



ARIZONA DEPARTMENT  
OF HEALTH SERVICES

**Arizona Vaccine News**

Karen Lewis, M.D.

Medical Director

Arizona Immunization Program Office

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Douglas A. Ducey | Governor    Cara M. Christ | MD, MS, Director

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150 North 18th Avenue, Suite 120, Phoenix, AZ 85007-3247   P | 602-364-3630   F | 602-364-3285   W | azdhs.gov

*Health and Wellness for all Arizonans*

Newsletter Topics

**VACCINE AND VACCINE-PREVENTABLE DISEASE NEWS**

- **Arizona Is One of the Vaccine Exemption Hot Spots in the United States**
- **Measles and Diphtheria Outbreaks in Venezuela**
- **Outbreaks of Circulating Vaccine-Derived Poliovirus Type 2 in the Democratic Republic of the Congo**

**INFLUENZA AND INFLUENZA VACCINES**

- **Live-Attenuated Influenza Vaccine Is an Option for the 2018-2019 Season**
- **Influenza Vaccine Receipt in Adults Is Increasing but Varies by Employment**
- **Provider Recommendation Is Important for Pediatric Influenza Vaccine Receipt**
- **Analysis of the 2017-2018 Influenza Season**

**LITERATURE ON VACCINES AND VACCINE-PREVENTABLE DISEASES**

- **Setbacks in the Fight to Eradicate Polio**
- **No Link between HPV Vaccine and Autoimmune Diseases**
- **Effective Responses to HPV Vaccine—Hesitant Parents**
- **Study Shows HPV Vaccination Decreases HPV Infections Due to HPV Vaccine Types**
- **Significant Progress in HPV Vaccine Coverage among U.S. Males**
- **Rotavirus Outbreaks in a Post-Vaccine Era**
- **Vaccines Prevent Diseases and Save Money**
- **Measles Outbreaks Are Very Expensive**
- **The Importance of Provider Recommendation of Tdap to Pregnant Women**
- **Infants Are Less Likely to Get Pertussis if Their Mother Received Tdap**



## **RESOURCES**

- **ACOG Supports Vaccination of Pregnant Women**
- **CDC Gives Updated Guidance for Pertussis, Tetanus, and Diphtheria Vaccines**
- **CDC Webcasts and Self Study Immunization Courses**
- **Updates/Errata to the CDC's "General Best Practice Guidelines for Immunization"**
- **Algorithm for Hepatitis B Vaccine Post-Vaccination Testing for Healthcare Personnel**
- **Arizona Pharmacies Continue to Assist in Vaccination Efforts**
- **Email Notification Service of Updates to ACIP Recommendations**
- **Library of Articles Documenting Key Vaccine Safety Issues**
- **Promoting Human Papillomavirus Vaccine Coverage in Arizona**

## **VACCINE AND VACCINE-PREVENTABLE DISEASE NEWS**

### **Arizona Is One of the Vaccine Exemption Hot Spots in the United States**

- Twelve of the 18 states in the U.S. that allow for "philosophical belief" vaccine nonmedical exemptions (NMEs) have shown an increase in NMEs over the last decade.
  - In Arizona, NMEs are known as personal belief exemptions.
- Arizona is tied with Utah for 4th place in increases of kindergarten NME rates.
- Maricopa County is in 1<sup>st</sup> place among leading metropolitan areas for kindergarten NMEs.
- There is an inverse relation between increasing NME rates and decreasing kindergarten MMR vaccine uptake in the 2016-2017 school year.
- Low vaccine coverage rates can lead to disease outbreaks of measles and other vaccine-preventable diseases.

For more details, see *PLOS Medicine*, [June 12, 2018](#).

### **Measles and Diphtheria Outbreaks in Venezuela**

- There has been a breakdown of the medical infrastructure in Venezuela with shortages of medical supplies including vaccine shortages.
- During the past year, there have been over 1,000 confirmed cases of measles, including more than 50 deaths.
- In the past two years, there have been over 1,600 suspected cases of diphtheria, including over 140 deaths.
- The Centers for Disease Control and Prevention (CDC) recommends that United States (U.S.) residents avoid all nonessential travel to Venezuela.
- People who must travel to Venezuela should be up-to-date on all vaccines including two doses of measles vaccine and a complete series of tetanus-diphtheria containing vaccines.

For more details, see the CDC [Travel Notice](#).



### **Outbreaks of Circulating Vaccine-Derived Poliovirus Type 2 in the Democratic Republic of the Congo**

- Wild polio virus type 2 (WPV2) has been [eradicated](#) with the last WPV2 isolate detected in 1999.
  - Wild polio virus type 3 has not been detected anywhere in the world since 2012.
  - [Currently](#), wild polio virus type 1 is being found in Afghanistan, Pakistan, and Nigeria.
- In communities where polio vaccine coverage levels are low, live-attenuated oral polio vaccine viruses that are shed in the stool can spread from person-to-person for long periods of time.
  - At times, these circulating vaccine-derived polioviruses (cVDPV) can undergo genetic changes that increase their ability to cause paralysis.
- Since there is no longer the risk of infection from WPV2, in order to stop the risk of paralysis from circulating vaccine-derived polio virus type 2 (cVDPV2), as of [April 1, 2016](#) all countries using oral polio vaccines changed from trivalent oral polio vaccine to bivalent oral polio (bOPV).
  - The bOPV contains only vaccine polio types 1 and 3.
  - Where resources allow, trivalent inactivated polio vaccine (IPV) is also used along with bOPV to continue protection against all three serotypes, but especially against cVDPV2.
- There are currently three different cVDPV2 outbreaks in the Democratic Republic of the Congo resulting in cases of paralysis. There is a risk that these cVDPV2 outbreaks can spread to other areas in Africa and internationally.
- The World Health Organization (WHO) and partners are countering cVDPV2 outbreaks by mass vaccination efforts using monovalent oral polio vaccine type 2 (mOPV2).

For more information, see WHO's Disease Outbreak News, [July 10, 2018](#).

### **INFLUENZA AND INFLUENZA VACCINES**

#### **Live-Attenuated Influenza Vaccine Is an Option for the 2018-2019 Season**

- During the 2016–17 and 2017–18 influenza seasons, CDC recommended that quadrivalent live-attenuated influenza vaccine (LAIV4) not be used because of concerns about poor vaccine effectiveness against influenza A H1N1 viruses circulating in the U.S.
- Investigations into the potential cause of low LAIV4 effectiveness showed reduced replication of the influenza A H1N1 vaccine virus (A/Bolivia/559/2013) in human nasal epithelial cells.
  - A different influenza A H1N1 virus that shows better viral replication has been added to this season's LAIV4, replacing the reduced replication H1N1 strain.
- For the 2018–19 U.S. influenza season, CDC states that providers may choose to administer any licensed, age-appropriate influenza vaccine including LAIV4.
  - CDC does not express a preference for any influenza vaccine product.
  - Arizona's VFC program will not be able to offer LAIV4 this season due to lack of funding.

For more details, see *Morbidity and Mortality Weekly Report* (MMWR), [June 8, 2018](#).

#### **Influenza Vaccine Receipt in Adults Is Increasing but Varies by Employment**

- Influenza vaccine receipt in adults  $\geq 18$  years old increased between 2012 and 2016 but differed by employment category.
- Influenza vaccine receipt in 2016 according to employment was:
  - Government employees: 45.6%
  - Private-sector employees: 36%
  - Self-employed: 29.8%

See the graph in MMWR, [February 27, 2018](#).



### **Provider Recommendation Is Important for Pediatric Influenza Vaccine Receipt**

- The National Immunization Survey-Flu collected information from parents for the 2013–14, 2014–15, and 2015–16 influenza seasons in the U.S.
  - Approximately 70% of parents received a provider recommendation for influenza vaccination for their child.
  - Parents of younger children (6 months - 12 years) were more likely to receive a provider recommendation than parents of 13–17 year old children.
  - Children living in a household with income over \$75,000 were more likely to receive a provider recommendation than children living below the poverty level.
  - Children who received a provider recommendation for influenza vaccine were **twice** as likely to receive an influenza vaccine than those without a provider recommendation.

See the abstract in *Vaccine*, [June 2018](#).

### **Analysis of the 2017-2018 Influenza Season**

- The 2017-18 influenza season was the first season to be classified as high severity for all age groups, with overall hospitalizations for all ages being the highest ever recorded.
- Interim estimates of the 2017-2018 season influenza vaccine effectiveness against medically attended respiratory illness was 36% overall, 25% against illness caused by influenza A(H3N2), 67% against illness caused by influenza A(H1N1), and 42% against illness caused by influenza B.
- Even during seasons when vaccine effectiveness is reduced, vaccination can offer substantial benefit and reduce the likelihood of severe outcomes, including hospitalization and death.
  - During the 2016-17 season, influenza vaccination averted an estimated 5.29 million illnesses, 2.6 million medical visits, and 84,700 influenza-associated hospitalizations.

For more details, see MMWR, [June 8, 2018](#).

## **LITERATURE ON VACCINES AND VACCINE-PREVENTABLE DISEASES**

### **Setbacks in the Fight to Eradicate Polio**

- Wild polio virus is currently endemic in only three countries: Afghanistan, Pakistan, and Nigeria.
- Although there were only 22 confirmed cases of wild polio virus causing paralysis in 2017, circulating vaccine-derived polio viruses are causing outbreaks with paralytic disease in the Democratic Republic of the Congo, in Papua New Guinea, and in Syria.
- There is always the danger that either wild polio virus or circulating vaccine-derived polio could spread to other countries.
- Oral polio vaccines will need to be used until wild polio virus is eradicated.

For more information, see the article in *Lancet*, [July 21, 2018](#).

### **No Link between HPV Vaccine and Autoimmune Diseases**

- Using Ontario, Canada's health and vaccination databases from 2007-2013, 290,000 girls between 12 -17 years old were evaluated for a link between receipt of quadrivalent human papillomavirus (HPV4) vaccine and the development of an autoimmune disease in 7-60 days following vaccination.
- The incidence of 681 cases of autoimmune diseases following vaccination was consistent with the background incidence of these disorders in this age group.

For more information, see the article in *Canadian Medical Association Journal*, [May 28, 2018](#).



### **Significant Progress in HPV Vaccine Coverage among U.S. Males**

- There were substantial increases in HPV vaccinations in males between 2011-2016 but only a modest increase among females.
- Increases in HPV vaccine coverage were lowest among males without health insurance, males below the poverty level, and males born outside the U.S.
- HPV vaccine coverage remains lower among males as compared to females.

See the article in *Journal of Infectious Diseases* (JID), [July 1, 2018](#).

### **Effective Responses to HPV Vaccine–Hesitant Parents**

- When parents express hesitancy about HPV vaccine, provider persistence in explaining HPV vaccine rationale was the most effective way to achieve same-day HPV vaccination.

See the article in *Pediatrics*, [June 2018](#).

### **Study Shows HPV Vaccination Decreases HPV Infections Due to HPV Vaccine Types**

- A quadrivalent human papillomavirus vaccination program targeting females aged 12–13 years started in Australia in 2007, with catch-up vaccination of 14–26 year olds through 2009.
- In 2015, 3-dose coverage of HPV among the following age groups was:
  - 53.3% among women 18-35 years old.
  - 65.0% among women 18-24 years old.
  - 40.3% among women 25-35 years old.
- Nine years following implementation of HPV vaccination, the prevalence of vaccine HPV types decreased :
  - From 22.7% to 1.5% among women ages 18–24 years old.
  - From 11.8% to 1.1% among those ages 25–35 years old.
- The substantial decrease in HPV type prevalence in women ages 25–35 years old, despite lower vaccine coverage than in the younger women, suggests strong herd protection and effectiveness of HPV vaccination, even when less than 3 vaccine doses are given.

See the abstract in JID, [May 15, 2018](#).

### **Rotavirus Outbreaks in a Post-Vaccine Era**

- After introduction of rotavirus vaccine in 2006, rotavirus infections markedly decreased.
- Rotavirus outbreaks can still occur in adults, in unimmunized children, and in a milder form among immunized children.
- Clinicians should continue to promote rotavirus vaccination among eligible infants.

For more details about recent rotavirus outbreaks, see the article in MMWR, [April 27, 2018](#).

### **Vaccines Prevent Diseases and Save Money**

- An analysis of the 20 years of the Vaccine for Children’s Program showed that childhood immunization averted 322 million illnesses and 732,000 premature deaths, at a net savings of \$295 billion in direct costs and \$1.38 trillion in total societal costs.
- The childhood immunization series was estimated to save \$3 in direct medical costs for each dollar invested.

For more details on U.S. and global immunization progress, see Dr. Anne Schuchat’s review in *Emerging Infectious Diseases*, [July 2018](#).



### **Measles Outbreaks Are Very Expensive**

- A single traveler infected with measles caused a measles outbreak in New York City in 2013 with 58 people infected and 3351 people exposed.
- Of the people infected with measles, 45 (78%) were at least 12 months old and were unvaccinated owing to parental refusal or intentional delay, and 12 (21%) were too young for routine measles vaccination.
- Many measles-infected people were not immediately placed into airborne isolation, resulting in exposures in 11 health care facilities.
- The total direct costs to New York City's Department of Health and Mental Hygiene were \$394,448, and a total of 10,054 hours were consumed responding to and controlling the outbreak.

See the *Journal of the American Medical Association (JAMA)*, [July 30, 2018](#).

### **The Importance of Provider Recommendation of Tdap to Pregnant Women**

- CDC's annual internet survey showed that in the U.S., Tdap (tetanus-diphtheria-pertussis) vaccine receipt during pregnancy in 2017 was 50.4%.
- Of the respondents:
  - 65.8% received an offer of Tdap vaccine from a doctor or medical professional.
  - 10.4% received a recommendation for but no offer of Tdap vaccine.
  - 23.8% did not receive a recommendation for Tdap vaccination.
- Women who received a recommendation for and an offer of Tdap vaccine were more likely to be vaccinated during pregnancy (70.4%) than women who received only a recommendation for Tdap vaccination but no offer of vaccine (36.9%).
- Of the pregnant women who did not receive a recommendation for Tdap vaccination, only 0.9% received Tdap.

See the CDC [website](#) for more details about Tdap and pregnant women.

### **Infants Are Less Likely to Get Pertussis if Their Mother Received Tdap**

- Commercial insurance claims data were used to determine Tdap receipt in pregnant women and hospitalizations and outpatient visits for pertussis in their infants from birth-18 months of age.
- Pertussis occurrence was compared between infants of mothers who received prenatal Tdap and infants of unvaccinated mothers.
- The rate of pertussis was 43% lower among infants whose mothers received Tdap during pregnancy compared to infants whose mothers did not receive prenatal or postpartum Tdap.

See the article in the *American Journal of Preventive Medicine*, [August 2018](#).

## **RESOURCES**

### **ACOG Supports Vaccination of Pregnant Women**

- The American Academy of Obstetricians and Gynecologists (ACOG) has issued a document supporting vaccination in pregnancy, specifically Tdap and influenza vaccine, as well as other recommended vaccines.

See *ACOG Committee Opinion*, [June 2018](#).



### **CDC Gives Updated Guidance for Pertussis, Tetanus, and Diphtheria Vaccines**

- In “Prevention of Pertussis, Tetanus, and Diphtheria with Vaccines in the United States,” CDC gives information about disease epidemiology and updated recommendations on vaccine use. See the entire publication at MMWR, (RR-2), [April 27, 2018](#).

### **CDC Webcasts and Self Study Immunization Courses**

- Many CDC webcasts and self-study courses provide continuing medical education for free. For more information, see the CDC [website](#).

### **Updates/Errata to the CDC’s “[General Best Practice Guidelines for Immunization](#)”**

Updates on July 18, 2018 included:

- Increased immune globulin dosing for hepatitis A prophylaxis (Table 3-4).
- The following are no longer precautions for DTaP (Table 4-1):
  - Collapse or shock-like state (i.e., hypotonic hyporesponsive episode) within 48 hours after receiving a previous dose of DTP/DTaP.
  - Seizure  $\leq 3$  days after receiving a previous dose of DTP/DTaP.
  - Persistent, inconsolable crying lasting  $\geq 3$  hours within 48 hours after receiving a previous dose of DTP/DTaP.
- If a vaccine and an immune globulin preparation are administered simultaneously (e.g., Td/Tdap and tetanus immune globulin [TIG], hepatitis B and hepatitis B immunoglobulin [HBIG]), separate limbs should be used for each injection.

### **Algorithm for Hepatitis B Vaccine Post-Vaccination Testing for Healthcare Personnel (HCP)**

- All HCP need serologic testing for antibody to hepatitis B surface antigen (anti-HBs) after receipt of a full hepatitis B vaccine series.
  - An anti-HBs level of  $\geq 10$  mIU is a protective level of antibody.
- Some people do not respond to the first hepatitis B vaccine series and need additional doses.
- After two complete series of hepatitis B vaccines, if the HCP remains seronegative and if hepatitis B virus infection has been excluded as a reason for not responding (i.e. the HBsAg test is negative), the HCP is considered to be a “non-responder” and will need hepatitis B immune globulin (HBIG) for any blood and body fluid exposures that are considered high-risk for hepatitis B virus infection.

See the [algorithm](#) that was adapted from MMWR, (RR-1), [January 12, 2018](#).

### **Arizona Pharmacies Continue to Assist in Vaccination Efforts**

- In 2017, Arizona pharmacists reported that they had administered 694,961 doses of vaccines.
  - Influenza vaccines were 78% of those vaccines (539,084 doses).
  - Pneumococcal conjugate vaccine (PCV13): 7%.
  - Tdap: 6%.
  - Pneumococcal polysaccharide vaccine (PPSV23): 4%.
  - Zoster vaccine: 3%.

This data is from the Arizona State Immunization Information System (ASIS) of the Arizona Department of Health Services.



#### **Email Notification Service of Updates to ACIP Recommendations**

- Providers can receive email updates about the Advisory Committee on Immunization Practices (ACIP) Vaccine Recommendations and Guidelines. To do so, enter your email address at <https://www.cdc.gov/vaccines/hcp/acip-recs/index.html>.

#### **Library of Articles Documenting Key Vaccine Safety Issues**

- The Vaccine Education Center at Children’s Hospital of Philadelphia has a new web section “[Vaccine Safety References](#)” that lists journal articles that clinicians can use with patients and also in legal proceedings. The topics deal with:
  - Aluminum and vaccines.
  - Autism and the MMR debate.
  - Diabetes and vaccines.
  - DNA and vaccines.
  - Formaldehyde and vaccines.
  - Multiple sclerosis and vaccines.
  - Thimerosal (mercury) and vaccines.
  - Too many vaccines, too soon.
  - Vaccine ingredients.

#### **Promoting HPV Vaccine Coverage in Arizona**

- As of March 31, 2018, data from ASIIS shows that among Arizona adolescents 13-18 years old:
  - 50% of females and 42% of males have completed their HPV vaccination series.
  - 31% of females and 35% of males have not received any doses of HPV vaccine.
- The Arizona Partnership for Immunization has assembled an “HPV Conversation Workgroup” of state-wide community partners who are working on HPV-related projects.
  - If you are interested in collaborating or if you would like more information, contact Tenneh Turner-Warren at [TennehT@tapi.org](mailto:TennehT@tapi.org) or call her at (602) 288-7567.

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