Age at SB5 initiation (years) captured. This interim analysis (IA) provides an overview of baseline characteristics and clinical management over time; data on COVID-19 infection has recently been reported. We prospectively and/or retrospectively for 48 weeks following transition. Primary outcome data were collected from clinical records retrospectively for the 24 weeks prior to transition, and prospectively thereafter. This ongoing observational study enrolled 1000 pts with rheumatoid arthritis outside the controlled, randomised, clinical trial setting. This real-world study provides data on outcomes of the transition from reference to biosimilar ADL outside the controlled, randomised, clinical trial setting. Objectives: To evaluate candidate predictors of persistence on SB5 in EU patients (pts) across multiple indications.

Methods: This ongoing observational study enrolled 1000 pts with rheumatoid arthritis (RA), axial spondyloarthritis (axSpA), psoriatic arthritis (PsA), ulcerative colitis, or Crohn’s disease who initiated SB5 as part of routine clinical practice following a minimum of 16 weeks’ treatment with reference ADL, at clinics in Belgium, Germany, Ireland, Italy, Spain, and the UK. Data are captured from clinic records retrospectively for the 24 weeks prior to transition, and prospectively and/or retrospectively for 48 weeks following transition. Primary outcome measures include baseline clinical characteristics, disease activity scores and clinical management over time; data on COVID-19 infection has recently been captured. This interim analysis (IA) provides an overview of baseline characteristics, disease activity scores and dose regimens up to 48 weeks post-initiation of SB5, and COVID-19 infection reported to date, in subjects with RA, axSpA, or PsA.

Conclusion: No 142 95.3 96 88.1 140 98.6
Yes 3 2.0 0 0 0 0
Unknown 4 2.7 12 11.0 1 1.0

SB5 Dosing regimen:
Baseline 40mg Q2W
Week 48 40mg Q2W
Baseline Other*
Week 48 Other*

Disease Score (paired patients)
Baseline, n, mean (95% CI)
69 2.5 (2.3–2.7) 22 73.9 (65.6–82.1) 42 2.8 (2.3–3.4) 49 1.8 (0.1–3.0) 49 0.6 (0.2–0.9)
Week 48, n, mean (95% CI)
69 2.6 (2.3–2.8) 21.2 (64.0–80.2) 42 3.0 (2.4–3.7) 49 (1.9–5.5) 49 (0.6–1.1)

RA (N=201) axSpA (N=134) PsA (N=169)

SD standard deviation; Q1 1st quartile, Q3 3rd quartile; CI Confidence Interval

AB0205
A NOVEL METHOD FOR PREDICTING 1-YEAR RETENTION OF ABATCEPT USING MACHINE LEARNING TECHNIQUES: DIRECTIONALITY AND IMPORTANCE OF PREDICTORS


Objective: To improve the clinical interpretability of the machine learning model in terms of directionality and the importance of each variable in predicting retention.

Methods: Previous analyses using the gradient-boosting model to identify predictors of abatacept retention at 1 year in the ACTION study have been described. This analysis used SHapley Additive exPlanations (SHAP), a mathematical framework, to show how a particular predictor value influences prediction in the context of all other predictors. Higher SHAP values indicate a higher likelihood of retention. The contribution of every variable in the model’s prediction (the exception of country variables) was computed for each data point to capture individual variable impact. This enabled interpretation for level of importance and directionality at a patient level.

Results: Using data from 2350 patients enrolled in ACTION (May 2008 to December 2013), the mean retention rate at 1 year was 59.3% (n=1335). Overall, all variable importance is shown in Figure 1. After removal of country variables, the top five baseline predictors of retention were: no previous corticosteroid use, ACR functional class II, ≥2 prior biologic treatments prior to abatacept initiation, abatacept monotherapy and HAQ-DI. In terms of directionality, no previous corticosteroid use, ≥2 prior biologic treatments prior to abatacept initiation, abatacept monotherapy and a higher HAO-DI score at baseline were associated with a lower likelihood of retention; ACR functional class II was associated with a higher likelihood of retention.
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.

REFERENCES:

Acknowledgements: This study was supported by Bristol Myers Squibb. Professional medical writing and editorial assistance was provided by Claire Line, PhD, at Caudex and was funded by Bristol Myers Squibb.

Disclosure of Interests: Rieke Alten Speakers bureau: AbbVie, Bristol Myers Squibb, Gilead, Janssen, Lilly, Pfizer, Consultant of: AbbVie, Bristol Myers Squibb, Gilead, Janssen, Lilly, Pfizer, Grant/research support from: AbbVie, Bristol Myers Squibb, Gilead, Janssen, Lilly, Pfizer, Claire Behar Shareholder of: Bristol Myers Squibb, Potential interest: Consultancy offers from the SCQM registries.

The SCQM is financially supported by pharmaceutical industries and donors. A list of financial supporters can be found on www.scqm.ch/sponsors.

Acknowledgements: We would like to thank Dr. Almut Scherer, Monika Hebeisen, and Eleftherios Papagianouillas from SCQM for providing the data and answering questions thereby. A list of national and international rheumatologists contributing to the SCQM registries can be found on www.scqm.ch/institutions. The SCQM is financially supported by pharmaceutical industries and donors. A list of financial supporters can be found on www.scqm.ch/sponsors.

Disclosure of Interests: Theresa Burkard: None declared, Enriqueta Vallejo-Yague: None declared, Thomas Hügle: Speaker at Caudex and was funded by Bristol Myers Squibb.

Sponsorship: This study was supported by Bristol Myers Squibb. The authors are accountable for the results and conclusions presented. A list of financial supporters can be found on the SCQM website.