



Centers for Disease Control and Prevention (CDC) Immunization Safety Office (ISO) Update

Advisory Commission on Childhood Vaccines (ACCV) meeting
September 4, 2020

Jonathan Duffy, MD, MPH
Immunization Safety Office
Centers for Disease Control and Prevention

Presentation outline

- Recent publications by Immunization Safety Office staff
- COVID-19 vaccine activities

Recent Publications

Order of Live and Inactivated Vaccines and Risk of Non-vaccine-targeted Infection in U.S. Children 11-23 Months of Age

- Newcomer SR, et al. Order of Live and Inactivated Vaccines and Risk of Non-vaccine-targeted Infection in U.S. Children 11-23 Months of Age. *Pediatr Infect Dis J.* 2020 Mar;39(3):247-253.
- Summary: Children in the United States receive up to 28 vaccine doses against 14 diseases before their 2nd birthday and 3 are live vaccines. Some observational studies suggest that receiving live vaccines may be associated with decreased non-vaccine targeted infection (NVTI) risk. Researchers conducted a retrospective study within the Vaccine Safety Datalink to estimate the risk of NVTIs based on most recent vaccine type received in children 11-23 months of age. Electronic health records and immunization data were reviewed from children born between 2003-2013. Among 428,608 children, 4.9% had more than 1 immunization visit with live vaccines only and 10.3% had a NVTI. Researchers observed modest associations between live vaccine receipt and a decreased risk of NVTIs, which may have been influenced by multiple factors, including healthcare-seeking behavior. In total, the results support the current sequence of live and inactivated vaccines in the U.S. vaccine schedule with respect to NVTI.

Available at: <https://pubmed.ncbi.nlm.nih.gov/32032310/>

Age inappropriate influenza vaccination in infants less than 6 months old, 2010-2018

- Suragh TA, et al. Age inappropriate influenza vaccination in infants less than 6 months old, 2010-2018. *Vaccine*. 2020 May 6;38(21):3747-3751.
- Summary: Annual influenza (flu) vaccination is recommended for everyone 6 months or older, and vaccination in infants less than 6 months old is a vaccine error. There are few safety studies in this population. Researchers searched the Vaccine Adverse Event Reporting System (VAERS) for reports of adverse events (AEs) following flu vaccination in infants less than 6 months old from 2010-2018. A total of 114 reports were found; 21 reported a specific AE. Fever, irritability, crying and diarrhea were the most common symptoms. Researchers identified several risk factors: 1) individuals getting vaccinated together resulting in patient mix-ups, 2) healthcare provider not verifying the patient's information, and 3) provider confusion due to similarities in vaccines' packaging and names of vaccines that sound alike. This study adds valuable information about the general absence of serious AEs in infants vaccinated with flu vaccine; yet, providers should be vigilant to avoid these preventable errors.

Available at: <https://pubmed.ncbi.nlm.nih.gov/32273185/>

Risk of subdeltoid bursitis following influenza vaccination: A population-based cohort study

- Hesse EM, et al. Risk of subdeltoid bursitis following influenza vaccination: A population-based cohort study. *Ann Intern Med.* 2020 Jun 23.
- Summary: Subdeltoid bursitis, characterized by pain or loss of motion in the shoulder, has been reported as an adverse event following intramuscular vaccination in the upper arm, and most case reports involved the influenza vaccine. With over 160 million U.S. doses distributed annually and recommended to everyone over 6 months of age, researchers wanted to estimate the risk of subdeltoid bursitis following influenza vaccination. In this cohort study using data from 7 Vaccine Safety Datalink sites, researchers included people who received an inactivated influenza vaccine during the 2016–2017 flu season, totaling 2.9 million people. The analysis to calculate risk of bursitis compared cases that appeared 3 days following vaccination to a control period 30-60 days following vaccination. There were an estimated 7.78 (95% CI 2.19-13.38) additional cases of bursitis per one million people vaccinated. While an increased risk of bursitis following vaccination was present, the overall risk was small.

Available at: <https://pubmed.ncbi.nlm.nih.gov/32568572/>

Determining Which of Several Simultaneously Administered Vaccines Increase Risk of an Adverse Event

- Wang SV, et al. Determining Which of Several Simultaneously Administered Vaccines Increase Risk of an Adverse Event. Drug Saf. 2020 Jul 1.
- Summary: The CDC childhood immunization schedule recommends all children get vaccinated. Children may get multiple vaccinations on the same day. If a child has an adverse event after getting multiple vaccinations, it would be difficult to determine which vaccine, if any, caused the event. Using observed data from two Vaccine Safety Datalink sites, researchers developed a systematic process to determine which of the simultaneously administered vaccine(s) are most likely to have caused an observed increase in risk of an adverse event. From the five scenarios simulated, the process determined which of the vaccines contributed to the simulated excess risk. This process could be used again in the future to provide valuable information on the potential risk of adverse events following individual and simultaneous vaccinations.

Available at: <https://pubmed.ncbi.nlm.nih.gov/32613596/>

Monitoring the safety of high-dose trivalent inactivated influenza vaccine in the Vaccine Adverse Event Reporting System (VAERS), 2011-2019

- Moro P, et al. Monitoring the safety of high-dose trivalent inactivated influenza vaccine in the Vaccine Adverse Event Reporting System (VAERS), 2011-2019. *Vaccine*. 2020 Aug 18;38(37):5923-5926.
- Summary: Older adults are at higher risk of developing serious complications from flu. In Dec. 2009, the high-dose trivalent influenza vaccine (IIV3-HD) was licensed for adults 65 years and older. Using the Vaccine Adverse Event Reporting System, researchers analyzed the 12,320 reports submitted after IIV3-HD vaccination from 2011-2019. Of the total, there were 61 reports of GBS and 13 of anaphylaxis. Nearly 6% of all reports were classified as serious (723). The most commonly reported serious events were fever (30.2%), weakness (28.9%), and shortness of breath (24.9%). There were 55 reports of death following IIV3-HD, and cause of deaths reported were typical for those in this age group with no evidence to suggest the vaccine caused the deaths. There were reports of 13 pregnant women and 59 children who inadvertently received IIV3-HD. Overall, this review of IIV3-HD did not reveal any new safety concerns among adults 65 years and older.

Available at: <https://pubmed.ncbi.nlm.nih.gov/32709434/>

COVID-19

Background

- Coronavirus disease 2019 (COVID-19) is caused by the virus SARS-CoV-2
- On March 11, 2020, the World Health Organization declared the COVID-19 outbreak a pandemic
- On March 13, 2020, the United States declared a national emergency concerning COVID-19
- As of August 23, 2020 there were more than 5.6 million total cases of COVID-19 reported in the United States
- The U.S. government's Operation Warp Speed's goal is to produce and deliver 300 million doses of safe and effective COVID-19 vaccines with the initial doses available by January 2021

CDC's Advisory Committee on Immunization Practices (ACIP)

- The ACIP develops recommendations on how to use vaccines to control disease in the United States
- The ACIP normally holds three meetings each year (Feb, June, Oct)
- ACIP is responding to the ongoing pandemic and accelerated vaccine development through scheduling of monthly emergency ACIP meetings
- The ACIP established a COVID-19 vaccines work group in April 2020 to help inform evidence-based approaches to COVID-19 vaccination policy

ACIP COVID-19 vaccines work group

- Policy topic under consideration: Use of COVID-19 vaccines in the U.S. population.
- Work group activities:
 - Review safety and immunogenicity data for COVID-19 vaccines
 - Review the epidemiology of COVID-19 disease and identify potential target populations for vaccination
 - Discuss potential vaccine prioritization plans in the event of insufficient early COVID-19 vaccine supply
 - Identify areas where additional data are needed to inform COVID-19 vaccine recommendations
 - Develop COVID-19 vaccine policy options that ACIP may consider for recommendation

ACIP COVID-19 vaccines work group

- The work group has 41 members, including ACIP voting members, liaisons, ex-officios, and expert consultants
- A vaccine safety technical subgroup advises the main work group on the safety of COVID-19 vaccines, both during clinical development and post-licensure

COVID-19 vaccines

- Over 200 COVID-19 vaccine candidates are under development worldwide
- A variety of different vaccine technologies (also known as platforms) are being used to develop vaccine candidates
- Examples:
 - Recombinant protein with adjuvant
 - RNA
 - Viral vector, e.g., Adenovirus vector

COVID-19 candidate vaccines that have received funding from Operation Warp Speed to date

Manufacturer	Vaccine platform
Janssen Pharmaceutical Companies of Johnson & Johnson	Adenovirus vector
Moderna in collaboration with NIAID	RNA
AstraZeneca in collaboration with University of Oxford	Adenovirus vector
Novavax	Recombinant protein with adjuvant
Pfizer and BioNTech	RNA
Sanofi and GlaxoSmithKline	Recombinant protein with adjuvant

<https://www.hhs.gov/coronavirus/explaining-operation-warp-speed/index.html>

COVID-19 vaccine post-marketing safety surveillance

- The CDC's Immunization Safety Office (ISO) is planning for safety surveillance of COVID-19 vaccines following approval by FDA
- ISO systems
 - Vaccine Adverse Event Reporting System (VAERS)
 - Vaccine Safety Datalink (VSD)
 - Clinical Immunization Safety Assessment (CISA) project
- Collaboration with other federal agencies to use other data sources

Thank You

For more information, contact CDC
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

