Saavedra: None declared, J. Fonseca Consultant for: AbbVie, Ache, Amgen, Biogen, BMS, Janssen, Lilly, MSD, Novartis, Pfizer, Roche, UCB, K. Lundin Grant/research support from: MSD, Consultant for: Takeda, Orion, AbbVie, Pfizer, MSD, D. Warren: None declared, E. Haavardsholm Consultant for: AbbVie, Pfizer, MSD, Roche, UCB, J. Jahnsson Consultant for: AbbVie, Takeda, Janssen, Cellt-rion, Napp, AstraPharma, Hikma, Orion, Pfizer, T. Kvien Consultant for: AbbVie, Biogen, Eli Lilly, Novartis, Pfizer, MSD, Roche, UCB, Boehringer Ingelheim, Orion Pharma, J. Goncalves Consultant for: AbbVie, Amgen, Biogen, MSD, Pfizer
DOI: 10.1136/annrheumdis-2018-eular.5554

FRI0664

BIOMARKERS FOR RELAPSE IN PATIENTS WITH ADULT ONSET STILL'S DISEASE TREATED WITH IL-6 INHIBITOR.

H. Yamada¹, Y. Kaneko¹, T. Takeuchi¹. ¹Division of Rheumatology, Department of Internal Medicine, Keio University, Shinjuku, Tokyo, Japan

Background: Symptoms and laboratory data in patients with adult onset Still's disease patients (AOSD) at relapse are often non-specific. Especially in AOSD patients treated with tocilizumab, IL-6 receptor inhibitor, inflammatory markers such as C-reactive protein (CRP) and erythrocyte sedimentation rate (ESR) are almost normal despite flared disease activity.

Objectives: To identify useful biomarkers for assessing disease activity and relapse in AOSD patients treated with tocilizumab.

Methods: Consecutive AOSD patients diagnosed by Yamaguchi's criteria in our institution from January 2007 until January 2018 were reviewed. Clinical information was collected from their medical charts. Relapse was defined as a case who required immunosuppressive treatment intensification for AOSD according to their attending physicians. Biomarkers were compared between before relapse and at relapse.

Results: Forty eight patients with AOSD were enrolled. Thirty relapses during the observation period of 3.5 years were identified. At relapse, white blood cell count (WBC), CRP, ESR, serum ferritin levels, and serum lactate dehydrogenase (LDH) levels significantly increased compared to before relapse (WBC, 12123 ± 1238 / μ L vs 7184 ± 607 / μ L, $P=0.002$; CRP, 4.37 ± 1.08 mg/dL vs 0.32 ± 0.18 mg/dL, $P=0.003$; ESR 39.1 ± 7.78 mm/hr vs 6.67 ± 1.46 mm/hr, $P=0.001$; ferritin, 78.9 ± 30.9 ng/mL vs 24.9 ± 3.8 ng/mL, $P=0.036$; LDH, 374.8 ± 48.1 IU/mL vs 214.7 ± 16.8 IU/mL, $P=0.005$). Six patients were identified to experience relapse with fever, active synovitis, rash or lymphadenopathy while treated with tocilizumab. In patients treated with tocilizumab, while neither CRP nor ESR increased in all patients at relapse (CRP <0.30 mg/dL in all; ESR, 4.50 ± 1.04 mm/hr vs 3.75 ± 1.18 mm/hr, $P=0.893$), LDH was significantly elevated at relapse compared to before relapse (451.2 ± 92.1 IU/mL vs 211.2 ± 24.6 IU/mL, $P=0.04$). WBC and serum ferritin levels tended to increase but with no significant difference (WBC: 14620 ± 1547 / μ L vs 9500 ± 2285 / μ L, $P=0.21$; ferritin, 236.4 ± 91.2 ng/mL vs 49.2 ± 24.2 ng/mL, $P=0.091$).

Conclusions: Instead of CRP and ESR, LDH level was a useful clinical biomarker for relapse of AOSD, especially in those treated with tocilizumab.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.3858

FRI0665

IMPACT OF THE MULTI-BIOMARKER DISEASE ACTIVITY SCORE RESULTS ON WHETHER RHEUMATOLOGISTS CHANGED BIOLOGIC THERAPY FOR RA PATIENTS

J. Curtis¹, K. Ford², L. Chen¹, H. Yun¹, F. Xie¹. ¹University of Alabama at Birmingham, Birmingham, ²Myriad Genetics, Inc., South San Francisco, United States

Background: The multi-biomarker disease activity (MBDA) score is a validated test used to assess disease activity for patients with rheumatoid arthritis (RA). How it is used in clinical practice in the U.S. is unclear.

Objectives: We evaluated the likelihood that rheumatologists would add or switch biologic therapies based on the MBDA test result.

Methods: Using previously published methods, we linked results of MBDA tests obtained as part of routine clinical care to 2012–2014 Medicare fee for service claims data for RA patients. We characterized patients as being on a biologic or targeted synthetic DMARD in the 90 days prior to the MBDA test and evaluated biologic/to facitininb treatment changes in the 90 days following the MBDA test. MBDA test scores were classified as low (<30), moderate (30–44), and high (>44). The unit of analysis was the 90-day interval before and after each MBDA test score. Alternating logistic regression was used to compute odds ratios (OR) to quantify the likelihood that patients made any change (add or switch), accounting for the clustered nature of the data (intervals nested within patients, and patients nested within doctor practices) and physician-level variability, controlling

for patient age and sex. Sensitivity analyses used a 6-month interval for outcome ascertainment after the MBDA test.

Results: Using previously validated methods, a total of 27,621 unique RA patients were linked to 44,438 MBDA test scores. For the 27,256 intervals where RA patients were not on biologic therapy when the MBDA score was obtained, a total of 13.2% of patients added a biologic. Patients with high MBDA scores were significantly more likely to add a biologic (table 1). For the 17,182 intervals where RA patients were already on a biologic, a total of 19.1% of patients switched or stopped the biologic that they were taking. Patients with lower MBDA scores were significantly more likely to stay on their therapy, whereas those with higher scores were more likely to stop and/or switch biologics. After adjustment, results from the regression analyses showed that patients with moderate MBDA scores were 1.47 (95% 1.29–1.67)-fold more likely to add or switch biologics, and those with high MBDA scores were 2.54 (95% CI 2.19–2.94)-fold more likely to add or switch biologics. Men (OR=0.90, 95% 0.82–0.98) and older patients (OR=0.92 per 5 year increment, 95% CI 0.91–0.93) were less likely to add or switch therapy, even after controlling for variability between physicians (OR=1.10, 95% CI 1.02–1.19). These results were robust and ORs were numerically larger when extending the interval to 6 months.

Table 1 Proportion of patients who added or switching biologics after the MBDA test

MBDA Score	Non-biologic users who added a biologic after the MBDA test N=27,256	Biologic Users Who Switched or Stopped their Current Biologic after the MBDA test N=17,182
Low (<30)	8.4%	14.0%
Moderate (30–44)	10.8%	16.2%
High (>44)	16.3%	23.1%
Chi-square p value	<0.0001	<0.0001

Conclusions: Results from the MBDA score were significantly associated with the likelihood that a physician added or switched biologic therapies, with either type of change being more frequent when the MBDA score was high. Further evaluation of outcomes after switching, conditional on the MBDA score, is warranted.

Acknowledgements: Financial support provided by Crescendo Bioscience Inc.

Disclosure of Interest: J. Curtis Grant/research support from: AbbVie, Amgen, BMS, Corrona, Janssen, Lilly, Myriad, Pfizer, Roche/Genentech, UCB, Consultant for: AbbVie, Amgen, BMS, Corrona, Janssen, Lilly, Myriad, Pfizer, Roche/Genentech, UCB, K. Ford Employee of: Myriad Genetics, Inc., L. Chen: None declared, H. Yun Grant/research support from: BMS, F. Xie: None declared

DOI: 10.1136/annrheumdis-2018-eular.5779

FRI0666

CIRCULATING MIR-99B-5P AS A PREDICTOR OF EROSION PROGRESSION IN EARLY RHEUMATOID ARTHRITIS: A 1-YEAR FOLLOW-UP STUDY BY HR-pQCT

J. Yue¹, J. F. Griffith², J. Xu³, F. Xiao², L. Shi², D. Wang², P. C. Wong¹, E. K. Li¹, M. Li¹, T. K. Li¹, T. Y. Zhu³, V. Hung³, L. Qin³, L.-S. Tam¹. ¹Department of Medicine & Therapeutics, ²Department of Imaging and Interventional Radiology, ³Department of Orthopedics & Traumatology, Prince of Wales Hospital, The Chinese University of Hong Kong, Hong Kong, Hong Kong

Background: Bone erosion is a key feature of RA reflecting both disease severity and progression. HR-pQCT is an in-vivo clinical imaging system allowing detailed analysis of bone structure, including bone erosion. Several circulating microRNAs have already been suggested as potential biomarkers in RA.

Objectives: To determine whether plasma cell-free circulating miRNAs are 1) associated with bone erosion at presentation and 2) predictive of erosion progression at 12 months as determined by HR-pQCT in patients with early rheumatoid arthritis (ERA).

Methods: In this prospective study, 124 ERA patients were treated with a tight control protocol aiming at remission by using conventional synthetic disease modifying anti-rheumatic drugs (csDMARDs). The second metacarpophalangeal joint (MCP2) was assessed for erosions by HR-pQCT at baseline and after 12 months. Plasma cell-free circulating miRNAs at baseline were identified by microRNA array in 10 treatment-naïve ERA patients with maximal erosion volume at MCP2; in 10 treatment-naïve ERA patients without erosion; and in 6 age- and sex-matched healthy controls. The 4 most dysregulated miRNAs were identified by TaqMan[®] qRT-PCR in these same 20 ERA patients. Thereafter, the expression of these 4 selected miRNAs was validated in all 124 ERA patients at baseline.

Results: Of the 377 screened miRNAs, 155 miRNAs were detectable. 94 (60.6%) of these detectable miRNAs were upregulated in ERA patient with erosions, with 13 (8.4%) upregulated more than twofold. 61 (39.4%) miRNAs were

downregulated in ERA patients with erosions, with 6 (3.9%) downregulated more than twofold. A total of 16 miRNAs were differentially expressed ($P < 0.05$) and 4 were possibly differentially expressed ($P \leq 0.1$) between ERA patients with and without erosions. At baseline, expressions of miR-143-3p, miR-145-5p and miR-99b-5p were significantly higher in ERA patients with erosions than those without erosions ($P < 0.05$ for all). After 12 months of csDMARDs treatment, 31.7%, 47.7%, and 20.6% of the ERA patients had erosion progression, stable erosion and partial erosion repair respectively. Logistic regression analysis revealed baseline expression of miR-99b-5p to be an independent predictor of erosion progression at 12 months (Exp [B] = 4.203, 95% CI 1.166–15.147, $P = 0.028$) (table 1).

	Univariate			Multivariate		
	P value	Exp (B)	95% CI	P value	Exp (B)	95% CI
Depth	0.068	0.479	0.217–1.056	0.085	0.177	0.025–1.269
Width	0.108	0.746	0.522–1.067	0.871	1.069	0.481–2.373
RF+	0.102	3.833	0.764–19.224	0.087	5.407	0.784–37.317
ACPA>250U	0.062	3.281	0.941–11.439	0.084	4.238	0.822–21.843
miR99b-5p	0.075	2.512	0.913–6.905	0.028	4.203	1.166–15.147

Conclusions: Increased level of cell-free circulating miR-99b-5p was associated with erosions at presentation in ERA patients and could predict erosion progression as assessed by HR-pQCT over a period of 12 months, indicating that it may well serve as a biomarker of poor response to csDMARDs. Whether early biologic DMARDs use in these miR-99b-5p positive patients could reduce or prevent progression of erosion will need to be addressed in future studies.

Acknowledgements: This study was partly supported by the Health and Medical Research Fund (project no 10110071).

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.1980

FRI0667 DEVELOPMENT AND VALIDATION OF A RHEUMATOLOGIST SATISFACTION WITH PRACTICE SCALE- "THE RHEUMATOLOGIST SATISFACTION SCALE" (RSS)

K. Sheth¹, A. Valenzuela¹, S. Shoor¹, P. Ritter¹, K. Lorig¹. ¹Stanford University, Palo Alto, United States

Background: Rheumatology practice improvement research routinely measures patient satisfaction and disease-specific outcomes but seldom considers the satisfaction of physicians who deliver the care. Studies suggest that physician dissatisfaction may pose a barrier to implementing quality improvement efforts. There is a paucity of succinct measures of physician satisfaction.

Objectives: As part of a Performance Improvement Project, in an academic rheumatology practice and an affiliated practice, we developed and piloted a simple questionnaire to study physician satisfaction in Rheumatology.

Methods: Thirty-five rheumatologists in the academic or private setting were sent open-ended questions to determine the factors that made them satisfied or dissatisfied with respect to their rheumatology practice. From the responses we formed 14 questions on a 0 to 10 scale centering on satisfaction and dissatisfaction. We then administered the questionnaires to a small pilot of 30 rheumatologists in academic and/or private setting.

Results: Our sample included 30 rheumatologists, from whom 60% were faculty members, 27 % were fellows. 53% (N=16) were males and the majority (77%) were salaried. Racial distribution was 57% white, 40% Asian, with 7% Hispanic/Latino ethnicity. The most common practice setting was academic medicine (80%, N=24), followed by multi-specialty group (10%, N=3), private practice (7%, N=2), and rheumatology group (3%, N=1). 40% (N=12) and 37% (N=11) had been in practice <5 and >30 years, respectively. Coefficient Alpha for each factor was 0.54 (raw), 0.66 (standardized) for satisfaction and 0.60 (raw), 0.60 (standardized) for dissatisfaction. Based on the results of this survey, mean satisfaction factor in rheumatologists was high (8.6±0.99). 91.3% of rheumatologists (N=21) had mean satisfaction factor >8 (range 5.5–9.9). The ability to make a difference in patient's life and having the opportunity to work with great colleagues were the strongest contributors to physicians' satisfaction (mean 9.2±1.1 and 9.4±0.8, respectively). Time spent on documentation and getting inappropriate referrals that are not in the scope of practice were among the strongest contributors to physicians' dissatisfaction (mean 3±1.9 and 3.9±1.3, respectively). None of the items were highly correlated with each other. This work has now been expanded to more than 150 rheumatologists including in the United States(US) and Latin American countries. Analysis is in progress.

Conclusions: A simple and practical questionnaire to measure physician satisfaction was developed and successfully piloted on a predominately academic sample of rheumatologists. The strongest correlates of physician satisfaction

were the "ability to make a difference in a patient's life" and to "work with great colleagues" whereas the greatest correlates of dissatisfaction were "time spent on documentation" and "inappropriate referrals." With further testing on a larger sample from the US and Latin American countries, we aim to gain a deeper understanding of how the cultural differences and practice of medicine may affect physician satisfaction. It is hoped that, this scale will serve as a means of determining aids and barriers to improving rheumatology practice for both patients and physicians and become a useful tool in rheumatology performance practice implementations and studies.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.5010

FRI0668 ITEM RESPONSE THEORY TO STANDARDIZE PATIENT REPORTED PHYSICAL FUNCTION OUTCOMES; LINKING 10 COMMONLY USED QUESTIONNAIRES TO A COMMON METRIC

M. Oude Voshaar¹, H. Vonkeman^{1,2}, D. Courvoisier³, A. Finckh³, L. Gossec⁴, K. Leung Ying Ying⁵, K. Michaud⁶, G. Pinheiro⁷, E. Soriano⁸, N. Wulfrat⁹, A. Zink¹⁰, M. van de laar^{2,11}. ¹Psychology, Health & Technology and Arthritis center Twente, University of Twente, ²Department of Rheumatology and Clinical Immunology, Medisch Spectrum Twente, Enschede, Netherlands, ³Division of Rheumatology, University Hospitals of Geneva, Geneva, Switzerland, ⁴Rheumatology department, Pitié Salpêtrière hospital, Paris, France, ⁵Dept of Rheumatology & Immunology, Singapore General Hospital, Singapore, Singapore, ⁶University of Nebraska Medical Center, Omaha, United States, ⁷Universidade do Estado do Rio de Janeiro, Rio de Janeiro, Brazil, ⁸Rheumatology Unit, Internal Medical Services, Hospital Italiano de Buenos Aires, Buenos Aires, Argentina, ⁹Wilhelmina Children's Hospital, Utrecht, Netherlands, ¹⁰Rheumatology and Clinical Immunology, Charité University Medicine Berlin, Berlin, Germany, ¹¹Department of Psychology, Health and Technology, University of Twente, Enschede, Netherlands

Background: Physical function is a core outcome domain in clinical trials in various inflammatory rheumatic diseases. It is also included in the recently developed International Consortium for Health Outcomes Measurement (ICHOM) standard set for patients with inflammatory arthritis. Physical function patient reported outcome measures (PROMs) are commonly collected in patient registries and are used by decision makers in ways that require outcomes to be aggregated across different data sources. A major barrier to such initiatives is that many different physical function PROMs are in widespread use, and results cannot be meaningfully compared across them, if the traditional scoring procedures based on summing of the individual item scores are used. This is because summed scores depend on both patient- and item characteristics. To facilitate standardization of physical function outcome measurement, we developed a common metric for ten commonly used physical function PROMs using item response theory (IRT), that can be used to adjust PROM scores for item characteristics.

Methods: Data of 16,386 patients with inflammatory arthritis from the United States National Databank of Rheumatic Disease, the Swiss Clinical Quality Management Registry, the National Database of the German Collaborative Arthritis Centres, the Dutch Rheumatoid Arthritis Monitoring Study, and several smaller observational studies were used to map the items of 10 commonly used physical function PROMs on a continuous latent physical function variable. The resulting common metric was cross-validated in an independent dataset of 243 patients with gout, osteoarthritis or polymyalgia rheumatica, in which four of the linked PROMs were administered

Results: Our analyses supported that all 97 items of the 10 included PROMs relate to a single underlying physical function variable and that responses to each item could be described by the generalized partial credit IRT model. In the cross-validation analyses we found congruent mean scores for four different PROMs when the IRT based scoring procedures were used.

Conclusions: We showed that scores obtained using the IRT based common metric developed in this study can be used to make physical function outcomes obtained using different physical function PROMs comparable.

Disclosure of Interest: None declared

DOI: 10.1136/annrheumdis-2018-eular.5135

FRI0669 PHYSICIAN GLOBAL ASSESSMENTS FOR DISEASE ACTIVITY IN RHEUMATOID ARTHRITIS ARE ALL OVER THE MAP!

M. A. Turk¹, J. Pope². ¹Biochemistry, ²Rheumatology, Schulich School of Medicine and Dentistry, London, Canada

Background: Assessments of disease activity in rheumatoid arthritis (RA) determine the course of treatment. Physician global assessments of disease activity (MD globals) are important outcomes in trials as they are part of the CDAI and