predefining a clinical responder at a specific time point. GMM was applied to observed CDAI values for bari 4mg pts, continuously treated from 0-52 weeks or up to rescue, to cluster pts into subgroups based on their trajectory patterns. Following identification of the groups, baseline pt characteristics and disease measures were compared between groups.

Results: Bari 4mg treated pts (N=487) were classified into 3 groups based on their CDAI trajectory patterns: Group 1 (n=344, 71%), Group 2 (n=56, 11%), and Group 3 (n=87, 18%) (Figure). Group 1 had lower baseline CDAI (34, Table 1), achieved CDAI≤10 (low disease activity, LDA) rapidly and maintained LDA up to 52 weeks. Group 2 had higher CDAI at baseline (48, Table 1), responded quickly, and although pts took longer to attain LDA, they continued to show CDAI improvement. Group 3 had similar baseline CDAI values (48, Table 1) to Group 2 but higher baseline damage (mean total Sharp score [mTSS] of 50, versus 41 for Groups 1 and 2, Table 1). Most Group 3 pts did not achieve LDA but continued to show improvement over time. The majority of pts had no radiographic progression with the highest proportion in Group 1 (Table 2). The trajectories of average pain VAS, Health Assessment Questionnaire-Disability Index (HAQ-DI), tender joint count 28, and swollen joint count 28 were consistent in the 3 groups.

Abstract THU0102 –Table 1. Baseline characteristics:

	Group 1 N=344	Group 2 N=56	Group 3 N=87
Age	53.8 (12.1)	54.0 (12.7)	52.2 (12.4)
Male, n (%)	74 (21.5)	16 (28.6)	22 (25.3)
BMI (kg/m ²)	26.8 (5.7)	25.9 (6.0)	27.0 (6.1)
CDAI	33.8 (10.0)	48.5 (10.0)	48.0 (10.4)
mTSS	41.0 (49.1)	40.6 (41.8)	49.8 (58.6)
Duration from RA diagnosis (years)	8.4 (8.0)	8.4 (9.3)	9.8 (10.2)
HAQ-DI	1.48 (0.68)	1.75 (0.64)	1.80 (0.60)

Data reported as mean (SD) unless indicated

Abstract THU0102 – Table 2. Response rates in patient groups, n (%)

		Group 1 N=344	Group 2 N=56	Group 3 N=87
CDAI ≤10	W24	214 (66.3)	28 (57.1)	2 (3.5)
W52	235 (76.8)	36 (85.7)	8 (16.0)	
mTSS change from baseline ≤0.5	W24	285 (90.8)	42 (85.7)	51 (83.6)
W52	266 (89.3)	34 (82.9)	40 (80.0)	

W=week

Conclusion: Baseline severity is associated with different treatment trajectories. With bari treatment, majority of pts achieved LDA and had no structural progression. Pts with high baseline disease activity were associated with longer time to achieve LDA. Pts with higher baseline structural damage in addition to high disease activity were less likely to achieve LDA, but consistent with the other groups, had similar low rate of joint damage progression. Long-term maintenance and continued improvement in CDAI were observed with bari treatment.

Figure: CDAI over time (0-52 weeks) in baricitinib 4mg-treated RA-BEAM patients (N=487) grouped by their CDAI trajectory patterns

Abstract THU0102 – Figure 1

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THU0103

ONE IN FIVE PATIENTS WITH RAPIDLY AND PERSISTENTLY CONTROLLED EARLY RHEUMATOID ARTHRITIS REPORT POOR WELLBEING AFTER ONE YEAR OF TREATMENT

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Background: In rheumatoid arthritis (RA), good disease control without major joint damage, loss of function or disability can be achieved. Still, a substantial number of patients report poor wellbeing. A better understanding is needed on why some patients still feel unwell despite good disease control. Specific attention to this mismatch, especially early in the disease, could help to further optimize the clinical course of new patients with RA.

Objectives: To identify and characterize patients with early RA treated optimally to current standards but reporting not feeling well after 1 year of treatment.

Methods: We included participants of the Care in early RA trial with an early and persistently favorable treatment response, defined as having a disease activity score (DAS28CRP) <2.6 from 16 weeks after initiation of treatment until year 1. Feeling well was assessed with 5 patient-reported outcomes (PROs): pain, fatigue, physical functioning, RA-related quality of life and sleep quality. K-means clustering was carried out to assign patients to clusters based on these PRO scores at year 1. After clustering, Cohen's d was computed to determine the magnitude of the difference between clusters, already at treatment start (BL) and 4 months

later (w16), with respect to the 5 clustering PROs as well as for coping behavior, illness perceptions and social support.

Results: Analyses revealed 3 distinct clusters. Details are depicted in Table 1. Of 140 patients, 77.9% were assigned to the 'concordant to disease activity' cluster, 9.3% to the 'dominant fatigue' cluster and 12.9% to the 'dominant pain and fatigue' cluster. When comparing the concordant cluster with both discordant clusters, differences at BL and w16 were shown, with small effects on patients' evaluation of their disease at year 1, such as more negative beliefs about the consequences of RA at w16 in patients reporting dominant pain and fatigue at year 1. Few differences with medium effects were identified, such as a moderately higher use of avoidance as a coping style at w16 and a stronger belief that symptoms can be explained by RA at w16, in patients reporting dominant fatigue at year 1 compared to patients in the concordant cluster. Large differences between patients in concordant and discordant clusters were found for pain and fatigue levels, which were already higher after 4 months of treatment for those patients reporting persistent pain and fatigue at year 1.

Abstract THU0103 –Table 1.

Table 1. Mean scores at year 1 of the patient-reported outcomes used to assign patients to a cluster (n=140 persistent responders)

	Clusters		
	Concordant to disease activity n=109 (77.9%)	Dominant fatigue n=13 (9.3%)	Dominant pain and fatigue n=18 (12.9%)
Pain (VAS 0-100)	7	15	45
Fatigue (VAS 0-100)	10	70	42
Functionality (HAQ 0-3)	0.07	0.24	0.26
RA-related quality of life (RAQoL 0-30)	3.92	6.21	5.55
Sleep quality (PSQI 0-21)	5	6	5

Note. RA: Rheumatoid arthritis. VAS: Visual Analog Scale; HAQ: Health Assessment Questionnaire; RAQoL: Rheumatoid Arthritis Quality of Life questionnaire; PSQI: Pittsburgh Sleep Quality Index; Higher scores indicate worse pain, worse fatigue, more functional loss, worse health-related quality of life and worse sleep quality. Clinical response was defined as achieving a disease activity score (DAS28CRP) <2.6. Persistent response was defined as an early clinical response at week 16, sustained between week 16 and year 1.

Conclusion: Three distinct groups of persistent responders with early RA were identified based on their 1-year PRO profile. The majority of patients were well-synchronized, reporting very low pain and fatigue levels in concordance with their well-controlled disease activity. One in 5 persistent responders, however, seemed to have unmet needs. In view of early identification of patients at risk of poor wellbeing despite good disease control, early pain and fatigue levels and certain coping behavior and illness perceptions were recognized as potential targets for future interventions.

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THU0104 HIGH-PERFORMANCE CHEMICAL ISOTOPE LABELING LIQUID CHROMATOGRAPHY MASS SPECTROMETRY FOR DISCOVERY OF METABOLITE BIOMARKERS OF RHEUMATOID ARTHRITIS

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Background: Early diagnosis of rheumatoid arthritis (RA) is hampered by suboptimal accuracy of currently available serological biomarkers. Recent advancements in metabolomic profiling include liquid chromatography mass spectrometry (LC-MS) and in-depth profiling of amine/phenol and carboxyl submetabolomes, resulting in 1000-fold increase in detection sensitivity, and universal metabolome-standard methodology to facilitate metabolome comparisons among different data sets.

Objectives: We aimed to identify a metabolite signature with consistently high accuracy for RA.

Methods: Sera from 2 RA cohorts were analyzed: Cohort A samples were from 50 RA patients, 39 female (mean age 49.9), 11 male (mean age 47.8), symptom duration <3 years, DAS >3.7, naïve to b-DMARD, and 50 age and sex-matched healthy controls. Cohort B samples were from 50 RA patients, 40 female (mean age 53.4), 10 male (mean age 57.2), symptom duration <5 years, samples from both pre- and post- (3 months) treatment with TNFi and a second set of 50 age and sex-matched healthy controls. Amine/phenol- and carboxyl-containing metabolites were labeled by ¹²C-dansyl (Dns) chloride and ¹²C-dimethylaminophenacyl (DmPA) bromide, respectively. A pooled sample was generated and labeled by ¹³C-Dns and ¹³C-DmPA, respectively. LC-UV quantification was applied for sample normalization. After mixing individual ¹²C-labeled serum with the ¹³C-labeled pool in equal amounts, the mixtures were analyzed by LC-QTOF-MS for relative quantification.

Results: A total of 3415 amine/phenol and 2114 carboxyl metabolites were commonly detected in more than 80% of the samples. For amine/phenol submetabolome profiling, partial least squares discriminant analysis (PLSDA) showed a clear separation of the groups for each cohort (R²=0.98;Q²=0.92 for cohort A and R²=0.93;Q²=0.79 for cohort B). Similarly, for carboxyl submetabolome profiling, a clear separation between RA and controls was demonstrable (R²=0.93;Q²=0.80 for cohort A and R²=0.84;Q²=0.55 for cohort B). 13 positively identified amine/phenol-containing metabolites, including o-phosphoethanolamine and glycyl-valine, were both significant in cohort A and cohort B, and each of these metabolites showed similar fold changes between RA and controls for both cohorts. 5 carboxyl-containing metabolites, with 1 positively identified, azelaic acid, and 4 unidentified, were both significant in 2 cohorts. The ROC AUC (95%CI) of the 13 amine/phenol-containing metabolite panel were 0.99 (0.94-1.00), 0.98 (0.92-1.00) and 0.98 (0.95-1.00) for cohort A and cohort B (pre- and post-treatment), respectively, with sensitivity/specificity of 94%/96%, 94%/95%, 94%/94%. The ROC AUC (95%CI) of the 5 carboxyl metabolite panel were 0.92 (0.86-0.97), 0.96 (0.91-0.99), 0.89 (0.82-0.95), respectively, with sensitivity/specificity of 86%/86%, 90%/91%, 80%/80%. The combined panel of 18 metabolites demonstrated ROC AUC>0.99 with sensitivity and specificity>95% for each cohort. None of these biomarker metabolites correlated with age, gender, or symptom duration.

Conclusion: Consistent discrimination in metabolite profiles between discovery and verification cohorts generated high priority candidates for further biomarker validation in RA.

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THU0105 DIVERSE DISEASE ACTIVITY MEASURES DEMONSTRATE THAT THE INITIATION OF TOFACITINIB LEADS TO SUSTAINED CLINICAL RESPONSES IN THE MAJORITY OF RHEUMATOID ARTHRITIS PATIENTS IN A CLINIC UTILIZING A TREAT TO TARGET STRATEGY

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Background: Treating Rheumatoid Arthritis (RA) patients to target (T2T) has been shown to result in better outcomes in patients with RA [1] and offers the opportunity to analyze clinical responses and changes in certain laboratory parameters after treatment with specific therapeutic agents.

Objectives: To determine the frequency, magnitude, and duration of clinical responses and changes in certain laboratory parameters after initiating Tofacitinib in a single community rheumatology clinic (author's) utilizing a T2T strategy.

Methods: Patients at a community based rheumatology clinic undergo disease activity measure assessments (DAMs) on a routine basis as part of the implementation of the T2T strategy. These assessments include the disease activity score in 28 joints (DAS28CRP), and the more objective