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

Allyn Bandell, PharmD1; Raburn Mallory, MD2; Christopher S. Ambrose, MD, MBA1; 1BioPharmaceuticals Medical, AstraZeneca, Gaithersburg, Maryland

Session: P-63. Pediatric Vaccines

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 vaccine 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 or were from at least one season during the study period, were from randomized, intervention 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 IA). During the same period, VE against A/H1N1 for children ranged from 76% to 74% for LAIV4 and from 3% to 56% for IIV (Fig IB). Point estimates of VE against A/H1N1 for children were 50% and 90% for LAIV4 and ranged from 24% to 87% for IIV (Fig IC). For influenza B, VE for children ranged from 31% to 80% for LAIV4 and from 12% to 80% for IIV (Fig ID). Statistical comparison of LAIV4 and IIV VE across each season was not feasible due to the small size of each study cohort.

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 LAIV 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

Ashleha Kaushik, MD1; Kristen Beal, MSN2; Sandeep Gupta, MD3; Richard Malley, MD4; 1UnityPoint Health and University of Iowa Carver College of Medicine, Sioux City, Iowa; 2UnityPoint Health, Sioux City, Iowa; 3Pulmonary and Critical Care Medicine, Unity Point Health, Sioux City, Iowa; 4Division of Infectious Diseases, Boston Children’s Hospital, Boston, Massachusetts

Session: P-63. Pediatric Vaccines

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 Northeastern (NC) Iowa (IA). Patients aged 6 months-18 years evaluated at UPH in NW and NC IA (comprising 55 outpatient clinics, 2 UC, 2 ED) were included. A multifaceted QI intervention was implemented on 9/1/2018 consisting of all of the following concurrently: 1. Patient/family education; 2. Increased awareness 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% (< 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, pedi- atric 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

Christine M. Miller, D.O.1; Erin McMahon, D.O.2; Marissa Parrillo, D.O.3; Cadence Peck, MPH4; Carol Malley, MD; Ruth Farkouh, MD, MPH1; Christina Hermos, MD5; Bonnie Mathews, MD1; UMass Medical School, Worcester, Massachusetts; 1Harvard Chan School of Public Health, Boston, Massachusetts

Session: P-63. Pediatric Vaccines

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 6-35 months vs 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, conscience for vaccine or reason for declining vaccine. This 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. Offering the vaccine to 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

Rotem Lidopit, MD, MSC1; Ruth Chapman, MSc, PhD2; Kelly Sutton, PhD3; Desmond Dillon-Murphy, MSc, PhD1; Shreya Patel, PhD3; Erica Chilson, PharmD1; Vincenza Snow, MD4; Raymond Farkash, PhD5; Matthew Wasserman, MSc; Stephen I. Pelton, MD6; Boston Medical Center, Boston, Massachusetts; Evidera, Inc, London, England, United Kingdom; Evidera, London, England, United Kingdom; Evidera, London, England, United Kingdom; Evidera PPD, London, England, United Kingdom; Pfizer, 500 Arcola Road, Pennsylvania; Pfizer Vaccines, Collegeville, PA; Pfizer, Inc., Collegeville, Pennsylvania

Session: P-63. Pediatric Vaccines

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 and 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 to project the proportional distribution of disease in children < 5 years of age.

Cases averted were calculated from published incidence for each IPD syndrome