Conclusion: The gradient-boosting model previously identified predictors of abatacept retention from ACTION;² the addition of SHAP in this analysis has provided information on the importance and directionality of those predictors. The most important predictor of abatacept retention was no previous corticosteroid use, which was associated with lower retention. The models and predictors identified could be further refined by using additional datasets from clinical trials. Machine learning offers an innovative and complementary approach to biostatistics and could be used to identify treatment response predictors at an individual patient level, leading to a more personalised treatment approach.

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Figure 1. Overall variable importance in ACTION, using SHAP

Colours indicate the value of the variable: pink represents higher and blue represents lower. The bulges in the plot indicate most patients with that value; each dot represents a single patient. Higher SHAP values indicate a higher likelihood of retention. bDMARD=biologic DMARD; CCP=cyclic citrullinated peptide; SHAP=SHapley Additive exPlanations.

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AB0206

DESCRIPTION AND FOLLOW-UP OF RHEUMATOID ARTHRITIS PATIENTS WHO STOPPED B/TSDMARD THERAPY, STRATIFIED BY CESSATION REASON

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Background: Biologic or targeted synthetic disease modifying antirheumatic drugs (b/tsDMARD) may be stopped for several reasons such as non-response, adverse events, remission, or other reasons (e.g. major surgery). Understanding the reasons and consequences of b/tsDMARD therapy cessation may contribute towards therapy decision guidance. Moreover, identifying patient characteristics leading to the re-start of b/tsDMARD therapy may guide decision-making as to which patients should remain on continuous b/tsDMARD therapy versus who may potentially stop b/tsDMARD therapy.

Objectives: To describe and follow rheumatoid arthritis (RA) patients who stopped b/tsDMARD therapy, stratified by cessation reason.

Methods: We conducted a descriptive cohort study among adult RA patients in the longitudinal Swiss Clinical Quality Management in Rheumatic Diseases (SCQM) between 1997 and 2019. RA patients who stopped their first b/tsDMARD therapy were eligible, with therapy stop date defining cohort entry. We followed all eligible patients from cohort entry until b/tsDMARD re-start (the outcome) or censoring due to end of patient record. All analyses were carried out stratified by cessation reason (non-response, adverse events, remission, other reasons, unknown reasons). We described patient characteristics (demographics, lifestyle factors, clinical information, other medication use, relevant comorbidities) at cohort entry. Furthermore, we estimated Kaplan Meier curves to describe differences in cumulative incidences of b/tsDMARD re-start. Finally, we assessed patient characteristics at b/tsDMARD re-start and compared them with those at cohort entry.

Results: Among 2559 eligible RA patients, the majority stopped their b/tsDMARD due to non-response (982, 38%), followed by adverse events (475, 19%), other reasons (445, 17%), unknown reasons (444, 17%), and remission (213, 8%). Mean age at b/tsDMARD stop was around 56.2 years except in patients who stopped due to remission (mean age of 58.1 years). The majority of patients were women (78%), stopping due to an adverse event had the highest proportion of women (84%), stopping due to remission had the lowest proportion of women (70%). Compared to patients who stopped b/tsDMARD therapy due to non-response or adverse events, patients who stopped due to remission were generally more physically active, better educated, less likely to have a family history of rheumatic diseases, and had shorter median disease duration. A total of 2086 patients (82%) re-started b/tsDMARD therapy during follow-up. Of these, the majority did so after stopping due to non-response (94%), followed by adverse events (82%), unknown reasons (79%), other reasons (74%), and remission (47%). The median cumulative incidence of re-starting b/tsDMARD therapy was shortest after non-response (30 days), followed by unknown reasons (31 days), adverse events (94 days), other reasons (212 days), and remission (1597 days). The population who stopped b/tsDMARD therapy due to remission or other reasons yielded increased RA disease activity and an increase in proportions of women, cardiac diseases, degenerative joint disease, other auto-immune diseases, and of patients with family history of rheumatic diseases at the date of b/tsDMARD re-start. However, among patients who stopped b/tsDMARD therapy due to non-response or adverse events, patient characteristics at b/tsDMARD re-start were unchanged compared to those at b/tsDMARD stop.

Conclusion: Observed differences in patient characteristics at b/tsDMARD stop may yield insight into why the patient was not responding, had an adverse event, or achieved remission. Observed changes in patient characteristics from the date of b/tsDMARD stop to re-start identified which ones may lead to a worsening of RA activity in the absence of b/tsDMARD therapy.

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AB0207

ANALYSIS OF ABATACEPT TREATMENT RETENTION AND EFFICACY ACCORDING TO DISEASE DURATION AND TREATMENT LINE IN A REAL-WORLD SETTING

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