

Treatment sequencing among asthma patients who were newly treated with long-acting antimuscarinic antagonist (LAMA) in the United States

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Aims

- Asthma is a global health problem and the burden for some patients remains significant.
- The goal of asthma treatment is to achieve and maintain asthma control and reduce further risks.
- For patients with moderate asthma, a combination of an inhaled corticosteroid (ICS) and a long-acting beta-agonist (LABA) are the preferred treatment according to guidelines to be recommended.
- However, up-to 50% of patients treated with an ICS-LABA are not well controlled^{1,2}. Adding a long-acting antimuscarinic antagonist (LAMA) may help improve the lung function and control of these patients³.
- This study aimed to better understand LAMA use in asthma by describing the treatment sequences leading up to initiation of LAMA therapy among asthmatics in the U.S.

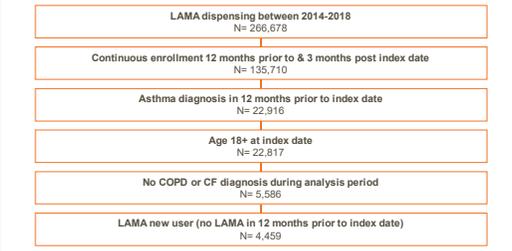
Methods

- We identified patients diagnosed with asthma, aged ≥ 18 years, and new users of LAMA (defined by no LAMA dispensing in the 12 months prior to index) in the Optum Clinformatics Data Mart commercial claims database between 1 January 2014 – 30 June 2018.
- All patients were required to be continuously enrolled during the 12 months prior to and 90 days after the index date (1st LAMA claim).
- Patients with a diagnosis of chronic obstructive pulmonary disease (COPD) or cystic fibrosis were excluded.
- We described asthma medications used before and after the index date in terms of most frequent medication treatment sequences and therapy changes within 90 days after the index date.
- We also described the frequency of each therapy line and time on each line.

Results

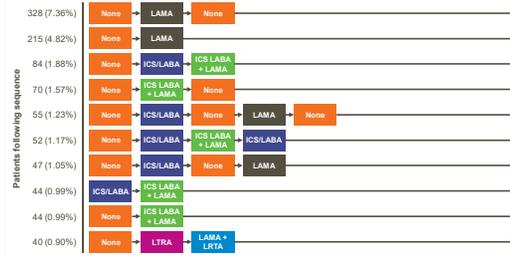
- 4,459 patients with asthma who were new users of LAMA and had sufficient follow-up were identified (Figure 1).
- Approximately half of the patients had new LAMA use as 'monotherapy' (i.e. no dispensing for other maintenance asthma medications on index or the 30 days after) and half of new LAMA users in combination with an ICS-containing regimen.
- The most frequent specific treatment patterns were patterns with LAMA only during the entire 15-month period, followed by patterns with ICS/LABA leading to triple therapy (ICS/LABA + LAMA) (Figure 2).
- Time on treatment sequences were described for sequences representing >1% of the study population (Figure 3). The most common treatment sequence included only one sequence of LAMA with a mean time of ~30 days, indicating that this may not reflect maintenance use of LAMA, nor maintenance asthma treatment.
- The most frequent treatment sequences were similar before and after the approval of Tiotropium in the U.S. for the treatment of asthma.
- Asthma medications, at a class level, dispensed during the analysis period were described (Table 1). Although, approximately half of the population initiated on LAMA 'monotherapy', approximately two-thirds of the population were dispensed an ICS/LABA at some point during the analysis period.

Figure 1. Analysis Selection of New LAMA Users in the United States



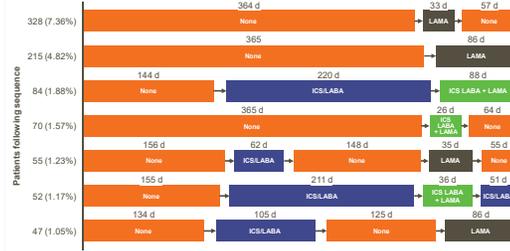
LAMA = long-acting antimuscarinic antagonist, COPD = chronic obstructive pulmonary disease, CF = cystic fibrosis, Index date = date of first LAMA dispensing, analysis period = 12 months before and 3 months after index date

Figure 2. Top 10 Most Common Treatment Sequences in the U.S.



LAMA = long-acting antimuscarinic antagonist, LTRA = leukotriene receptor antagonist, ICS = inhaled corticosteroids, LABA = long-acting beta-agonists

Figure 3. Timing of the Most Common Treatment Sequences in the U.S.



LAMA = long-acting antimuscarinic antagonist, ICS = inhaled corticosteroids, LABA = long-acting beta-agonists; Time calculated as mean number of days.

Conclusions

- New use of LAMA as a 'monotherapy' (i.e. no dispensing for other maintenance asthma medications on index or the 30 days after) was observed as common as new use of LAMA with an ICS-containing medication, specifically with ICS/LABA.
- The most frequent specific treatment patterns were patterns with LAMA only during the entire 15-month period, followed by patterns with ICS/LABA leading to triple therapy (ICS/LABA + LAMA) or LAMA only. The relatively high frequency of LAMA-only patterns may have been driven by the methodology and pattern simplicity.
 - The most common treatment sequence included only one sequence of LAMA with a mean time of ~30 days, indicating that this may not reflect maintenance use of LAMA.
 - Treatment sequences were similar before and after the approval of Tiotropium for the treatment of asthma.
- Although, approximately half of the population initiated on LAMA 'monotherapy', approximately two-thirds of the population were dispensed an ICS/LABA at some point during the analysis.

Table 1. Asthma Medications Used During the Analysis Period, U.S.

Medication Class	N (%)
LAMA	4,459 (100%)
SABD	3,853 (86.41%)
ICS-LABA	2,988 (67.01%)
LTRA	2,437 (54.65%)
ICS	1,175 (26.35%)
Anti-IgE	167 (3.75%)
Xanthine	113 (2.53%)
LABA	102 (2.29%)
anti-IL5	18 (0.40%)
OCS (for any reason)	3,293 (73.85%)
Mast cell stabilizers	13 (0.29%)

LAMA = long-acting antimuscarinic antagonist, SABD = short-acting bronchodilators, SABA = short-acting beta agonist, ICS = inhaled corticosteroids, LABA = long-acting beta-agonists, OCS = oral corticosteroids, LTRA = leukotriene receptor antagonist

References
 1. Davis J, et al. *J Asthma* 2019;56:332-40.
 2. Lee LK, et al. *J Asthma* 2018;55(2):208-219
 3. Global Initiative for Asthma 2019 Report. Available from: <https://www.ginasthma.org/gia-report> [last accessed 24 February 2020]

Disclosures
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