Measuring adherence in an asthma cohort: comparison of prescribing, dispensing, and patient-reported use

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AIM

• Patient reports (PR) and electronic health data (EHD) are common data sources when assessing long-term adherence in large populations.
• The accuracy of PR and EHD-based adherence estimates is however imperfect, as PR tools often do not focus on specific behaviors and time intervals, while EHD-based algorithms are not behavior-specific and often ignore essential information, e.g., leftover medication or dosage changes.
• We compared newly-developed PR- and EHD-based algorithms aiming to improve computation of adherence from these data sources.

METHODS

• The ASTRO-LAB cohort included persistent asthma patients (6-40 yrs) in France and the United Kingdom (UK) prescribed ≥612 months of ICs and/or long-acting β-agonists (LABAs) in separate or combination inhalers.
• Adherence was assessed regularly during follow-up (≤24 months) by computer-assisted telephone interviews (CATIs) with patients/carers.
• Patient data were linked with French dispensing (SNIIRAM) and UK prescribing (THIN) data.
• PR and EHD-based adherence (implementation) estimates in the 4 months before the first CATI were compared via correlations and measures of concordance.

NEW

Self-report

MIS-A

The Medication Intake Survey - Asthma (MIS-A) is a 6-item count-based recall measure designed to assess specific medication intake behaviors on clearly-defined time intervals in a CATI conversation.
• The items aim to facilitate recall and reduce social desirability.
• Composite scores were calculated via algorithms that considered the specific information and time coverage of each item.
• The 4-month composite score was used for comparisons.

Prescribing & dispensing data

AdhereR

• AdhereR is a newly-developed R package for calculating EHD-based adherence to medications (implementation and persistence) via several customizable functions.
• Alternative estimates of implementation (continuous medication availability; CMA) were computed for a 4-month interval corresponding to the 4-month MIS-A score at baseline.
• CMA9 (new algorithm for longitudinal designs) is shown below.

RESULTS

• Low adherence was common, particularly according to EHD-based estimates.
• PR 4-month adherence was not associated with prescribing-based adherence on the same intervals, but was moderately associated with dispensing-based estimates.

CONCLUSION

• Prescribing, dispensing and self-reported use capture different aspects of asthma inhaler adherence.
• In France, dispensing patterns can provide valuable insights on inhaler use patterns.
• The link between PR and dispensing-based adherence scores also provide support to the validity of MIS-A 4-month scores.
• The value of PR and EHD as data sources for adherence research would be increased by careful and transparent algorithms.