2733. Association Between Influenza Vaccination Coverage and Ambulatory Antibiotic Prescription Rates in Children in South Carolina

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Background: Prior studies demonstrated an increase in ambulatory antibiotic prescription rates during the peak of Influenza virus activity, which often occurs during the first 4 months of the year in Southeastern United States. However, the impact of Influenza vaccination coverage on antibiotic prescription rates remains undefined. The purpose of this retrospective cohort study is to examine the association between Influenza vaccination coverage and ambulatory antibiotic prescription rates in children in South Carolina from 2012 to 2017.

Methods: Medicaid and State Employee Health Plan pharmacy claims for outpatient oral antibiotics were utilized for estimation of community antibiotic prescription rates in South Carolina population 6 months to 17 years of age from January 1, 2012 to December 31, 2017, which represents approximately 60% of the South Carolina population in this age group. Linear regression was used to examine the association between antibiotic prescription rates in January to April of each year and Influenza vaccine coverage in children 6 months to 17 years old after adjustments for Influenza vaccine effectiveness in that season as obtained from Centers for Disease Control and Prevention (CDC).

Results: During the 6-year study period, the mean antimicrobial prescription rate in children in South Carolina declined from 103 to 79 per 1000 person-months for the months January through April indicating a 26% decline ($P < 0.0001$). Influenza vaccine coverage also increased from 50.6% during the first Influenza season of the study and peaked at 60.7% in 2014–2015 Influenza season (Figure 1). After adjusting for the vaccine effectiveness, the decline in antibiotic prescription rate was significantly associated with an increase in vaccine coverage in children (P-value < 0.01). Antibiotic prescription rates declined by 3 per 1,000 person-months for each 1% increase in Influenza vaccine coverage in children.

Conclusion: There is a temporal association between the increase in Influenza vaccination coverage and the decline in ambulatory antibiotic prescription rates in children in South Carolina. Achieving the CDC's set target Influenza vaccination coverage of 70% of the population may be associated with greater decline in ambulatory antibiotic prescription rates in children in the future.

Children - Ages 6 months - 17 years
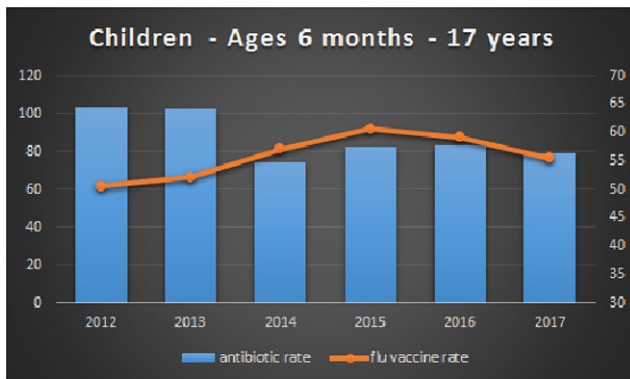
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2734. Lack of Influence of Early Exposure to Influenza A(H3N2) Viruses on Vaccine Effectiveness Against A(H3N2)-Associated Illness in US Children <18 Years, 2016–2018

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Background: During 2017–2018, influenza vaccine effectiveness (VE) against A(H3N2) illness was highest among children <5 years compared with all other ages. A child's first influenza infection can shape later immune responses. The emergence of antigenically distinct influenza A(H3N2) viruses in 2014–2015 provided an opportunity to explore potential effects of first virus infection on vaccine effects. We compared VE against influenza A(H3N2) during 2016–2017 and 2017–2018 among children born after and before 2014.

Methods: Outpatient children aged 6 months–17 years with acute respiratory illness with cough were enrolled in the United States Influenza VE Network and tested for influenza infection by RT–PCR. Vaccination status was derived through medical records and immunization registries. Children with partial or unknown vaccination status were excluded. We used a test-negative design to estimate VE and 95% confidence intervals (CI) from logistic regression, adjusting for potential confounders. Cohorts were defined by birth after or before June 2014; we assumed exposure to the new A(H3N2) virus among children born after June 2014.

Results: During 2016–2017, among 2,545 children, 445 (18%) tested positive for A(H3N2) and 1,809 (71%) tested negative. VE against A(H3N2) did not differ among children born after June 2014 and among those born before June 2014 [49% (95% CI: −12%, 77%) vs. 43% (27%, 55%); interaction $P < 0.75$]. During 2017–2018, among 2,936 patients, 631 (22%) tested positive for A(H3N2), and 1,852 (63%) tested negative. VE against A(H3N2) was 59% (36%, 74%) among children born after June 2014 vs. 20% (−1%, 37%) among those born before June 2014 (interaction $P < 0.01$).

Conclusion: We did not consistently see differences in VE against A(H3N2) between children potentially exposed to different A(H3N2) viruses. However, error in exposure assignment to A(H3N2) viruses and few seasons since the emergence of the new A(H3N2) viruses limit our interpretation. Future study will include additional A(H3N2) seasons as initial exposures to current circulating viruses increase among young children. Alternative explanations for age-related differences will also be explored, such as prior seasonal vaccination.

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2735. Improving Uptake of Maternal Immunizations in the Obstetric Care Setting Through an Adaptation of the CDC's Immunization Quality Improvement Program (AFIX)

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Background: Influenza and Tdap vaccines are recommended for pregnant women in every pregnancy. However, vaccine uptake remains suboptimal. Obstetrics practices need quality improvement models to improve their vaccination delivery programs. CDC's AFIX program has been shown to be effective at increasing vaccination uptake in primary care settings. Our objective was to adapt and evaluate CDC's AFIX program in the obstetrical setting (AFIIX-OB).

Methods: An average of 40 charts per practice were randomly reviewed pre- and post-intervention. Baseline immunization rates and vaccine administration practices were collected in the Assessment phase. Feedback was provided at meetings conducted by study staff where baseline immunization rates were shared and practices selected quality improvement measures to implement. Practices were required to implement either standing orders for influenza and Tdap vaccines or improve their vaccine documentation. As an Incentive, providers could receive continuing medical education and maintenance of certification part IV credit. After implementing the practice specific measures for 6 months, practice-wide vaccine rates were assessed and a post-intervention meeting was held with providers and staff at each practice to eXchange the results.

Results: AFIX-OB was implemented in 11 obstetric practices: 5 in Georgia and 6 in Colorado. Practices were primarily urban, their patients largely Caucasian and African American and most patients carried private insurance. Baseline practice-level immunization rates ranged from 10% to 82.9% for influenza vaccine and 12.5% to 97.6% for Tdap. 4 practices implemened standing orders, 6 improved their vaccine documentation and 1 did both. After the 6 month follow-up period, all 11 practices saw improvements in their overall Tdap vaccine acceptance (3 with statistically significant increases, $P < 0.05$) with final rates ranging from 25% to 100%. 9 practices either maintained or improved their influenza vaccination rates (4 with statistically significant increases, $P < 0.05$) with final rates ranging from 32.5% to 85.0%.

Conclusion: The AFIX-OB model provides a promising intervention to improve maternal immunization uptake that can be administered widely but still be tailored to the needs of individual clinics.

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