



Persistence of Asthma Biologic Use in Clinical Practice

Maddux, Jacob T, MD¹; Inselman, Jonathan, MS²; Jeffery, Molly M, PhD³; Shah, Nilay D, PhD^{2,3,4}; Rank, Matthew A, MD^{2,5,6}

¹Department of Medicine, Mayo Clinic, Phoenix, AZ, ²Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, Mayo Clinic, Rochester, MN

³Division of Health Care Policy and Research, Department of Health Sciences Research, Mayo Clinic, Rochester, MN

⁴OptumLabs, Cambridge, MA, ⁵Division of Allergy, Asthma, and Clinical Immunology, Mayo Clinic, Scottsdale, AZ

⁶Division of Pulmonology, Phoenix Children's Hospital, Phoenix, AZ

Rationale

Current guidelines suggest a trial of asthma biologics for *at least 4 months*

Limited evidence supports this suggestion

Describing persistence of asthma biologic use in clinical practice may provide evidence to inform length of asthma biologic trial

Data Source

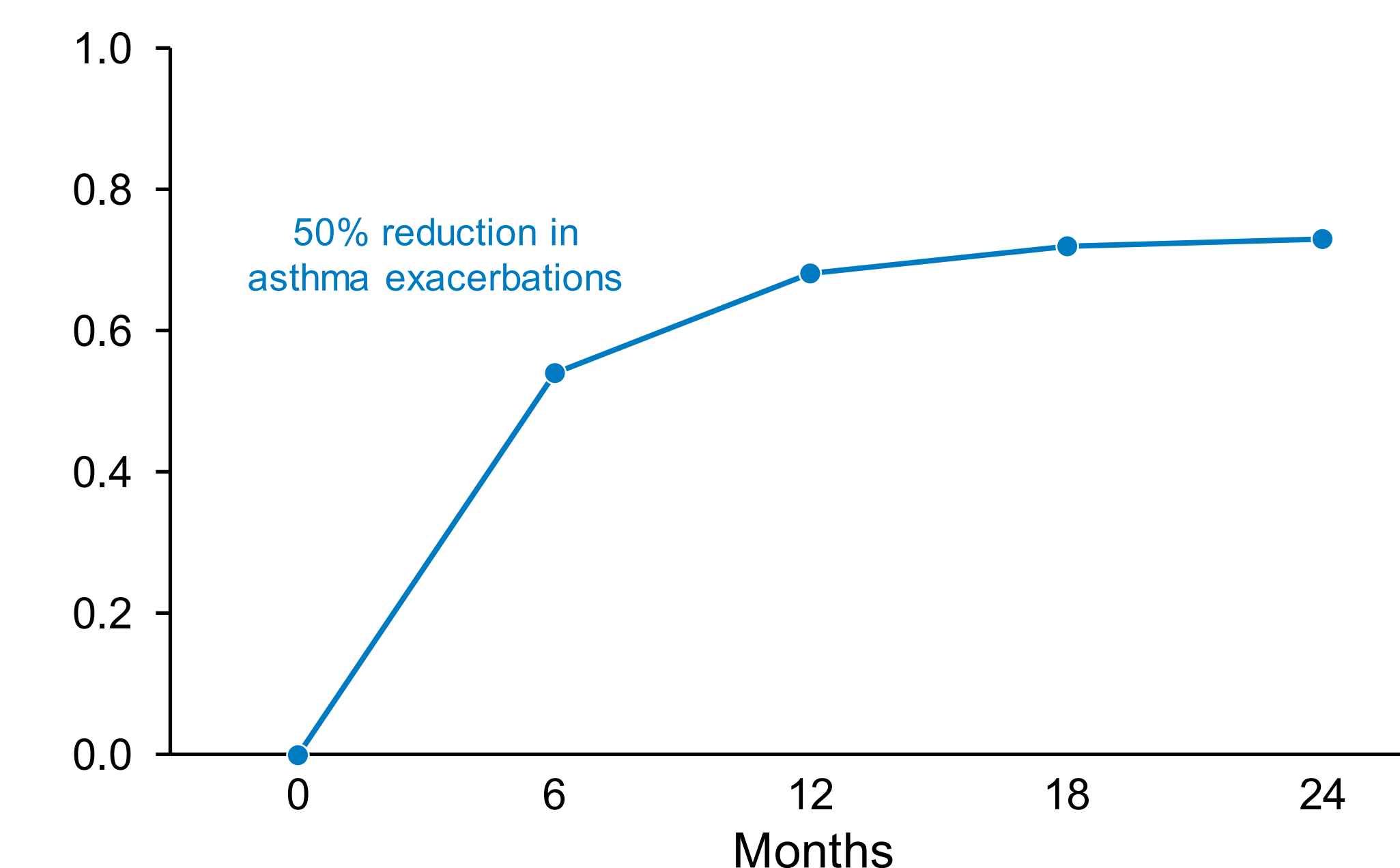
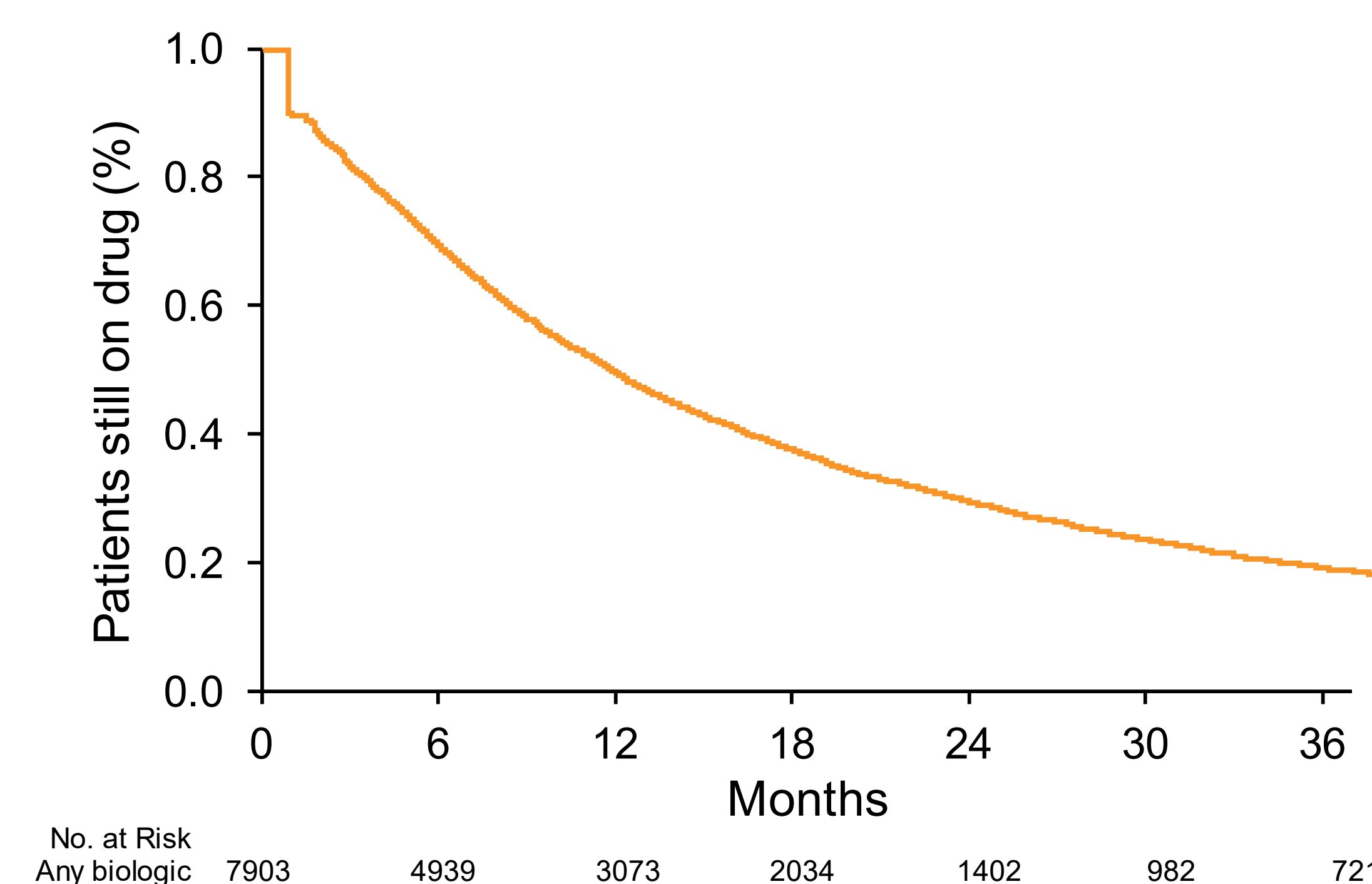
- OptumLabs Data Warehouse (OLDW)
- US patients with Commercial and Medicare Advantage insurance
- The OptumLabs® Data Warehouse (OLDW) is a longitudinal, real-world data asset with de-identified administrative claims and electronic health record (EHR) data.
- Since this study involved analysis of pre-existing, de-identified data, it was exempt from Institutional Review Board approval.

Cohort

- Individuals with asthma defined by HEDIS
- Use of at least 1 asthma biologic from 2003-2018
- Excluded urticaria and atopic dermatitis
- Biologic use captured by claim for the biologic
 - Omalizumab
 - Mepolizumab
 - Reslizumab
 - Benralizumab
 - Dupilumab

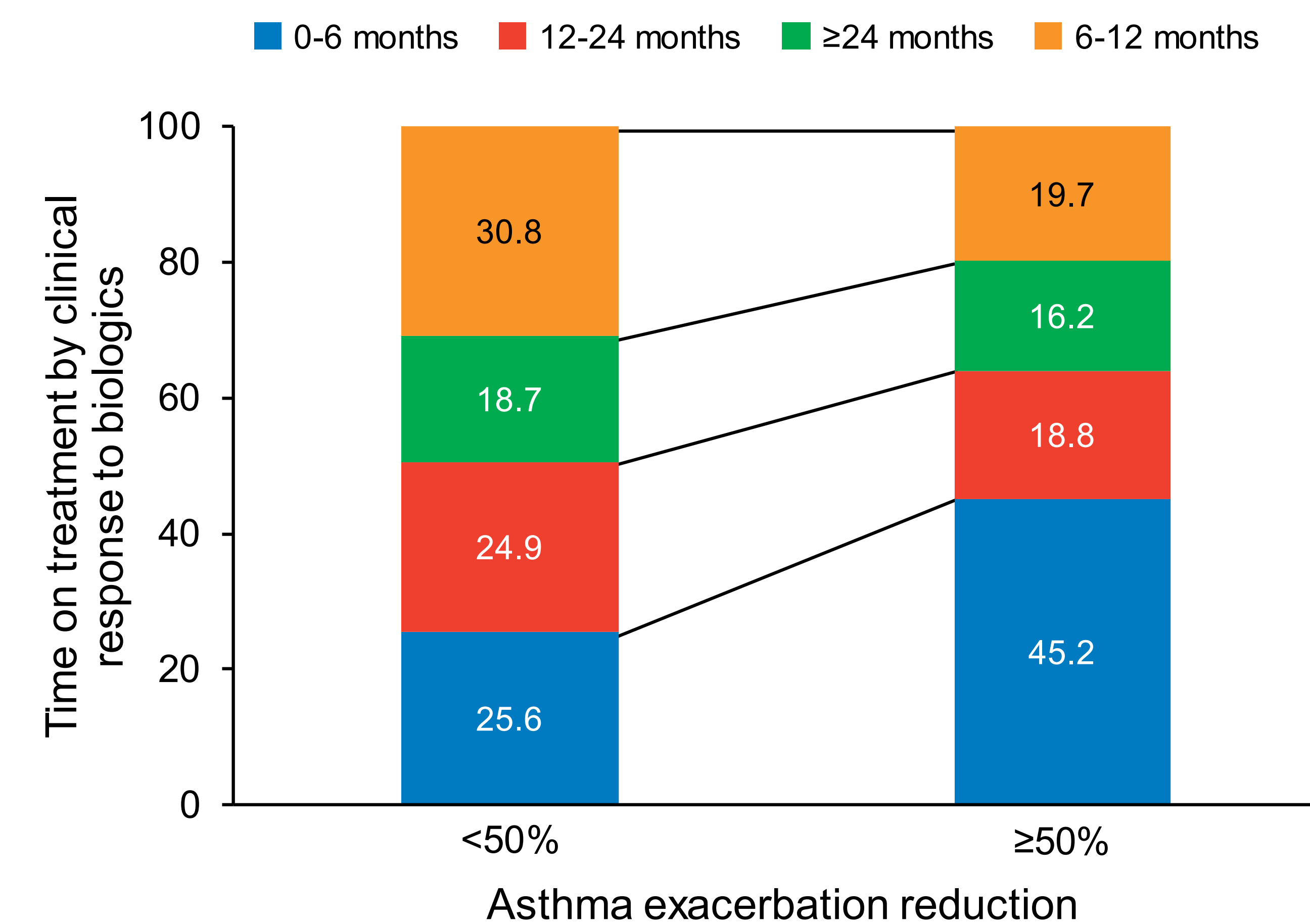
Clinical Response to Asthma Biologics in The First 6 Months of use is Not Associated with Higher Persistence Of Use

Persistence of Asthma Biologic Use



* Assumes all patients who are lost to follow-up before the specified time point did not achieve a 50% reduction in asthma exacerbations

Time on Treatment by Clinical Response to Biologics



Key Definitions

- Asthma exacerbation selected as this was the primary outcome for most asthma biologic trials
 - Hospitalization, emergency department, or urgent care visit with asthma in primary diagnosis or an any diagnostic position if associated with a primary respiratory diagnosis
 - Pharmacy claim for a systemic corticosteroid associated with a clinical visit for asthma within 30 days
- A clinical response to asthma biologic was defined as a 50% or greater reduction in asthma exacerbation comparing 6 months before and after starting the asthma biologic, as this is the average treatment effect seen in trials

Summary of Conclusions

- Half of patients in our cohort did not have an asthma exacerbation in the 6 months before starting a biologic
 - Other outcomes such as quality of life, day-to-day symptoms, etc, may be driving use
- Persistence of use for biologics, in this cohort, suggest that half of patients who start a biologic will have stopped using it within the first year
 - The reasons for stopping cannot be discerned in the current analysis
- A 6 month asthma biologic trial is long enough to show a reduction in asthma exacerbation; longer trial periods are less likely to find this reduction if it was not detected in the first 6 months
- A clinical response in the first 6 months of use is not associated with higher persistence of use compared to non-responders
 - Decisions to continue or stop asthma biologics appears to be unrelated to asthma exacerbation rates

Future Directions

- More research could help inform the best means of assessing clinical response after asthma biologic initiation
 - What are the best ways in clinical practice to determine response and how to best integrate other measures (quality of life, control, missing school/work, etc)?
 - What are the effects of inconsistent use patterns (i.e. adherence levels) on asthma biologic outcomes?
 - Can we predict who will do well after stopping biologics?

Funding

- NHLBI HL140287
- Robert D. and Patricia E. Kern Center for the Science of Healthcare Delivery
- Mayo Clinic Foundation