

Pertussis Vaccine Protection

Krista D. Capehart, PharmD, MS, BCACP, FAPhA

Clinical Professor, West Virginia University School of Pharmacy

Director, Wigner Institute for Advanced Pharmacy Practice,
Education, and Research, WVU SOP

Best Method of Protection from Pertussis? But wanes over time....

Vaccine	Abbreviations	Trade Name	Ages
Diphtheria, tetanus, and acellular pertussis vaccine	DTaP	Daptacel Infanrix	(minimum age: 6 weeks)
Tetanus, diphtheria, and acellular pertussis vaccine	Tdap	Adacel Boostrix	(minimum age: 11 years for routine vaccination, 7 years for catch-up vaccination) & Adults
COMBO Vax:			
DTaP, hepatitis B, and inactivated poliovirus vaccine	DTaP-HepB-IPV	Pediarix	6 weeks-6 years of age
DTaP, inactivated poliovirus, and Haemophilus influenzae type b vaccine	DTaP-IPV/Hib	Pentacel	6 weeks through 5 years of age
DTaP and inactivated poliovirus vaccine	DTaP-IPV	Kinrix Quadracel	Ages 4-6 yrs of age (5 th dose only)
DTaP, inactivated poliovirus, Haemophilus influenzae type b, and hepatitis B vaccine	DTaP-IPV-Hib-HepB	Vaxelis	6 weeks through 4 years of age

<https://www.cdc.gov/vaccines/hcp/imz-schedules/downloads/child/0-18yrs-child-combined-schedule.pdf>

<https://www.cdc.gov/vaccines/hcp/imz-schedules/downloads/adult/adult-combined-schedule.pdf>

Vaccine schedule for < 18 years

- DTaP
- Reoutine recommendation: 5-dose series (3-dose primary series at age 2, 4, and 6 months, followed by booster doses at ages 15–18 months and 4–6 years)
 - Prospectively: Dose 4 may be administered as early as age 12 months if at least 6 months have elapsed since dose 3.
 - Retrospectively: A 4th dose that was inadvertently administered as early as age 12 months may be counted if at least 4 months have elapsed since dose 3.

Catch-up Schedule Recommendations:

- Separate doses 1 and 2 by 4 weeks, doses 2 and 3 by 4 weeks and doses 3 and 4 by at least 6 months.
- Dose 5 is not necessary if dose 4 was administered at age 4 years or older and at least 6 months after dose 3.

<https://www.cdc.gov/vaccines/hcp/imz-schedules/downloads/child/0-18yrs-child-combined-schedule.pdf>

<https://downloads.aap.org/AAP/PDF/AAP-Immunization-Schedule.pdf>

Tetanus, diphtheria, and acellular pertussis (Tdap) vaccination

- Routine Vaccination: Age 11–12 years: 1 dose Tdap (adolescent booster).
- Pregnancy: 1 dose Tdap during each pregnancy, preferably in early part of gestational weeks 27–36
- Note: Tdap may be administered regardless of the interval since the last tetanus and diphtheria toxoid-containing vaccine.

Tetanus, diphtheria, and acellular pertussis (Tdap) vaccination

- Catch-up:
- Age 13–18 years who have not received Tdap: 1 dose Tdap (adolescent booster).
- Age 7–18 years not fully vaccinated* with DTaP: 1 dose Tdap as part of the catch-up series (preferably the first dose); if additional doses are needed, use Td or Tdap.
- Tdap administered at age 7–10 years:
 - Age 7–9 years who receive Tdap should receive the adolescent Tdap booster dose at age 11–12 years.
 - Age 10 years who receive Tdap do not need the adolescent Tdap booster dose at age 11–12 years.

<https://www.cdc.gov/vaccines/hcp/imz-schedules/downloads/child/0-18yrs-child-combined-schedule.pdf>

<https://downloads.aap.org/AAP/PDF/AAP-Immunization-Schedule.pdf>

Tetanus, diphtheria, and acellular pertussis (Tdap) vaccination - ADULTS

- **Routine vaccination:** Completed primary series and received at least 1 dose Tdap at age 10 years or older: Td or Tdap every 10 years thereafter
- **Unvaccinated or incomplete primary vaccination series** for tetanus, diphtheria, or pertussis: administer remaining doses (1, 2, or 3 doses) to complete 3-dose primary series. 1 dose Tdap followed by 1 dose Td or Tdap at least 4 weeks later, and a third dose of Td or Tdap 6–12 months later (Tdap is preferred as first dose and can be substituted for any Td dose), then Td or Tdap every 10 years thereafter.

Contraindications DTaP or Tdap

- Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component
- Encephalopathy (e.g., coma, decreased level of consciousness, prolonged seizures) not attributable to another identifiable cause within 7 days of administration of previous dose of DTP or DTaP

Precautions DTaP or Tdap

- Guillain-Barré syndrome (GBS) within 6 weeks after previous dose of tetanus-toxoid–containing vaccine
- History of Arthus-type hypersensitivity reactions after a previous dose of diphtheria-toxoid–containing or tetanus-toxoid–containing vaccine; defer vaccination until at least 10 years have elapsed since the last tetanus-toxoid-containing vaccine
- For DTaP only: Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy; defer DTaP until neurologic status clarified and stabilized
- Moderate or severe acute illness with or without fever

Common adverse events of DTaP and Tdap

- DTaP:
 - System common doses 1-3: fussiness/irritability, inconsolable crying, and decreased activity/lethargy, fever; local common after doses 4-5: tenderness, redness and increase in arm circumference
- Tdap: pain, redness, and swelling at the injection site; increase in arm circumference of the injected arm; headache; fatigue; and gastrointestinal symptoms

[Vaccine package inserts](https://www.fda.gov/media/124002/download)

<https://www.fda.gov/media/124002/download>

<https://www.fda.gov/media/119465/download>

<https://www.fda.gov/media/74035/download>

Strategies to improve DTaP and Tdap uptake

Pediatrics

- Educate parents and caregivers
- Make vaccines readily available
- Non-judgmental conversations
- Vaccination reminders/fliers
- Provider training

Adults

- Educate about the diseases in the vaccine and the vaccine itself
- Educate about the pregnancy vaccination recommendation
- Ensure family and household member vaccination status is also up-to-date!
- Provider training

Questions and contact info

- Krista Capehart, PharmD, MS, BCACP, FAPhA
- krista.d.capehart@wv.gov
- kdcapehart@hsc.wvu.edu
- 304-206-5767