Objectives: High-titers of anti-cyclic citrullinated protein (anti-CCP) have been independently associated with reduced response to TNFi therapy;² thus, we evaluated the ability of a blood-based molecular signature response classifier (MSRC) test to stratify RA patients by their likelihood of inadequate response to TNFi therapies – regardless of their positive or negative anti-CCP status.

Methods: A subset of patients enrolled in the Network-04 prospective observational trial evaluating the ability of a molecular signature response classifier to stratify patients were subdivided into two groups based upon whether they were positive (N = 72) or negative (N = 74) for anti-CCP. The odds of inadequate response to TNFi therapies were calculated based on whether or not a patient had a molecular signature of non-response to TNFi therapy at baseline before the start of treatment. Odds ratios and confidence intervals were calculated^{3,4} to represent the strength of association between detecting the molecular signature of non-response and the patient's failure to achieve ACR50 at 6 months.

Results: The odds that a patient with a molecular signature of non-response failed to meet ACR50 criteria at 6 months was approximately three times greater than among those patients who lacked the signal (Table 1). No significant difference in odds ratios was observed between patients who were positive or negative for anti-CCP.

Table 1. The odds of patients with a molecular signature of non-response failing to achieve an ACR50 response 6 months after TNF inhibitor therapy initiation

	Odds ratio (95% confidence interval)
Anti-CCP positive	3.5 (1.3-9.7)
Anti-CCP negative	3.1 (1.2-8.3)

Conclusion: The MSRC test evaluates RA disease biology and accurately stratifies patients based on their likelihood of having an inadequate response to TNFi therapies, regardless of being negative or positive for anti-CCP autoantibodies. Rheumatologists can use the results of the MSRC test to inform targeted therapy selection for RA patients, instead of their anti-CCP serostatus, eliminating the variability inherent to the anti-CCP measurement and its inability to consistently predict TNFi therapy incompatibility. With the MSRC test, providers can rely on a more predictable and accurate assessment of TNFi therapy success or failure when coordinating patient management.

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AB0139 RHEUMATOID ARTHRITIS AND SLEEP QUALITY

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Background: Consequences of rheumatoid arthritis (RA) are many and varied: physical, psycho-affective and financial.

Objectives: The objective of our study is to evaluate the impact of RA on sleep quality.

Methods: We conducted a cross-sectional study including 49 RA patients. An evaluation of sleep quality using the MOS-Sleep Scale was performed.

Results: The mean age of patients was 54.1 years, with a female predominance (89.8%). The mean duration of RA was 11.43 $\pm$ 7.32 years with a mean time to diagnosis of 2.35 years. Rheumatoid factor was positive in 77.6% of cases. A atlanto-axial dislocation was found in 4.1% of cases and coxitis in 8.2% of cases. All patients were

on symptomatic treatment, 57.1% of whom were on corticosteroid therapy. 83.67% of patients were on cs-DMARDs and 14.2% were on biologics. At inclusion, sleep was optimal in 63.2% of cases and the mean Sleep Problem Index was 26.19 $\pm$ 22.77. The index of sleep problems was higher in older subjects and in those with long diagnostic delays. The presence of co-morbidities and atlanto-axial dislocation and/or coxitis was associated with impaired sleep quality. Also, VAS pain and EGP were associated with an increase in the sleep problem index. In the multi-variate study, EGP, the presence of co-morbidities and atlanto-axial dislocation and/or coxitis were the independent factors affecting sleep quality.

Conclusion: The impact of RA on the patient's quality of life and especially the quality of sleep is confirmed by several studies in the literature. A global management of the patient is necessary in order to adapt well to his disease.

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AB0140 A HIGH-CONFIDENCE DEFINITION OF THERAPEUTIC RESPONSE IN RHEUMATOID ARTHRITIS USING A MONTE CARLO SIMULATION APPROACH

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Background: Therapy choice and therapy change depend on the ability to accurately assess patients' disease activity. The clinical assessments used to evaluate treatment response in rheumatoid arthritis have inherent variability, normally considered as measurement error, intra-observer variability or within subject variability. Each contribute to variability in deriving response status as defined by composite measures such as the ACR or EULAR criteria, particularly when a one-time observed measurement lies near the boundary defining response or non-response. To select an optimal therapeutic strategy in the burgeoning age of precision medicine in rheumatology, achieve the lowest disease activity and maximize long-term health outcomes for each patient, improved treatment response definitions are needed.

Objectives: Develop a high-confidence definition of treatment response and non-response in rheumatoid arthritis that exceeds the expected variability of subcomponents in the composite response criteria.

Methods: A Monte Carlo simulation approach was used to assess ACR50 and EULAR response outcomes in 100 rheumatoid arthritis patients who had been treated for 6 months with a TNF inhibitor therapy. Monte Carlo simulations were run with 2000 iterations implemented with measurement variability derived for each clinical assessment: tender joint count, swollen joint count, Health Assessment Questionnaire disability index (HAQ-DI), patient pain assessment, patient global assessment, physician global assessment, serum C-reactive protein level (CRP) and disease activity score 28-joint count with CRP.¹⁻³ Each iteration of the Monte Carlo simulation generated one outcome with a value of 0 or 1 indicating non-responder or responder, respectively.

Results: A fidelity score, calculated separately for ACR50 and EULAR response, was defined as an aggregated score from 2000 iterations reported as a fraction that ranges from 0 to 1. The fidelity score depicted a spectrum of response covering strong non-responders, inconclusive statuses and strong responders. A fidelity score around 0.5 typified a response status with extreme variability and inconclusive clinical response to treatment. High-fidelity scores were defined as >0.7 or <0.3 for responders and non-responders, respectively, meaning that the simulated clinical response status label among all simulations agreed at least 70% of the time. High-confidence true responders were considered as those patients with high-fidelity outcomes in both ACR50 and EULAR outcomes.

Conclusion: A definition of response to treatment should exceed the expected variability of the clinical assessments used in the composite measure of therapeutic response. By defining high-confidence responders and non-responders, the true impact of therapeutic efficacy can be determined, thus forging a path to development of better treatment options and advanced precision medicine tools in rheumatoid arthritis.

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AB0141

THE DYNAMICAL TRAJECTORY OF GLUCOCORTICOID TAPERING AND DISCONTINUATION IN RHEUMATOID ARTHRITIS PATIENTS COMMENCING GLUCOCORTICOID WITH CSMDARDS: A REAL-WORLD DATA FROM 2009 TO 2020

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Background: Glucocorticoids (GC) are currently recommended as bridging therapy in combination with csDMARDs in rheumatoid arthritis (RA) and should be tapered as rapidly as clinically feasible for safety concerns about their long-term use [1-3].

Objectives: To unravel the dynamical trajectory and characteristics of GCs tapering and discontinuation in RA patients commencing GCs with concomitant csDMARDs.

Methods: We used data from longitudinal real-world TARRA (Treat-to-TARget in RA) cohort in Peking University First Hospital. RA patient who started GCs and concomitant csDMARDs therapy over 1-year follow-up were included. The changes in GCs dose and disease activity in the context of csDMARDs were evaluated. GCs discontinuation rate was analyzed using Kaplan-Meier analysis. The relapse profiles within 6 months after GCs discontinuation were also analyzed.

Results: A total of 207 RA patients were included. During a median follow-up duration of 38.6 months, 124 (59.9%) patients discontinued GC. The median oral prednisolone dose of 10 (5-10) mg/d at initiation was reduced by 50% in the first 6 months and then more slowly reduced, finally to zero by 48 months. The cumulative probability of GCs discontinuation was 26.6% at year 1, 48.0% at year 2, 58.6% at year 3, with calculated median time of 27 months (Figure 1). Of the 124 patients who discontinued GCs, add of other csDMARDs or increment of current csDMARDs was required in 29.0% of them. Approximately half of 124 patients were in clinical remission at the time point of GCs discontinuation. Within 6 months after GCs withdrawal, 79.1% (91/115) of participants maintained relapse-free.

Figure 1. Kaplan-Meier curve with cumulative probability of glucocorticoids discontinuation in RA patients who start glucocorticoids with concomitant csDMARDs during the follow-up period. csDMARDs: conventional synthetic disease modifying antirheumatic drugs.

Conclusion: In RA patients commencing GCs in addition to csDMARDs, GCs are feasibly discontinued with favorable control of disease activity in real-life setting, mostly without short-term flare. Adding targeted therapies are sometimes required to attain GCs discontinuation within the time frame of 3 months in current guidelines.

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AB0142

SOCIOECONOMIC STATUS (SES) AND MEDICATION USE IN RHEUMATOID ARTHRITIS (RA): A SCOPING REVIEW

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Background: Socioeconomic status (SES) influences disease outcomes in rheumatoid arthritis (RA) patients. (1, 2) Differences in medication use could partly explain this association. (3) A scoping review was used to identify research conducted on this topic and determine what knowledge gaps remain.

Objectives: To determine what research has been conducted on this topic, how this research has defined SES and medication use, and establish what knowledge gaps remain.

Methods: MEDLINE, EMBASE and PsychInfo were searched from their inception until May 2019 for studies which assessed SES and medication use as outcome variables. Studies were included if they measured medication use and incorporated an SES measure as a comparator variable.

SES was defined using any of the "PROGRESS" framework variables (4) including patients' stated gender, age, educational attainment, employment, occupational class, personal income, marital status, health insurance coverage, area- (neighbourhood) level SES, or patients' stated race and/or ethnicity. Medication use was broadly defined as either prescription or dispensation of a medicine, medication adherence, or delays in treatment. Data was extracted on studies' primary objectives, measurement of specific SES measures, patients' medication use, and whether studies assessed for differences in patients' medication use according to SES variables.

Results: 1464 studies were identified by this search from which 74 studies were selected for inclusion, including 52 published articles. Studies' publication year ranged from 1994-2019, and originated from 20 countries; most commonly from the USA.

Studies measured a median of 4 SES variables (IQR 3-6), with educational achievement, area level SES and race/ethnicity the most frequently recorded. Likelihood of disease modifying antirheumatic drug (DMARD) prescription was the most frequent primary objective recorded.

96% of studies reported on patients' use of DMARDs, with glucocorticoids and analgesics being reported in fewer studies (51% and 23% respectively.)

Most included studies found at least one SES measure to be significantly associated with differences in patients' medication use. In some studies, however, this result was not necessarily drawn from the primary outcome and therefore may not have been adjusted for covariates.

70% of published studies measuring patients' income (n=14 of 20) and 58% of those that measured race/ethnicity (n=14 of 24) documented significant differences in patients' medication use according to these SES variables, although the direction of this effect – whether it led to 'greater' or 'lesser' medication use – varied between studies.

Conclusion: Multiple definitions of SES are used in studies of medication use in RA patients. Despite this, most identified studies found evidence of a difference in medication use by patient groups that differed by an SES variable, although how medication use differed was found to vary between studies. This latter observation may relate to contextual factors pertaining to differences in countries' healthcare systems. Further prospective studies with clearly defined SES and medication use measures may help confirm the apparent association between SES and differences in medication use.

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