical and psychological) as dependent variables and adherence, health literacy and the set of demographic and clinical variables as predictor variables.

Results: A total of 708 pairs of patient and physician questionnaires were analyzed. The mean age of the patients, of whom 73% were women, was 60 years (SD=12).

Multiple regression analyses show, that health literacy is an independent predictor for HAQ and both SF-12 scales. Adherence by doctor is an independent predictor for both SF-12 scales while the adherence composite score is an independent predictor for HAQ and SF-12 psychological. Taking all 4 rheumatoid medications as prescribed is an independent predictor for HAQ and SF-12 physical. All models

Table 3: Multiple linear regression models

MLR model ^a	Predictor	HAQ ^b		R ²	SF-12 Physical		R ²	SF-12 Psychological		R ²
		B (95%-CI)	p-value		B (95%-CI)	p-value		B (95%-CI)	p-value	
Model 1	All 4 rheumatism agents taken as prescribed	4.41 (4.5, 8.38)	.029		2.39 (5.1, 4.28)	.013		.34 (-1.67, 2.35)	.741	
	Adherence by doctor (ref. medium or less adherence)									
	adherent	1.79 (-3.89, 7.45)	.534		3.14 (4.5, 5.86)	.028		.74 (-2.15, 3.64)	.615	
	Very adherent	3.01 (-2.56, 8.58)	.289		3.28 (6.1, 5.95)	.016		3.10 (-2.54, 8.95)	.033	
Model 2	Health education literacy ^c	.330 (-2.29, 4.31)	<.001		.141 (-0.93, 1.89)	<.001		.220 (-1.69, 2.72)	<.001	
	All 4 rheumatism agents taken as prescribed	3.32 (-1.87, 7.32)	.123		2.00 (0.4, 3.96)	.046		-.11 (-2.20, 1.98)	.919	
	Adherence composite score (ref. low adherence)									
	medium adherence	2.22 (-1.16, 6.06)	.256		.67 (-1.17, 2.51)	.476		.12 (-1.84, 2.08)	.905	
Model 3	high adherence	5.06 (-6.2, 9.50)	.026		1.48 (-.65, 3.61)	.172		2.74 (-.47, 5.01)	.018	
	Health education literacy ^c	.323 (-2.22, 4.23)	<.001		.141 (-0.93, 1.90)	<.001		.223 (-1.71, 2.74)	<.001	

All models are adjusted for sex, age, drinking alcohol (y/n), smoking status (y/n) and sport activities (y/n); B, regression coefficient, 95%-CI, 95%- confidence interval; ^clinearly transformed on a scale from 0 (negative/low) to 100 (positive/high)

Table 1. Efficacy outcomes at week 24 with data up to rescue

	Placebo (N=716)		Baricitinib 4 mg (N=714)	
	Smoker (n=139)	Non-Smoker (n=577)	Smoker (n=151)	Non-Smoker (n=562)
ACR20	44 (31.7)	231 (40.0)	108 (71.5)	399 (71.0)
ACR50	24 (17.3)	119 (20.6)	76 (50.3)	270 (48.0)
ACR70	8 (5.8)	49 (8.5)	49 (32.5)	151 (26.9)
SDAI ≤3.3	5 (3.6)	19 (3.3)	24 (15.9)	88 (15.7)
SDAI ≤1.1	24 (17.3)	137 (23.7)	72 (47.7)	294 (52.3)
CDAI ≤2.8	4 (2.9)	24 (4.2)	24 (15.9)	89 (15.8)
CDAI ≤1.0	22 (15.8)	137 (23.7)	71 (47.0)	289 (51.4)
DAS28-hsCRP ≤3.2	24 (17.3)	123 (21.3)	75 (49.7)	296 (52.7)
DAS28-hsCRP <2.6	9 (6.5)	53 (9.2)	51 (33.8)	192 (34.2)
HAQ-DI ≥0.3	47 (33.8)	219 (38.0)	103 (68.2)	346 (61.6)
HAQ-DI ≥0.22	61 (43.9)	254 (44.0)	108 (71.5)	381 (67.8)
mTSS change ≤0*	68/96 (70.8)	250/356 (70.2)	78/107 (72.9)	304/363 (83.7)

Data are n (%). *mTSS data are from RA-BEAM only.