



Children's Hospital Colorado

Prevalence and Adherence Trends of Inhaled Corticosteroid/Long-Acting Bronchodilator (ICS/LABA) and ICS Monotherapy By Age Group Using Electronic Medication Monitoring Data from 2017-2019

William C. Anderson III MD¹, Rahul Gondalia MPH, PhD², Heather E. De Keyser MD³, Stanley J. Szeffler MD³, Leanne Kaye PhD², David A. Stempel MD²

(1)Department of Pediatrics, Section of Allergy and Immunology, Children's Hospital Colorado/University of Colorado School of Medicine, Aurora, CO;

(2)Propeller Health, San Francisco, CA; (3)Department of Pediatrics, Breathing Institute, Children's Hospital Colorado/University of Colorado School of Medicine, Aurora, CO

Affiliated with
University of Colorado
Anschutz Medical Campus

BACKGROUND

- Reluctance to use ICS/LABA, especially in children, focused on perceived concerns around its safety and limited pediatric efficacy data¹
- FDA-mandated phase IV studies comparing ICS/LABA with ICS demonstrated that ICS/LABA did not have a higher risk of serious adverse events versus ICS alone and provided efficacy data^{2,3}
- These results led to the removal of the boxed warning for ICS/LABA

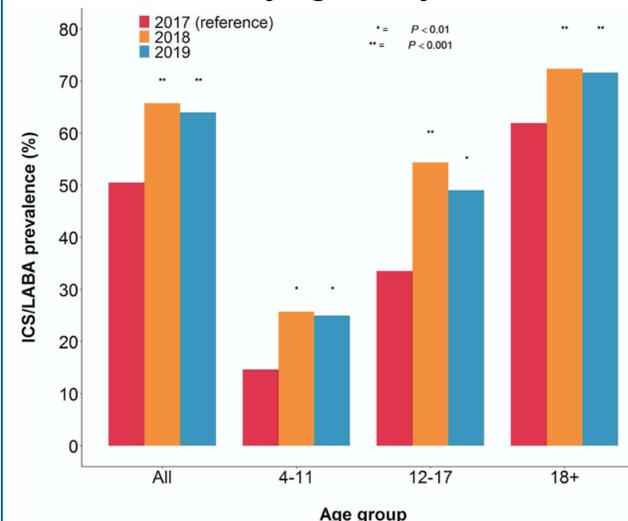
OBJECTIVE

- Assess the change in prevalence of ICS/LABA use by age group following the removal of the boxed warning in December 2017

METHODS

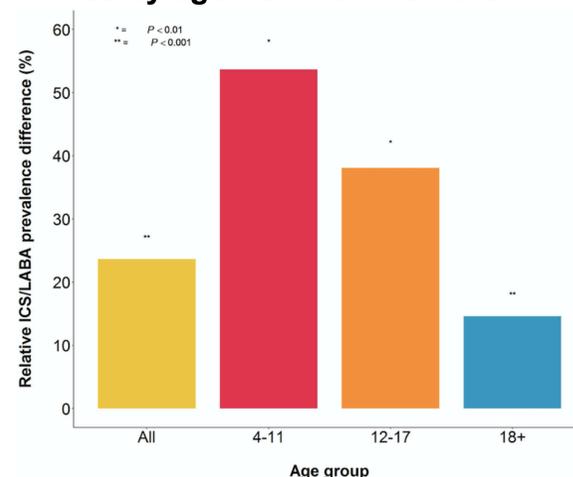
- 6,060 patients with asthma (aged ≥ 4 years) were enrolled from June 2017 to June 2019
- EMMs (Propeller Health; Madison, WI) attached to their controller inhalers and passively recorded the date and time of actuations
- Patients with an ICS-containing medications with ≥90 days of continuous data were included
- ICS/LABA prevalence and daily controller adherence was assessed starting at week 2 and compared 2018 and 2019 to 2017 and by age group (4-11; 12-17; ≥18 years)
- The onboarding period (week 1) was excluded from analysis
- Mean daily adherence (%) was compared between age groups (4-11; 12-17; ≥18 years) using ANOVA

Fig 1: Prevalence of ICS/LABA use by age and year



P values refer to statistical tests of ICS/LABA prevalence in 2018 and 2019 vs. 2017

Fig 2: Relative change of ICS/LABA use by age from 2017 to 2019



P values refer to statistical tests of relative changes in ICS/LABA prevalence from 2017 to 2019

RESULTS

Table 1: ICS and ICS/LABA Prevalence by age group and calendar year of first sync

Year	Overall	2017	2018	2019
All ages, n (%)	3757 (62.0)	650 (50.5)	1972 (65.8)**	1135 (64.0)**
4-11 years, n (%)	164 (22.3)	31 (14.6)	80 (25.7)*	53 (25.0)*
12-17 years, n (%)	296 (47.5)	55 (33.5)	161 (54.4)**	80 (49.1)*
18+ years, n (%)	3297 (70.1)	564 (61.9)	1731 (72.4)**	1002 (71.6)**

*P < 0.01; **P < 0.001; P values refer to statistical tests of ICS/LABA prevalence in 2018 and 2019 vs 2017

Table 2: Difference in ICS/LABA prevalence from 2019 vs. 2017

	Overall	4-11 years	12-17 years	18+ years
Absolute difference (95% CI), %	13 (10, 17)**	10 (3, 18)*	16 (5, 26)*	10 (6, 14)**
Prevalence ratio (95% CI)	1.27 (1.19, 1.35)**	1.71 (1.16, 2.58)*	1.46 (1.13, 1.92)*	1.16 (1.09, 1.23)**

*P < 0.01; **P < 0.001; P values refer to statistical tests of absolute and relative changes in ICS/LABA prevalence from 2017 to 2019

Table 3: Controller medication adherence by age group

	ICS/LABA	ICS	P
All ages, % (Mean SD)	42 (30)	39 (30)	<0.001
4-11 years, % (Mean SD)	44 (28)	45 (29)	0.719
12-17 years, % (Mean SD)	36 (26)	36 (27)	0.966
18+ years, % (Mean SD)	43 (31)	38 (32)	<0.001

P values refer to statistical tests comparing adherence to ICS/LABA vs. ICS only

CONCLUSIONS

- ICS/LABA use increased in all age groups in the year following the removal of the boxed warning
- 4-11 year-olds had the greatest relative increase in ICS/LABA use from 2017 to 2019, followed by 12-17 year-olds
- Controller medication adherence was on average around 30%
- Controller medication adherence did not differ between ICS and ICS/LABA in the 4-11 and 12-17 age groups
- 18+ year patients had a statistically significant higher adherence to ICS/LABA vs. ICS

IMPLICATIONS

- ICS/LABA boxed warning removal was associated with an increase in ICS/LABA use, especially in the pediatric populations
- The addition of a LABA to ICS therapy had a statistically significant increase to controller adherence only 18 and older patients

REFERENCES

- Nelson HS, et al. The Salmeterol Multicenter Asthma Research Trial: a comparison of usual pharmacotherapy for asthma or usual pharmacotherapy plus salmeterol. Chest 2006;129:15-26.
- Stempel DA, et al. Serious asthma events with fluticasone plus salmeterol versus fluticasone alone. N Engl J Med 2016;374:1822-30.
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DISCLOSURES

Data/analysis were provided by Propeller Health



Propeller