

Identifying Determinants of Medication Persistence in Rheumatoid Arthritis Using Machine Learning and Regression Analysis

Zulfiia Ditto, PhD; Ana Lopez Medina, PharmD, PhD; Andrew Wash, PharmD, PhD; Casey Fitzpatrick, PharmD

C0156



Background

- Persistence to rheumatoid arthritis (RA) therapy is critical for achieving disease control; however, real-world studies report low persistence rates, with approximately one third of patients remaining persistent at one year.¹
- Health-system specialty pharmacies (HSSPs) support patients with RA by facilitating medication access and providing clinical management and monitoring. In doing so, they collect a rich array of data that differs from traditional pharmacy records.²

Objective

This study aimed to identify factors influencing medication persistence among patients with RA in an HSSP setting.

Methods

Study Design

Retrospective, multicenter, observational study that utilized HSSP data for patients with RA who initiated specialty therapy from 2022-2024.

Index Date

The index date was defined as the first dispense date of an RA specialty medication through the HSSP, representing treatment initiation.

Follow-Up Period

Patients were observed for a follow-up period of up to one year following the index date.

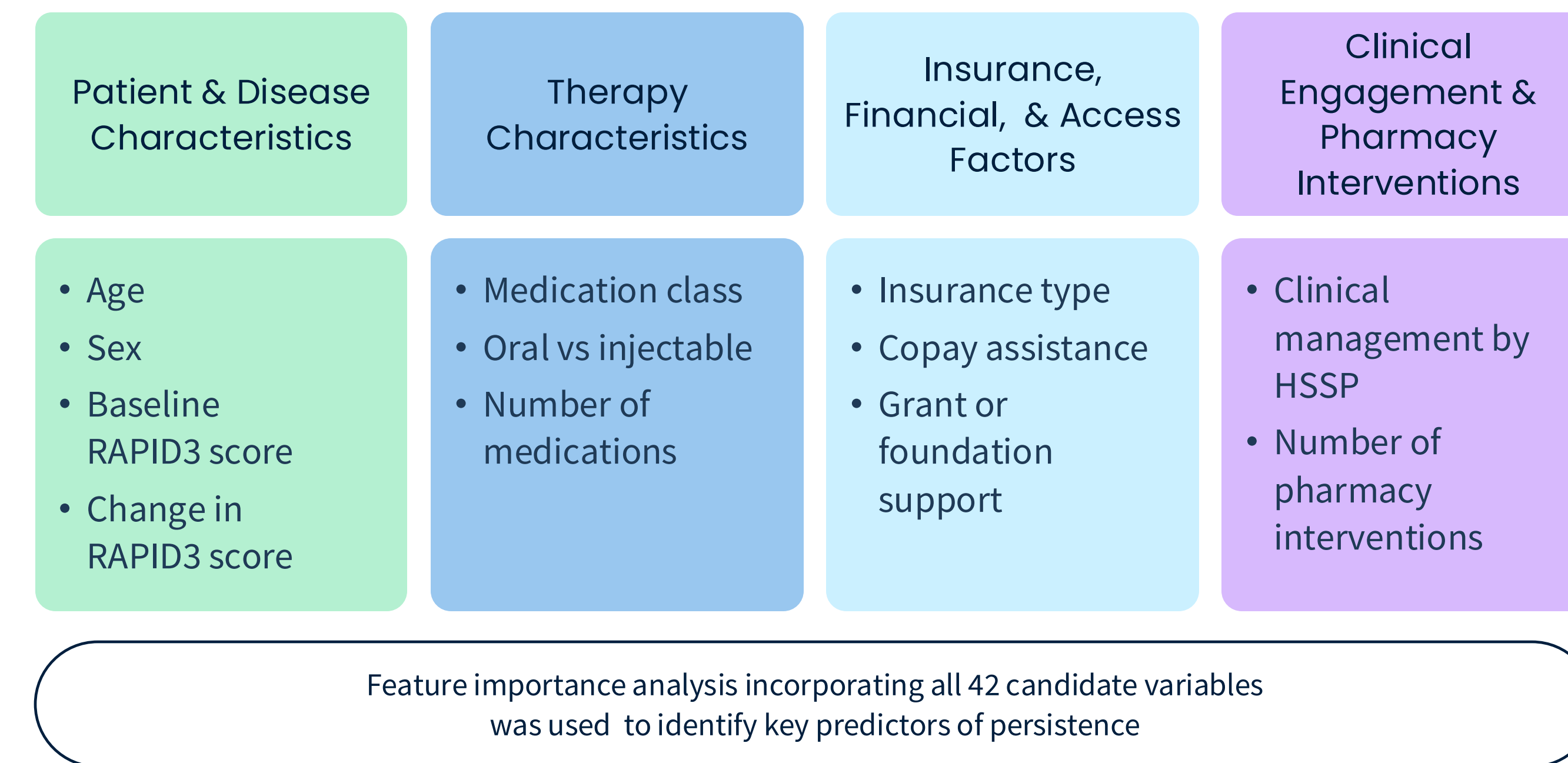
Inclusion Criteria	Exclusion Criteria
<ul style="list-style-type: none"> Adult patients (≥ 18 years old) Patients diagnosed with RA (ICD 10 code M05-M05.9; M06-M06.9) Patients clinically managed by CPS-managed HSSP 	<ul style="list-style-type: none"> Patients who did not dispense their medication with the HSSP for a full year

Endpoints

- The primary endpoint was treatment persistence at one year, defined as the absence of a ≥ 60 -day gap in medication supply during the study period.

Methods cont.

Figure 1: Examples of Variables Included in Feature Importance Analysis



Data Analysis

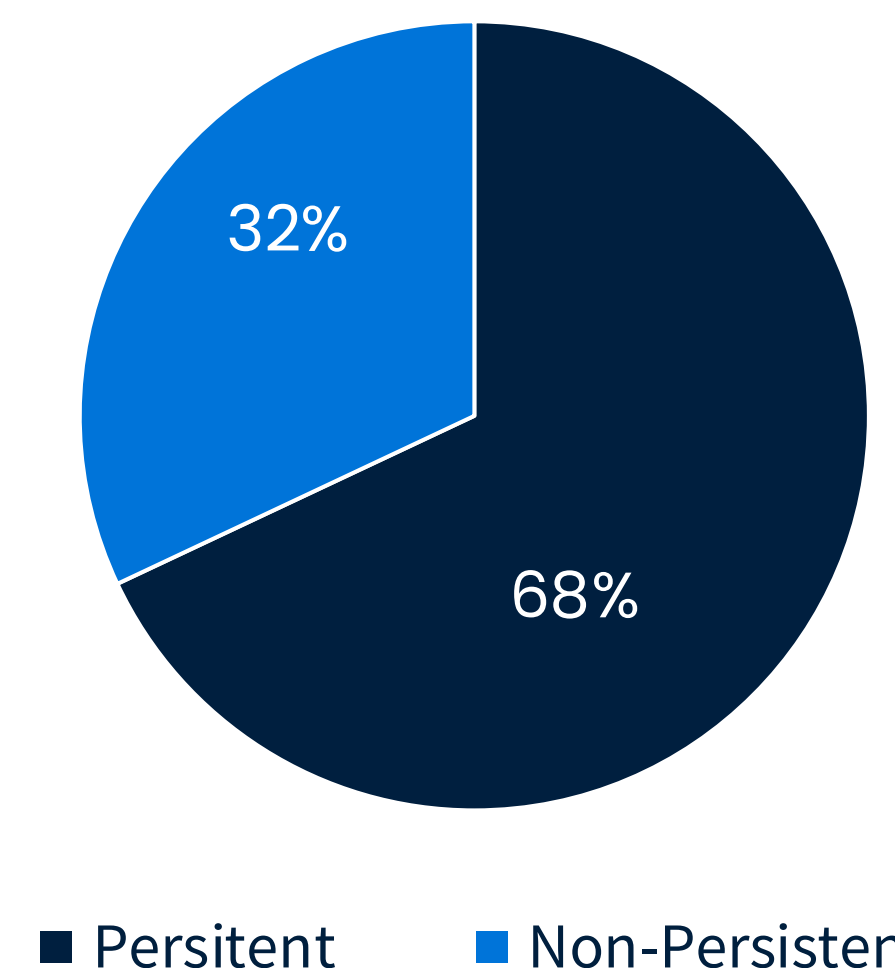
- Logistic regression was used to validate the significance and strength of association of emergent predictive variables. A p-value < 0.05 was considered statistically significant.

Results

Table 1: Demographics

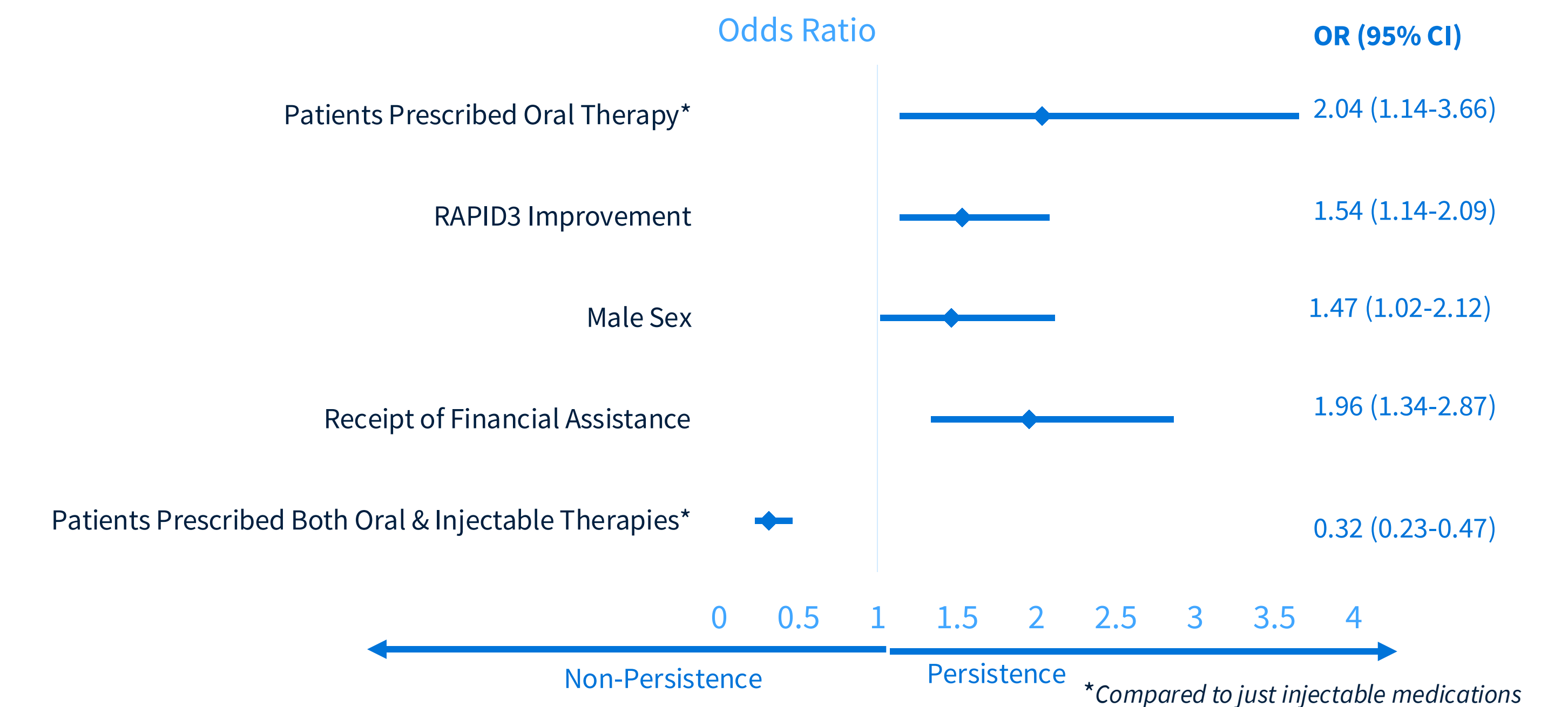
Characteristics	N=930
Age (Mean \pm SD)	59 \pm 13
Female, n (%)	735 (79%)

Figure 2: Persistent & Non-Persistent



Results cont.

Figure 3: Factors Associated with 1-Year Medication Persistence



Discussion & Conclusion

- These findings identify actionable opportunities for pharmacist intervention, including optimization of administration route and facilitation of financial assistance. Addressing these factors through shared decision-making that incorporates patient preferences and access considerations may support long-term medication persistence. Thoughtful selection of oral versus injectable therapies based on patient-centered factors may improve treatment continuity and outcomes.
- The results underscore the added value of HSSP data compared with traditional claims data, which typically lack key clinical and access-related variables.
- Further research is needed to explore causal relationships and incorporate these determinants into predictive models that support targeted, proactive interventions to improve long-term treatment continuity in RA.

References

- Blum MA, Koo D, Doshi JA. Measurement and rates of persistence with and adherence to biologics for rheumatoid arthritis: a systematic review. *Clin Ther.* 2011;33(7):901-913. doi:10.1016/j.clinthera.2011.06.001. PMID: 21715007
- Peter ME, Zuckerman AD, DeClercq J, et al. Adherence and persistence in patients with rheumatoid arthritis at an integrated health system specialty pharmacy. *J Manag Care Spec Pharm.* 2021;27(7):882-890. doi:10.18553/jmcp.2021.27.7.882. PMID: 34185565