LAIV in GINA:

VACCINATIONS

Influenza

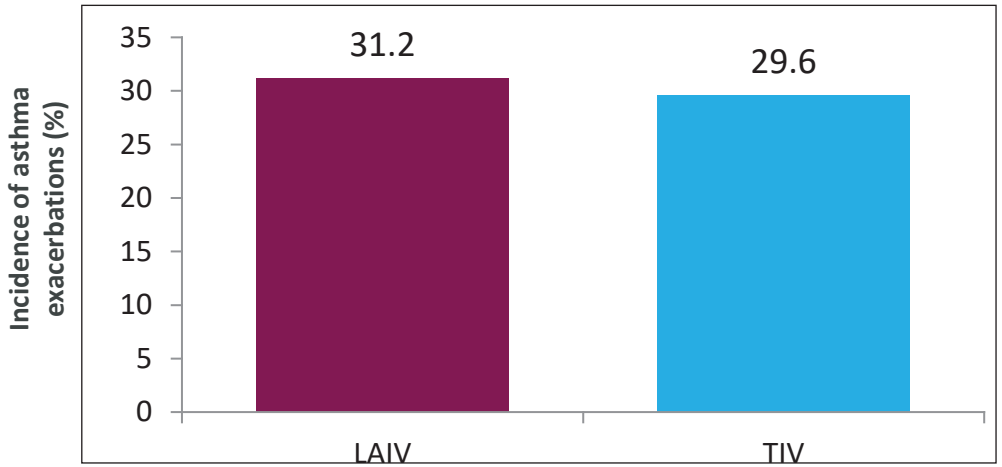
Influenza causes significant morbidity and mortality in the general population, and contributes to some acute asthma exacerbations. In 2020, the first year of the COVID-19 pandemic, many countries reported a reduction in influenza-related illness, likely due to the handwashing, masks and social/physical distancing introduced because of the pandemic.[454,455]

The risk of influenza infection itself can be reduced by annual vaccination. A 2013 systematic review of placebo-controlled randomized controlled trials of influenza vaccination showed no reduction in asthma exacerbations,[456] but no such studies had been performed since 2001. A 2017 systematic review and meta-analysis, which included observational studies with a wide range of study designs, suggested that influenza vaccination reduced the risk of asthma exacerbations, but bias could not be excluded for most of the studies.[457] There is no evidence for an increase in asthma exacerbations after influenza vaccination compared with placebo.[457] A systematic review of studies in individuals aged 2–49 years with mild–moderate asthma found no significant safety concerns or increased risk for asthma-related outcomes after influenza vaccination with live attenuated virus.[458]

Head-to-Head Clinical Trials

Efficacy and safety of LAIV in children and adolescents with asthma, and children with recurrent wheezing

- A randomized, open-label clinical trial compared the efficacy and safety of LAIV versus TIV among children and adolescents (**aged 6–17 years**) with **asthma** during the **2002/03** influenza season **(2200 Patients, mild-to-moderate)**
- No significant differences were observed between LAIV versus TIV in the incidence of asthma exacerbations post-vaccination (90% CI −1.6, 4.8; 95% CI −2.2, 5.4, respectively), or in in mean peak expiratory flow rate, asthma symptom scores, or night-time awakening scores

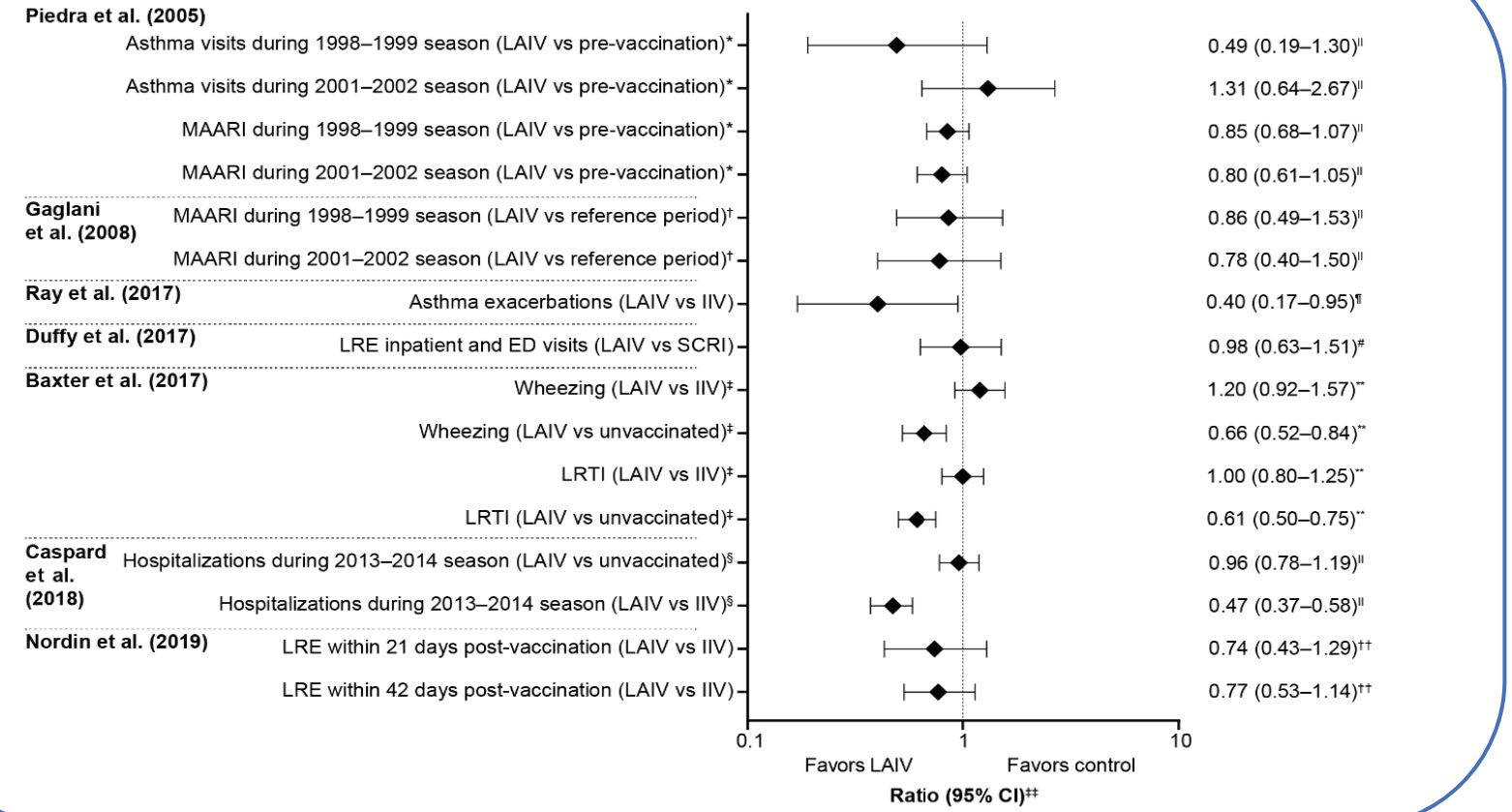


- The proportion of patients experiencing adverse events was similar between LAIV versus TIV (84.2% vs 78.9%)

- CI = confidence interval; LAIV = live attenuated influenza vaccine; RTI = respiratory tract infection; TIV = trivalent inactivated influenza vaccine.

- 1. **Fleming DM et al. *Pediatr Infect Dis J.* 2006;25(10)**:860–869;

Safety of LAIV in Children and Adults With Asthma: A Systematic Literature Review and Narrative Synthesis



- A systematic literature review included **14 studies** of children (**aged 2−17 years**) and adults (**aged 18−49 years**) with a history of wheeze or **mild-to-moderate** asthma
- **None** of the studies found an increased risk of **significant** clinical outcomes (including asthma exacerbations, wheezing, or healthcare utilization) post-vaccination with **LAIV versus IIV, Placebo or no vaccine (Seasons from 1997 to 2017), N = 1.2 Million**
- LAIV was well tolerated; no safety concerns were identified

- CI = confidence interval; ED = emergency department; IIV = inactivated influenza vaccine; LAIV = live attenuated influenza vaccine; LRE = lower respiratory events; LRTI = lower respiratory tract infection; MAARI = medically attended acute respiratory illness; SCRI = self-controlled risk interval. *During days 0–14 post-LAIV. †During days 0–14 in children aged 5–9 years; reference period is before day 0 and after 14 or 42 days post-LAIV. ‡During the 1–42-day risk interval post-vaccination. §Any hospitalization during the 42-day risk interval post-vaccination. ‖Risk ratio/relative risk. ¶Ratio of odds ratios. #Incidence rate ratio. **Adjusted hazard ratio. ††Adjusted ratio of rate ratios. ‡‡Ratio covers different types of statistical analysis.
- Bandell A et al. *Expert Rev Vaccines*. 2021;20(6):717–728.