



# ARIZONA DEPARTMENT OF HEALTH SERVICES

## Arizona Vaccine News

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*Health and Wellness for all Arizonans*

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### **Viral Lower Respiratory Tract Disease Decreased After Pneumococcal Vaccines in Adults**

- A total of 13,856 patients with virus-associated lower respiratory tract infection (LRTI) and 227,887 matched controls were studied in relation to their receipt of 13-valent pneumococcal conjugate vaccine (PCV13).
- PCV13 had a vaccine efficacy (VE) of:
  - 24.9% against virus-associated pneumonia.
  - 21.5% against other non-pneumonia virus-associated LRTIs.
  - 26.8% against all virus-associated LRTI episodes diagnosed in inpatient settings.
  - 18.6% against all virus-associated LRTI episodes diagnosed in outpatient settings.
- Statistically-significant protection with PCV13 were found against LRTI episodes associated with influenza A and B viruses, endemic human coronaviruses, parainfluenza viruses, human metapneumovirus, and enteroviruses but not with either respiratory syncytial virus or adenoviruses.

See the *Journal of Infectious Diseases*, [February 15, 2023](#).

### **US Infant Pertussis Incidence Trends Before and After Maternal Tdap**

- In 2011, CDC recommended Tetanus-Diphtheria-Pertussis vaccine (Tdap) for *pregnant women* to decrease pertussis in infants too young to be fully vaccinated.
- National pertussis incidence was tracked between 2000-2019.
  - During the pre-maternal Tdap vaccination period, the mean annual pertussis incidence among infants younger than 2 months was 165.3 per 100,000 infants.
  - After the new recommendations, infant pertussis decreased to 80.9 per 100,000 in 2017-2019 as maternal Tdap vaccinations rose to 54.9% in 2019.
- A higher Tdap coverage in pregnant women would likely decrease infant pertussis incidence even further.

See *JAMA Pediatrics*, [February 6, 2023](#).

### **Influenza Vaccine Decreased Influenza Infection by About One-Third in Recent Season**

- During the 2021-2022 influenza season:
  - Vaccine effectiveness against all influenza was 57%.
  - Vaccine effectiveness against Influenza A(H3N2) was 36%.

See *Clinical Infectious Diseases*, [April 15, 2023](#).

### **Early Human Papillomavirus Vaccine Increases Chances of Series Completion Before 15 Years**

- Based on data from the *National Immunization Survey-Teen, 2017-2020*, those receiving HPV vaccine starting at ages 9- to 10-years-old instead of 11- to 12-years-old were:
  - More likely to complete the HPV series by ages 13 years (74.0% vs 31.1) and by 15 years (91.7% vs 82.7%).
  - Less likely to complete the HPV series within 3 years (82.3% vs 84.9%).
- Starting routine HPV vaccination at ages 9-10 years may improve vaccination coverage rates in early and mid-adolescence.

See *Pediatrics*, [February 27, 2023](#).



### **Vaccine in Development to Prevent Valley Fever in Dogs and Humans**

- Since infections with *Coccidioides* species result in life-long protection, vaccine candidates are being studied.
- At the University of Arizona, complete deletion of a gene from *C. posadasii* has resulted in a 1<sup>st</sup>-generation replication-incompetent mutant, called *delta-cps1*.
- Vaccination with *delta-cps1* has been very protective in animal studies against infection with both *C. immitis* and *C. posadasii*.
- A *delta-cps1* vaccine is in development to prevent coccidioidomycosis (Valley Fever) in dogs.
- In addition, efforts are now underway to develop a *delta-cps1* vaccine for humans.

For further details, see *Journal of Fungi*, [August 10, 2022](#).

### **Real World Effectiveness of Monkeypox Vaccination**

- Whether by subcutaneous or intradermal administration, the efficacy of monkeypox vaccination at 3 months after vaccination was:
  - 75% for one dose.
  - 86% for two doses.

See *Morbidity and Mortality Weekly Report* (MMWR), [May 19, 2023](#).

### **Confidence in Routine Childhood Vaccines in the U.S. Is Higher than in COVID-19 Vaccines**

- 88% of adults say that the benefits of measles-mumps-rubella (MMR) vaccines outweigh the risks.
- Roughly half of mothers with a child under 18 years rate the risk of side effects from MMR vaccines as medium or high.
- About half of parents with a young child 0-4 years old say that they worry that not all of the childhood vaccines are necessary.
- Only 45% of U.S. adults say that the health benefits of COVID-19 vaccines are high.

For more data, see *Pew Research Center Report*, [May 16, 2023](#).

## **COVID-19 AND COVID-19 VACCINES**

### **COVID-19 Vaccine Effectiveness in 5- to 11-year-olds**

- Vaccine efficacy (VE) in 5- to 11-year-olds after the second dose of a COVID-19 vaccine primary series was 66%.
- The SARS-CoV-2 antibodies where the primary dosing interval was < 8 weeks waned more quickly than antibodies where the two doses were spaced by  $\geq$  8 weeks.
- VE against severe outcomes was 94% in the period 7-29 days after 2 doses, but declined to 57% after  $\geq$  120 days.

See *Pediatrics*, [March 3, 2023](#).



### Higher Death Rates in Elderly if Unimmunized Versus Bivalent COVID-19 Vaccine Recipients

- Comparing death rates from COVID-19 between elderly unvaccinated people and people who received a bivalent COVID-19 vaccine during one of three SARS-CoV-2 variant periods:
  - BA.5 predominance (early fall 2022): 16.3% higher deaths in unimmunized.
  - BQ.1/BQ.1.1 predominance (late fall 2022): 11.4% higher deaths in unimmunized
  - XJB.1.5 predominance (early 2023): 8.4% higher deaths in unimmunized.

See MMWR, [June 16, 2023](#).

### Fewer COVID-19 School Absenteeism and Pediatric Hospitalizations with Bivalent Boosters

- A simulation model predicted that COVID-19 bivalent booster campaigns achieving an uptake similar to seasonal influenza vaccination among children 5-17 years old could have prevented:
  - 5,448,694 days of school absenteeism.
  - 10,019 pediatric hospitalizations (2,646 needing ICU care).
- A similar COVID-19 bivalent campaign that reached only 50% of the age-specific uptake of influenza vaccination could have averted:
  - 2,875,926 days of school absenteeism among children aged 5 to 17 years.
  - 5,791 hospitalizations among children 0 to 17 years (1,397 needing ICU care).

See *JAMA Network Open*, [May 19, 2023](#).

### Safety of Pfizer COVID-19 Vaccine by Commercial Database Analysis

- Using commercial databases for over 3 million children ages 5- to 17-year-old to study 20 prespecified outcomes after COVID-19 vaccines, the only statistically significant signal was for myocarditis or pericarditis.
  - For the subset of younger children (ages 5-11 years), there was no signal for myocarditis or pericarditis.

See *JAMA Pediatrics*, [May 22, 2023](#).

### More Young Children Died from COVID-19 than from Other Vaccine-Preventable Diseases

- Dr. Paul Offit explains that even though children are at less risk from COVID-19 than adults, children are still at risk of serious and rarely fatal infections from COVID-19.
  - Between October 2020 and October 2021, 66 children aged 5-11 years died of SARS-CoV-2 infection.
  - The estimated incidence of myocarditis after mRNA COVID vaccines in 5- to 11-year-olds is about 1 in 500,000 (usually a mild illness).
- In comparison, prior to the availability of a vaccine, estimated yearly deaths in the U.S. were: 3 children died of hepatitis A virus, 8 children died of meningococcus, 16 children died of varicella, 17 people of all ages died of rubella, and 20 children died of rotavirus.

For more details, see *JAMA Pediatrics*, [January 23, 2023](#).



## VACCINE HISTORY

### **The Three Waves in Modern Anti-Vaccine Efforts**

- The modern anti-vaccine movement has come in three distinct waves related to:
  - 1) Pertussis vaccine (DTP): Claims of seizures and developmental delay after DTP.
  - 2) Measles vaccine (MMR): Accusations of autism after MMR.
  - 3) COVID-19 vaccines: The idea of individualism superseding the responsibility for community health.
- Suggestions of long-term steps to counter anti-vaccine views: Better science education of young people and promotion of science literacy to the general public.

See *Inquiry*, [February 17, 2023](#).

## RESOURCES

### **Updated Schedules for COVID-19 Vaccinations**

- Tables of COVID-19 vaccination schedules based on *age, health status, and products*.
- Infographics for bivalent COVID-19 vaccine administration
  - Non-Immunocompromised
  - Moderately or Severely Immunocompromised:

See tables and infographics at *Interim [Clinical Considerations](#) for Use of COVID-19 Vaccines in the United States*.

### **CDC Resources to Build COVID-19 Vaccine and Other Vaccine Confidence**

- [Strategies](#) to Reinforce Vaccine Confidence.
- 12 COVID-19 Vaccination Strategies for Your [Community](#).

### **Report Adverse Events Occurring After Vaccines to Vaccine Adverse Event Reporting System (VAERS)**

- Healthcare providers are **required by law** to report to VAERS:
  - Any adverse event listed in the [VAERS Table of Reportable Events Following Vaccination](#) that occurs within the specified time period after vaccinations.
  - An adverse event listed by the vaccine manufacturer as a contraindication to further doses of the vaccine that occurs after a vaccine.
  - The reporting requirement also includes events occurring after COVID-19 vaccines and Mpox vaccines as explained on the VAERS [website](#).
- Healthcare providers are strongly **encouraged** to report to VAERS:
  - Vaccine administration errors.
  - An adverse event that occurs after the administration of a vaccine licensed in the U.S., whether it is or is not clear that a vaccine caused the adverse event.



### **Promoting Vaccine Confidence by Communicating with Families**

- The American Academy of Pediatrics has a website to assist providers in promoting vaccine confidence. Items include:
  - Talking Points to answer parents' [questions](#).
  - Toolkits for [influenza](#), [HPV](#), and [COVID-19](#) vaccines.
  - Free [images](#) of children and vaccinations.

### **Public Health Image Library (PHIL) as a Resource for Illustrations**

- PHIL contains public health [images](#) from the CDC that are not copyrighted, so they may be used in presentations with appropriate acknowledgement.
- The imagery showcased in the PHIL is historic in nature, so it should not to be used as a source of the most current public health information.

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