Methods: A research librarian conducted systematic searches in Medline, Embase and Amed from earliest date until August 2016. Inclusion criteria were adult human case-control studies published in English or a Scandinavian language, presenting data on HRV in patients with IJD (Rheumatoid Arthritis (RA) or Spondyloarthritis (SpA)). Included under the SpA diagnosis were patients with psoriatic arthritis or ankylosing spondylitis. Six established measures of HRV were selected: the Square root of mean squared difference of successive R-R interval (rMSSD), high frequency (HF), total power (TP), Ewing protocol standing (E-S), breathing (E-B) and Valsalva (E-V). Patients with RA, SpA and healthy controls were compared separately using random-effects meta-analyses of standardized mean differences (SMD).

Results: 847 titles and abstracts were reviewed, 36 papers were eligible for inclusion (Figure 1). For rMSSD the pooled SMD (95% CI) RA vs. controls was -0.90 (-1.35 to -0.44), for SpA vs. controls; -0.34 (-0.73 to 0.06). For HF, the pooled SMD RA vs. controls was -0.78 (-0.99 to -0.57), for SpA vs. controls; -0.04 (-0.22 to 0.13). For TP the pooled SMD RA vs. controls was -0.60 (-1.26 to 0.06), SpA vs. controls; -0.27 (-0.51 to -0.03). All pooled Ewing parameters were significantly lower in cases compared to controls, except for E-V which was comparable between cases and controls in patients with RA. 18/36 papers examined the relationship of IJD disease activity to HRV, of which the majority, 13, describe an inverse association between the parameters. The impact of pain on HRV was not explored in any study, and only one study explored the impact of physical activity on HRV, finding no cross-sectional association.

Conclusions: Patients with IJD have lower cardiac parasympathetic modulation compared to healthy controls and this may be a risk factor for CVD. There is an inverse relationship between IJD disease activity and HRV. The relationship between pain, physical activity and HRV should be further explored.

References:

- [1] Kosek E, Altawil R, Kadetoff D, et al. Evidence of different mediators of central inflammation in dysfunctional and inflammatory pain—interleukin-8 in fibromyalgia and interleukin-1 beta in rheumatoid arthritis. *J Neuroimmunol.* 2015; 280:49–55.

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THU0687 FEASIBILITY AND VALIDITY OF PROMIS® GLOBAL HEALTH SHORT FORM (PROMIS10) IN OUTPATIENTS WITH SLE

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Background: Routine measurement of patient reported outcomes (PROs) is a priority for improving quality of care and outcomes in chronic rheumatic conditions including systemic lupus erythematosus (SLE). Measuring PROs at the point of care requires validated instruments with minimal responder burden. PROMIS10 is a 10 question universal (non-disease specific) PRO instrument measuring physical and mental health domains with T-scores normalized to the general population (mean score =50). The feasibility and validity of PROMIS10 have not been demonstrated in SLE.

Objectives: To evaluate: 1) feasibility and 2) validity of PROMIS10 in outpatients with SLE.

Methods: Adults meeting 1997 ACR SLE classification criteria were recruited from an SLE Center of Excellence. Subjects completed SF-36, LupusQoL-US, selected PROMIS Computerized Adaptive Tests (CATs), and PROMIS10. Construct validity was evaluated using Spearman's correlations comparing PROMIS10 physical and mental health scores with PROMIS CATs and legacy instruments. Test-retest reliability was evaluated in subjects reporting stable SLE activity at 2 assessments a week apart with intraclass correlation coefficients (ICCs). Focus groups of participants evaluated the relevance and utility of PROMIS10.

Table 1. Spearman's Correlations of PROMIS10 with PROMIS CATs, SF-36, and LupusQoL

	PROMIS10 Physical Health (n=199)	PROMIS10 Mental Health (n=187)
PROMIS CAT- Physical Function	0.77	0.54
PROMIS CAT- Pain Interference	-0.80	-0.59
PROMIS CAT- Fatigue	-0.65	-0.60
PROMIS CAT- Anxiety	-0.41	-0.61
PROMIS CAT- Depression	-0.48	-0.73
PROMIS CAT- Ability to Participate in Social Roles	0.74	0.65
SF-36- Physical Function	0.76	0.47
SF-36- Role Physical	0.60	0.46
SF-36- Physical Component Summary	0.77	0.41
SF-36- Mental Health	0.42	0.72
SF-36- Role Emotional	0.49	0.61
SF-36- Mental Component Summary	0.41	0.72
SF-36- Bodily Pain	0.79	0.56
SF-36- Social Function	0.70	0.66
LupusQoL-US- Physical Health	0.77	0.59
LupusQoL-US- Emotional Health	0.52	0.70
LupusQoL-US- Pain	0.74	0.56
LupusQoL-US- Fatigue	0.62	0.62
LupusQoL-US- Planning	0.69	0.62

p<0.01.

Results: 204 (86%) of 238 patients approached, enrolled. There were no statistically significant differences in demographic characteristics between participants and non-participants. SLE patients scored worse than the general population in PROMIS10 physical health (mean T-score 41.6 +/- SD 8.8; range 19.9 - 67.7) and mental health (mean T-score 43.7 +/- SD 8.7; range 25.1 - 67.6). PROMIS10 physical health scores correlated strongly with physical function, pain, and social health domains in PROMIS CATs, SF-36, and LupusQoL, while PROMIS10 mental health scores correlated strongly with PROMIS depression CAT and SF-36 and LupusQoL mental health domains (Table 1). Test-retest reliability for both PROMIS10 physical and mental health scores was high with ICCs of 0.89 and 0.85 respectively. Median time to complete PROMIS10 was <2 minutes. Focus group participants found PROMIS10 relevant and useful.

Conclusions: PROMIS10 is feasible to administer to outpatients with SLE and valid compared to legacy instruments. PROMIS10 can be used to quickly, accurately, and reliably screen for impaired physical function, pain, and depression and could be an important tool in the measurement of patient centered outcomes and improvement of quality of care in SLE.

Disclosure of Interest: None declared

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THU0688 DISEASE FLARES, DAMAGE ACCRUAL AND SURVIVAL IN ANCA-ASSOCIATED VASCULITIS

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Background: ANCA- associated vasculitis (AAV) is a potentially life threatening condition requiring careful monitoring and balancing of treatment options to minimize morbidity and mortality.

Objectives: To investigate the influence of baseline disease characteristics and induction therapy on the disease course and outcome in ANCA- associated vasculitis.

Methods: Single centre longitudinal cohort study of all adult patients with an EMEA algorithm based diagnosis of AAV followed up to August 2016. Clinical data including disease activity (BVAS), ANCA type and level, treatment, relapses (BVAS >3) and organ damage (VDI) and other complications (e.g. infections) during the disease course were recorded. Predictors for ESRD, death, cancer and damage accrual were analysed by multivariate logistic regression presented as Odds Ratios (OR).

Results: A total of 63 patients (59% male) (mean age at diagnosis 57 years, 59% with GPA, 24% MPA and 16% EGPA) were included. Fluorescence ANCA was positive in 92%, while 47% had MPO-ANCA and 43% PR3-ANCA. Induction therapy included corticosteroids (92%), Cyclophosphamide (57%), Rituximab (35%) and Plasmapheresis (6%). During 46 months of follow-up 34 patients (54%) experienced 71 relapses (rate 2.5/100 months) and 55 serious complications occurred (rate 2/100 months). Mean VDI at last follow-up was 2.1 with only 11 patients (17.4%) not developing organ damage. Averaged BVAS correlated with last VDI scores (Rs 0.25, p=0.012). Overall, 4 patients (6.3%) died, 19 (27%) developed renal insufficiency of which 2 (3.1%) required chronic dialysis, while 6 (9.5%) developed a new cancer. Age was an independent predictor (OR 1.09, p=0.05) for patient survival (95% and 91% at 1 and 5 years), but no effect was seen for baseline BVAS, gender, AAV or ANCA subtype (all p>0.1).

Conclusions: While current treatment reduces the risk of death, AAV is still associated with a high rate of disease relapse, organ damage accrual and serious complications.

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THU0689 MODERATE TO GOOD CONSTRUCT VALIDITY OF GLOBAL PRESENTISM MEASURES WITH MULTI-ITEM PRESENTISM MEASURE AND PATIENT REPORTED HEALTH OUTCOMES: EULAR-PRO WORKER PRODUCTIVITY STUDY

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Background: Inflammatory arthritis (IA) and osteoarthritis (OA) often impact on

the worker's performance whilst at work due to ill health (i.e. presenteeism). A number of global measures have been developed to assess presenteeism in clinical studies. However, limited information is available on the correlation between these measures and the construct validity of these measures.

Objectives: To i) determine the correlation between four global measures of presenteeism and ii) to evaluate the construct validity of these measures.

Methods: The main aim of this international observational study (7 countries in Europe and Canada), recruiting patients with IA (RA, PsA or AS) or OA in paid employment, was to investigate content and construct validity of global presenteeism measures. Patients completed 4 global measures (Work Productivity Scale – Arthritis (WPS-A), Work Productivity and Activity Impairment Questionnaire (WPAI), Work Ability Index (WAI), and both the Quality and Quantity scales of the QQ questionnaire) (see table legend for descriptions individual scales). Spearman correlations were applied to test the correlation between individual presenteeism scales and to test construct validity with the 11-item Workplace Activity Limitation presenteeism Scale (WALS) and several health related patient reported outcome measures. Interpretation of correlation coefficients: (very) weak ($r_{\text{range}}=0.0-0.39$), moderate ($r_{\text{range}}=0.40-0.59$) to strong ($r_{\text{range}}=0.60-1.0$).

Results: 468 patients with a median disease duration of 10 [IQR 5–18] yrs were included; 62% were female. Median [IQR] presenteeism scores were, respectively: 2 [0–5] for WPS-A, 3 [1–5] for WPAI, 8 [6–9] for WAI, 81 [49–100] QQ-total, with WAI and QQ having reversed scales (Legend table). Correlations between the 4 global measures were moderate to strong, ranging from -0.49 for the correlation between WPS-RA and QQ-Quality to 0.83 between WPAI and WPS-RA. The multi-item presenteeism scale WALS, measuring difficulty at work, strongly correlated with both WPAI ($r=0.65$, $p<0.05$) and WPS-RA ($r=0.64$, $p<0.05$), both measures capturing the affect and interference of arthritis on work productivity. Moderate correlations were achieved between all six global presenteeism measures and health outcomes (r_{range} irrespective direction: $|r_{\text{presenteeism-VAS Well-being}}|=0.36$ to 0.54 ; $|r_{\text{presenteeism-EQ-5D}}|=0.37$ to 0.54 ; and $|r_{\text{presenteeism-HAQ}}|=0.40$ to 0.58).

		WPAI	WPS-RA	WAI	QQ-Quantity	QQ-Quality	QQ-Total
Global presenteeism scales	WPAI	1.0					
	WPS-RA	0.83	1.0				
	WAI	-0.65	-0.62	1.0			
	QQ-Quantity	-0.58	-0.53	0.60	1.0		
	QQ-Quality	-0.52	-0.49	0.58	0.75	1.0	
	QQ-Total	-0.60	-0.56	0.63	0.95	0.88	1
Multi-item presenteeism scale	WALS	0.65	0.64	-0.55	-0.50	-0.49	-0.54
Health related patients reported outcomes	VAS Well being	0.54	0.51	-0.43	-0.39	-0.36	-0.42
	EQ-5D	-0.54	-0.54	0.48	0.37	0.39	0.42
	HAQ	0.57	0.58	-0.52	-0.40	-0.41	-0.45

WPAI (0= condition no effect on work – 10=condition completely prevented work); WPS-IA/OA (0=no interference – 10=complete interference; WAI (0=completely unable to work – 10=work ability at its best); QQ-Quantity/Quality (0=normal quantity/good quality – 10=normal quantity/good quality); QQ-Total=Q_{quantity} * Q_{quality}; VAS well-being = Visual Analogue Scale general Well being; EQ-5D=EuroQol 5D measurement; HAQ= health assessment questionnaire.

Conclusions: Global measures of presenteeism show good to moderate construct validity, with the WPAI and WPS-IA/OA showing slightly better construct validity compared to the WAI and QQ. The information obtained in this study will further inform research on instrument use for a standardized approach to estimate presenteeism in future clinical studies.

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THU0690 SERUM AMYLOID A LEVELS AS A POTENTIAL BIOMARKER TO MONITOR PSORIATIC ARTHRITIS PATIENTS ON BIOLOGICS – A RETROSPECTIVE OBSERVATIONAL STUDY

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Background: According to previous studies, serum amyloid A (SAA) is involved in the pathophysiology of several conditions including inflammatory arthritis and psoriasis. Recent evidence suggests its valuable role in monitoring disease activity in Rheumatoid Arthritis, but its role is yet to be determined in Psoriatic Arthritis (PsA).

Objectives: To study the association between SAA levels and its variation with other biomarkers and disease activity/functional parameters in a cohort of PsA patients under biologic therapy.

Methods: Observational retrospective study was conducted including PsA patients (according to CASPAR criteria) followed at our Rheumatology department

with at least one measurement of SAA levels from January 2015 until December 2016. Demographic and clinical data were obtained by consulting the national database (Reuma.pt). The disease activity/functional scores from at least one visit and corresponding measurements of SAA, ESR and CRP levels were collected. The difference (Δ) between 2 evaluations separated by a median time of 6 months [6–18] was calculated for all variables. Agreement between dichotomized biomarkers was calculated using kappa coefficients. Correlations were studied using Pearson and Spearman coefficient analysis. Significance level was set as 0.05.

Results: 53 PsA patients were included. 31 (59%) patients were females with a mean (SD) age of 50 (11.2) years and a median disease duration of 9 years [1–43]. 28% had axial involvement, 34% peripheral involvement and 38% had both types. All patients were under biologic DMARD. 100 SAA measurements were collected. Median SAA and ESR levels were significantly superior in female patients (23 vs 6mm/1st and 8.6 vs 4.4mg/L, respectively, $p<0.05$) and only ESR levels correlated with age ($r=0.20$, $p=0.05$). The three biomarkers showed a weak association with serum creatinine levels, with greater correlation for SAA ($r=0.46$, $p<0.001$). SAA levels had a stronger correlation with CRP ($r=0.75$, $p<0.001$) than with ESR levels ($r=0.26$, $p<0.01$). SAA and CRP (dichotomized as negative/positive) had a greater level of agreement ($\kappa=0.40$) compared to ESR ($\kappa=0.26$ and $\kappa=0.32$, respectively). No significant correlations were found between the biomarkers and the tender/swollen joint count or the pain/global disease activity VAS. SAA levels correlated with ASDAS CRP ($r=0.43$, $p<0.001$) and weakly with ASDAS ESR and DAS28 CRP ($r=0.20$ and $r=0.24$, respectively, $p<0.05$). Only ESR had a significant weak correlations with BASDAI, MASES and SPARCC scores ($r=0.25$, $r=0.21$, $r=0.35$; $p<0.05$). All the biomarkers had weak correlations with BASFI and HAQ scores. Δ SAA levels had a weak correlation with Δ CRP ($r=0.32$, $p=0.03$; $n=47$) and no significant association was found with Δ ESR. Δ SAA correlated significantly with Δ ASDAS CRP and Δ BASMI ($r=0.32$, $r=0.39$; $p<0.05$).

Conclusions: This study showed that SAA levels and its variation had a significant correlation with CRP levels and its variation, respectively. Significant association with ASDAS CRP variations suggests that serial measurements of SAA may represent an additional marker for monitoring disease activity over time in PsA patients.

References:

- [1] Connolly M et al. *Arthritis Rheum.* (2012);64(4):1035–45.
- [2] Hwang et al. *Arthritis Res Ther* (2016) 18:108.
- [3] Morizane S. et al. *J Invest Dermatol.* (2016) Oct 20. pii: S0022-202X(16)32533-7.

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THU0691 IS SERUM AMYLOID A PROTEIN AN USEFUL BIOMARKER TO MONITOR TREATMENT WITH ANTI-TUMOUR NECROSIS FACTOR-ALPHA AGENTS IN SPONDYLOARTHRITIS PATIENTS?

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Background: Quantitating the degree of inflammation has become essential to tailor the treatment strategy of various rheumatic diseases. Traditionally used measures to assess disease activity and treatment response in spondyloarthritis (SpA) are ESR, CRP and Bath Ankylosing Spondylitis Disease Activity Index (BASDAI) and Ankylosing Spondylitis Disease Activity Score (ASDAS). Serum amyloid A (SAA) is an acute-phase reactant predominantly synthesized in the liver by hepatocytes in response to proinflammatory cytokines. Some studies have shown that SAA can be a valuable indicator of disease activity, damage and functional impairment, however it has not been extensively used in clinical practice.

Objectives: To investigate if SAA levels have better correlation with conventional assessments used to monitor anti-tumor necrosis factor α (anti-TNF) treatment in SpA than CRP and ESR.

Methods: Prospective study, including SpA patients under anti-TNF α treatment at a Rheumatology Department of a Portuguese University Hospital. The following parameters were collected and registered in two different evaluations 6 months apart from each other: SAA, CRP and ESR levels, BASDAI, ASDAS-PCR, ASDAS-VS, BASFI, BASMI, swollen and tender joints counts (SJC and TJC), MASES, SPARCC, and patient global assessment (PtGA), physician global assessment (PGA), total back pain (TBP), nocturnal back pain (NBP) measured in a visual analogue scale (VAS). The variation of each parameter was calculated as the difference between the levels registered at each evaluation (baseline and 6 months) and presented as Δ (parameter). We compared the correlation between Δ SAA, Δ CRP and Δ ESR levels with Δ BASDAI, Δ ASDAS-PCR, Δ ASDAS-VS, Δ BASFI, Δ BASMI, Δ SJC, Δ TJC, Δ MASES, Δ SPARCC, Δ PtGA-VAS, Δ PGA-VAS, Δ TBP-VAS, Δ NBP-VAS. The statistical analysis was performed using SPSS 21.0 software, and $p<0.05$ was taken to indicate statistical significance. Correlation was calculated using the Spearman rank correlation (r).

Results: 89 patients were included, 58.4% ($n=52$) were male. On baseline the median age was 44.0 years (range 21.0–74.6) and median disease duration was 18.8 years (2– 51.6). Δ SAA was moderately correlated with Δ CRP ($r=0.65$,