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:**

<table>
<thead>
<tr>
<th>Group</th>
<th>N=344</th>
<th>N=56</th>
<th>N=87</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td>53.8 (12.1)</td>
<td>54.0 (12.7)</td>
<td>52.2 (12.4)</td>
</tr>
<tr>
<td><strong>Male, n (%)</strong></td>
<td>74 (21.5)</td>
<td>16 (28.6)</td>
<td>22 (25.3)</td>
</tr>
<tr>
<td><strong>BMI (kg/m²)</strong></td>
<td>26.8 (5.7)</td>
<td>25.9 (6.0)</td>
<td>27.0 (6.1)</td>
</tr>
<tr>
<td><strong>mTSS</strong></td>
<td>33.8 (10.0)</td>
<td>48.5 (10.0)</td>
<td>48.0 (10.4)</td>
</tr>
<tr>
<td><strong>Duration from RA diagnosis (years)</strong></td>
<td>8.4 (8.0)</td>
<td>8.4 (9.3)</td>
<td>9.8 (10.2)</td>
</tr>
<tr>
<td><strong>HAQ-DI</strong></td>
<td>1.48 (0.68)</td>
<td>1.75 (0.64)</td>
<td>1.60 (0.60)</td>
</tr>
</tbody>
</table>

Data reported as mean (SD) unless indicated

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

<table>
<thead>
<tr>
<th>CDAI ≤10</th>
<th>W24</th>
<th>W52</th>
<th>mTSS change from baseline ≤0.5</th>
<th>W24</th>
<th>W52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td>214 (66.3)</td>
<td>28 (57.1)</td>
<td>2 (3.5)</td>
<td>235 (76.8)</td>
<td>36 (85.7)</td>
</tr>
<tr>
<td>Group 2</td>
<td>285 (80.8)</td>
<td>42 (85.7)</td>
<td>51 (83.6)</td>
<td>266 (89.3)</td>
<td>34 (82.9)</td>
</tr>
</tbody>
</table>

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.

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**Disclosures of Interests:**


**THU0103 ONE IN FIVE PATIENTS WITH RAPIDLY AND PERSISTENTLY CONTROLLED EARLY RHEUMATOID ARTHRITIS REPORT POOR WELLBEING AFTER ONE YEAR OF TREATMENT**

- Kristien Van Der Elst1,2, Patrick Verschuren2,3, Diederik De Cock2, An De Groe3,4, Veerle Stoumen1, Sofia Pazmino5, Johanna Vriezekolk5, Johan Joly6, Philip Moons1,2, Rene Westhovens1,2, Department of Physical Medicine and Rehabilitation, Leuven, Belgium

**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 early in 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 1 year. 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.

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 concordance, early pain and fatigue levels and certain coping behavior and illness perceptions were recognized as potential targets for future interventions.

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Background: Early diagnosis of rheumatoid arthritis (RA) is hampered by suboptimal accuracy of currently available serological biomarkers. Recent advancements in metabolic profiling include liquid chromatography mass spectrometry (LC-MS) and in-depth profiling of amine/phenol and carboxyl submetabolites, 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 13C-dansyl (Dns) chloride and 13C-dimethylaminophenacyl (DmPA) bromide, respectively. A pooled sample was generated and labeled by 12C-Dns and 12C-DmPA, respectively. LC-UV quantification was applied for sample normalization. After mixing individual 13C-labeled serum with the 12C-labeled pool in equal amounts, the mixtures were analyzed by LC-DTOF-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,C2=0.92 for cohort A and R2=0.93,C2=0.79 for cohort B). Similarly, for carboxyl submetabolome profiling, a clear separation between RA and controls was demonstrated (R2=0.93,C2=0.80 for cohort A and R2=0.84,C2=0.55 for cohort B). 13 positively identified amine/phenol-containing metabolites, including o-phosphoethanolamine and glycerol-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/specifcity 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.

Disclosure of Interests: Xiaohang Wang: None declared, Joel Paschke: None declared, Rana Dadashova: None declared, Edna Hutchings: None declared, Liang Li: None declared, Walter P Maksymowycz: Grant/research support from: AbbVie, Pfizer, Janssen, Novartis, Consultant for: AbbVie, Eli Lilly, Boehringer, Galapagos, Janssen, Novartis, Pfizer and UCB Pharma; Chief Medical Officer for Canadian Research and Education Arthritis


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. T2T strategy: 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