

1401. Real-World Effectiveness of Inactivated and Live Attenuated Influenza Vaccines in Children During Three Recent Seasons: 2016–2019

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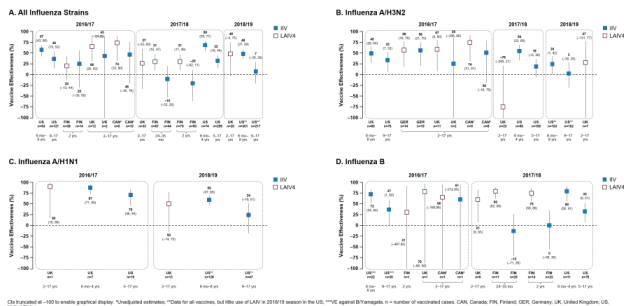
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Background. Given the substantial burden of influenza in the pediatric population, influenza vaccination with live attenuated influenza vaccines (LAIVs) and/or inactivated influenza vaccines (IIVs) is now recommended for children in an increasing number of countries. In recent seasons, the real-world effectiveness of influenza vaccines has varied substantially. In the 2013/14 and 2015/16 influenza seasons, LAIV demonstrated reduced vaccine effectiveness (VE) against A/H1N1 strains. LAIV and IIVs have also demonstrated variable effectiveness against A/H3N2 strains in recent seasons. This study evaluated LAIV and IIV effectiveness in children between the 2016/17 and 2018/19 seasons.

Methods. Quadrivalent LAIV (LAIV4) and IIV effectiveness studies conducted in the pediatric population from 2016/17 through 2018/19 were identified from published literature, congress presentations, public health websites and personal communication with national investigators. Studies were excluded if they were from countries where Ann Arbor-backbone LAIV was not available for at least one season during the study period, were from randomized, interventional studies, or contained duplicate data from other publications.

Results. For the three seasons, point estimates of all-strain VE for children ranged from 20% to 74% for LAIV4 and from -20% to 68% for IIV (Fig 1A). During the same period, VE against A/H3N2 for children ranged from -76% to 74% for LAIV4 and from 3% to 56% for IIV (Fig 1B). Point estimates of VE against A/H1N1 for children were 50% and 90% for LAIV4 and ranged from 24% to 87% for IIV (Fig 1C). For influenza B, VE for children ranged from 31% to 80% for LAIV4 and from -12% to 80% for IIV (Fig 1D). Statistical comparison of LAIV4 and IIV VE across each season was not feasible due to the multivariate nature of each study cohort.

Figure 1. 2016–2019 Effectiveness of Inactivated and Live Attenuated Influenza Vaccines by Influenza Strain in Children



Conclusion. During three recent seasons, LAIV4 and IIV showed similar moderate effectiveness against all influenza strains, A/H1N1 strains, and B strains. VE against A/H3N2 for LAIV4 and IIV was good in 2016/17, but decreased in the 2017/18 and 2018/19 seasons. VE estimates for LAIV4 and IIV overlapped for all strains and each subtype, demonstrating the general comparability of LAIV4 and IIV VE in the seasons between 2016 and 2019.

Disclosures. Allyn Bandell, PharmD, AstraZeneca (Employee, Shareholder) Raburn Mallory, MD, AstraZeneca (Employee, Shareholder) Christopher S. Ambrose, MD, MBA, AstraZeneca (Employee, Shareholder)

1402. Smart Technology and Education for Smart Protection against the Flu: Impact of a Multifaceted Quality Improvement (QI) Intervention on Influenza Vaccination Rates in Children

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Background. Low pediatric influenza vaccination rates are a public health challenge. It is imperative that innovative measures to promote influenza immunization are studied.

Methods. Aim: To study impact of a multifaceted QI intervention on influenza vaccination rates in children evaluated at outpatient clinics, urgent care (UC) and emergency departments (ED) at UnityPoint Health tertiary care centers (UPH) across Northwestern (NW) and Northcentral (NC) Iowa (IA). Patients aged 6 months-18 years evaluated at UPH in NW and NC IA (encompassing 5 outpatient clinics, 2 UC, 2 ED) were included. A multifaceted QI intervention was implemented on 9/1/2018 consisting of all of the following concomitantly: 1. Patient/family education: Posters about flu vaccination displayed at entrance, in waiting rooms and patient rooms throughout the clinics, UC, ED as well as patient/family handouts emphasizing

importance of influenza immunization. 2. Information Technology: "Health maintenance" reminder in outpatient electronic medical record (EMR- EPIC) that appears as soon as a patient's chart is accessed to remind nurses/providers that influenza vaccine is due. 3. Provider Education flyers at study sites about debunking flu myths. We compared pre-intervention period (P1, 09/01/2017– 05/31/2018) with intervention period (P2, 09/01/2018 – 05/31/2019) for influenza vaccination rates.

Results. A total of 10050 and 9889 patients were evaluated during P1 and P2 respectively. Influenza vaccination rate increased significantly from 56.1% (5642) in P1 to 73.3% (7252) in P2 ($p < 0.0001$). Patients were 1.43 times more likely to get vaccinated during P2 than P1 (95% CI= 1.32-1.46). Regionally during P2, influenza vaccination rate was higher than the national (62.6%; $p < 0.0001$) and Iowa state averages (65.8%; $p < 0.0001$) respectively. Proportion of children aged < 9 years receiving second dose of influenza vaccine increased from 43% to 69% ($p < 0.001$). Influenza vaccination rates among children aged 6-36 months increased significantly [40% (1078/2671) in P1 to 47.2% (1287/2723) in P2; $p < 0.01$].

Conclusion. With the combined educational and technologic intervention, pediatric influenza vaccination rates increased significantly across NW and NC IA, including proportion of patients receiving second dose of the vaccine.

Disclosures. Richard Malley, MD, Merck (Consultant)

1403. The Pediatric Emergency Room as a Promising Setting for Receiving the Flu Shot

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Background. Children are the most likely population to get influenza, and are two times more likely compared to adults aged 65 and greater (attack rate by age group: 0-17 yo 9.3%, 18-74 yo 8.8%, 65 + 3.9%). Additionally, children are at high risk of suffering complications from influenza. According to the CDC, the overall effectiveness of the 2018-2019 flu vaccine for both strains A and B was 48% in children aged 6m-8 years and 7% in children aged 9- 17 years. Currently our Pediatric Emergency Department (PED) does not routinely offer influenza vaccine to unvaccinated patients. Our project goals are to identify barriers to the administration of influenza vaccine in the PED and to offer and administer influenza vaccine to eligible patients.

Methods. After performing root cause analysis with key stakeholders, the first countermeasure implemented in a Plan-Do-Study Act (PDSA) cycle was the development of a screening form including eligibility criteria, history of influenza vaccine, consent for vaccine or reason for declining vaccine. The screening form was administered by resident physicians in our PED from October to November who then went on to order the vaccine for eligible patients who consented. Primary outcome measures included number of patients screened per month, percent of patients who desired the vaccine, and the percent of patients who received the vaccine in the ED during their visit. Secondary outcome measures included length of PED stay.

Results. Preliminary results show that 75% (42/56, CI: 62%-86%) of children screened in the PED between October and November were eligible for the influenza vaccine. Of those eligible, 59% (29/42, CI: 43%-74%) received the vaccine. The average length of stay was comparable between those that received influenza vaccine and those that did not (p value 0.4756).

Conclusion. A subset of eligible patients are now being offered and receiving the flu shot in our PED. Over half of eligible patients received the influenza vaccine, demonstrating that a resident administered screening form has been a successful countermeasure for increasing vaccine rates. Future PDSA cycles will focus on further increasing the number of patients screened and capturing patients who consented but did not receive vaccine.

Disclosures. All Authors: No reported disclosures

1404. Twenty-year impact of Pneumococcal Conjugate Vaccines (PCV) on the burden of invasive pneumococcal disease in US children less than 5 years of age

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Background. Clinical trials of PCV7 demonstrate significant reductions in vaccine-type (VT) invasive pneumococcal disease (IPD), clinically diagnosed pneumonia in children less than 5 years of age and VT acute otitis media in children < 2 years of age. Observational, population-based studies demonstrate a reduction in overall IPD in US children following the introduction of PCV7 and PCV13. The cumulative impact of PCV on IPD syndromes over the 20 years following introduction into the US national immunization program has not been detailed.

Methods. Published and unpublished data from the Active Bacterial Core (ABC) surveillance network were used to calculate annual incidence rates of IPD and the proportional distribution by syndrome in children < 5 years of age. Cases averted were calculated from published incidence for each IPD syndrome