



# **EpiVac Pink Book Web-on-Demand Series**

## **DTaP/Tdap-2020**

**Immunization Services Division**

**National Center for Immunization and Respiratory Diseases**

**Centers for Disease Control and Prevention**

**Atlanta, GA**

# Learning Objectives

- For each vaccine-preventable disease, identify those for whom routine immunization is recommended.
- For each vaccine-preventable disease, describe characteristics of the vaccine used to prevent the disease.
- Describe an emerging immunization issue.
- Locate current immunization resources to increase knowledge of team's role in program implementation for improved team performance.
- Implement disease detection and prevention health care services (e.g., smoking cessation, weight reduction, diabetes screening, blood pressure screening, immunization services) to prevent health problems and maintain health.

# Today's Agenda

**EpiVac Pink Book Web-on-Demand Series: DTaP/Tdap-2020**

**Andrew Kroger, MD, MPH, Medical Officer, CDC/NCIRD**

# Continuing Education Information

- CE credit, go to: [www.cdc.gov/GetCE](http://www.cdc.gov/GetCE)
- Search course number: **WD4344-080520**
- CE credit expires: **July 1, 2022**
- CE instructions are available on the EpiVac Pink Book Web-on-Demand Series web page
- Questions and additional help with the online CE system, e-mail [CE@cdc.gov](mailto:CE@cdc.gov)

Training and Continuing Education Online (TCEO)



TRAINING AND CONTINUING EDUCATION ONLINE

- TCEO Home
- Search Courses
- Create Account
- 9 Simple Steps to Earn CE
- Frequently Asked Questions
- Contact TCEO

**New to TCEO?**  
Visit [Create Account](#). Once your account has been created, you will be able to search for courses and complete requirements to receive CE.

**Already have a TCEO account from the previous system?**  
To move your account to the new system please sign in above using your existing TCEO username and password. Once signed in, follow the prompts to verify and update your account. After your account is updated forward you will use this email address and password to sign in.

**Not sure how to get started?**  
Follow these [9 Simple Steps](#) to earn continuing education for the courses you have taken or conferences you have attended!



Welcome to TCEO

Training and Continuing Education Online (TCEO) is a system that provides access to CDC educational activities for continuing education (CE). Use TCEO to search for CE opportunities, complete course

# Disclosure Statements

**In compliance with continuing education requirements, all presenters must disclose any financial or other associations with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters, as well as any use of unlabeled product(s) or product(s) under investigational use.**

**CDC, our planners, content experts, and their spouses/partners wish to disclose they have no financial interests in or other relationships with the manufacturers of commercial products, suppliers of commercial services, or commercial supporters.**

**Planners have reviewed content to ensure there is no bias.**

# Disclosure Statements

**Content will not include any discussion of the unlabeled use of a product or a product under investigational use with the exception of Dr. Kroger's discussion of Tdap and tetanus—toxoid containing vaccines in a manner recommended by the Advisory Committee on Immunization Practices, but not approved by the Food and Drug Administration.**

**CDC does not accept any commercial support.**



# **Diphtheria, Tetanus, and Pertussis**

## **DTaP/DT and Tdap/Td Vaccines**

**Pink Book Web-on-Demand Series 2020**

**Andrew Kroger, MD, MPH**

**Medical Officer/Medical Health Educator**

1

**Diphtheria  
Disease**

# Diphtheria

- A toxin-mediated disease caused by *Corynebacterium diphtheriae*
- Usually produces exudate and membrane involving pharynx and tonsils
- Complications attributable to toxin – severity generally related to extent of local disease
- Most complications are myocarditis and neuritis.
- Death in 5% to 10% of cases



**Tonsillar  
diphtheria**

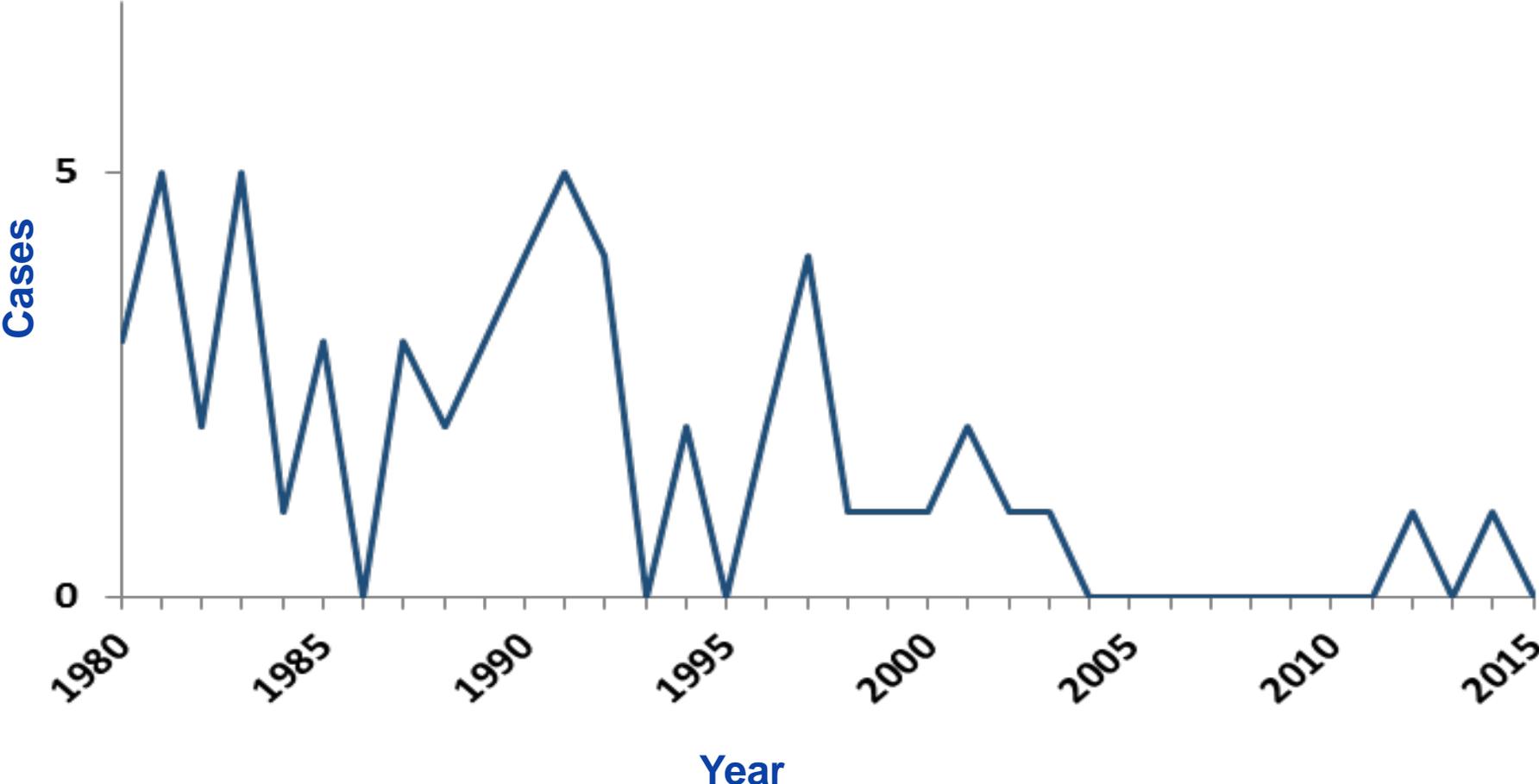
# Diphtheria Clinical Features

- Incubation period: 2–5 days (range: 1–10 days)
- May involve any mucous membrane
- Classified based on site of disease
  - Anterior nasal
  - Pharyngeal and tonsillar
  - Laryngeal
  - Cutaneous
  - Ocular
  - Genital

# Diphtheria in the Late 19<sup>th</sup>–Early 20<sup>th</sup> Century



# Number of Reported Diphtheria Cases -- United States, 1980 through 2015



Source: National Notifiable Diseases Surveillance System

2

**Tetanus  
Disease**

# Tetanus

- A toxin-mediated disease caused by *Clostridium tetani*
- Anaerobic gram-positive, spore-forming bacteria
- Spores found in soil, animal feces
- Two exotoxins produced with growth of bacteria
  - Tetanospasmin responsible for clinical manifestations of tetanus

# Tetanus Clinical Features

- **Incubation period: 8 days (range: 3–21 days)**
- **Three clinical forms: local (uncommon), cephalic (rare), generalized (most common)**
- **Generalized tetanus: descending pattern of trismus (lockjaw), neck stiffness, difficulty swallowing, rigidity of abdominal muscles**
  - Spasms continue for 3–4 weeks.
  - Complete recovery may take months.
- **Neonatal tetanus**
  - Generalized tetanus in newborn infant
  - Infant born without protective passive immunity
  - 39,000 neonates died in 2015 worldwide.

# Morbidity and Mortality Weekly Report (*MMWR*)

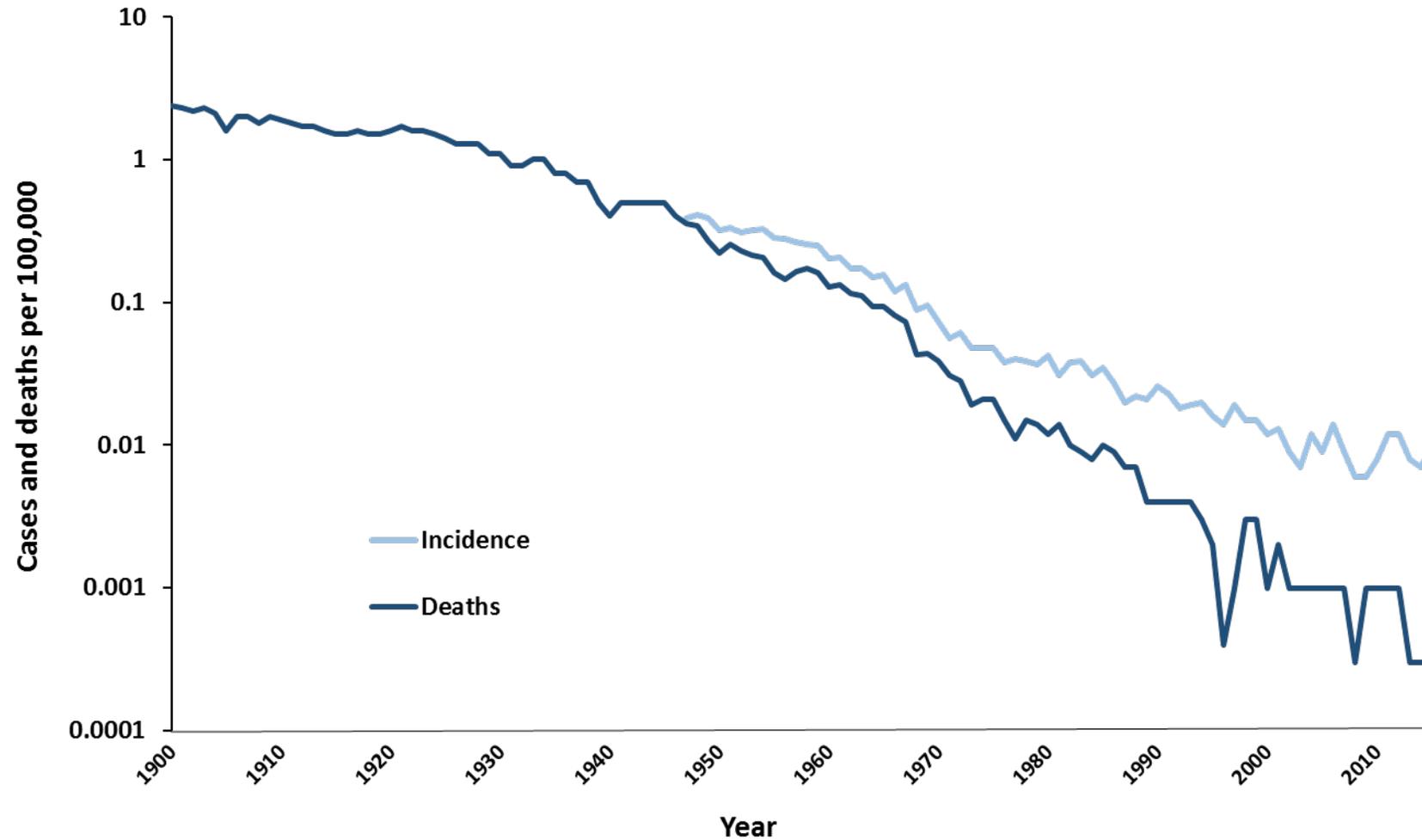
[CDC](#) > [MMWR](#)

*Notes from the Field: Tetanus in an Unvaccinated Child – Oregon, 2017*

*Weekly* / March 8, 2019 / 68(9);231–232

- **Required 57 days of inpatient acute care, including 47 days in the intensive care unit**
- **The inpatient charges totaled \$811,929 (excluding air transportation, inpatient rehabilitation, and ambulatory follow-up costs).**

# Annual Incidence\* of and Deaths Due to Tetanus -- United States, 1900 through 2015



Sources: National Notifiable Diseases Surveillance System and passive reports to the Public Health Service  
\* Per 100,000 population

3

**Pertussis  
Disease**

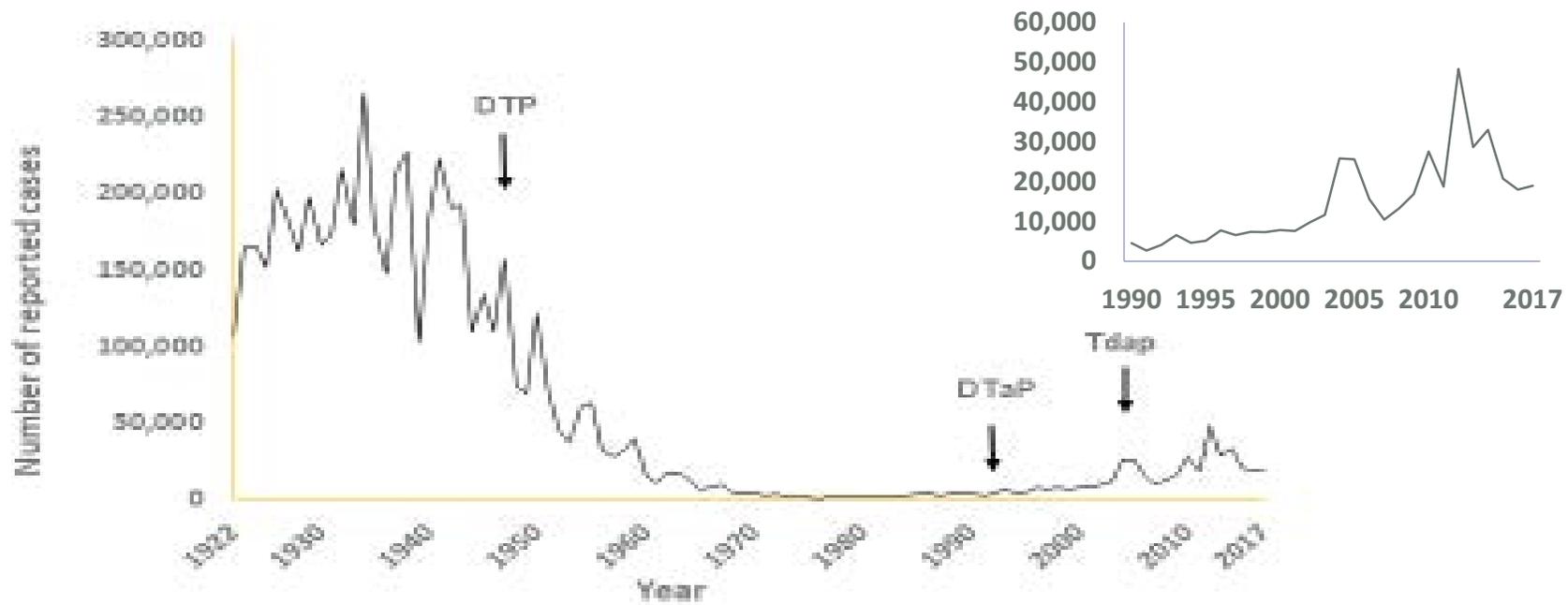
# Pertussis

- Acute infectious disease caused by *Bordetella pertussis*
- Outbreaks first described in 16th century
- *Bordetella pertussis* isolated in 1906
- Estimated 160,700 deaths worldwide in 2014

# Pertussis Clinical Features

- Incubation period: 7–10 days (range: 4–21 days)
- Insidious onset, similar to the common cold with nonspecific cough
- Fever usually minimal throughout course of illness
- Catarrhal stage
  - 1–2 weeks
- Paroxysmal cough stage
  - 1–6 weeks
- Convalescence
  - Weeks to months

## Reported NNDSS pertussis cases: 1922-2017



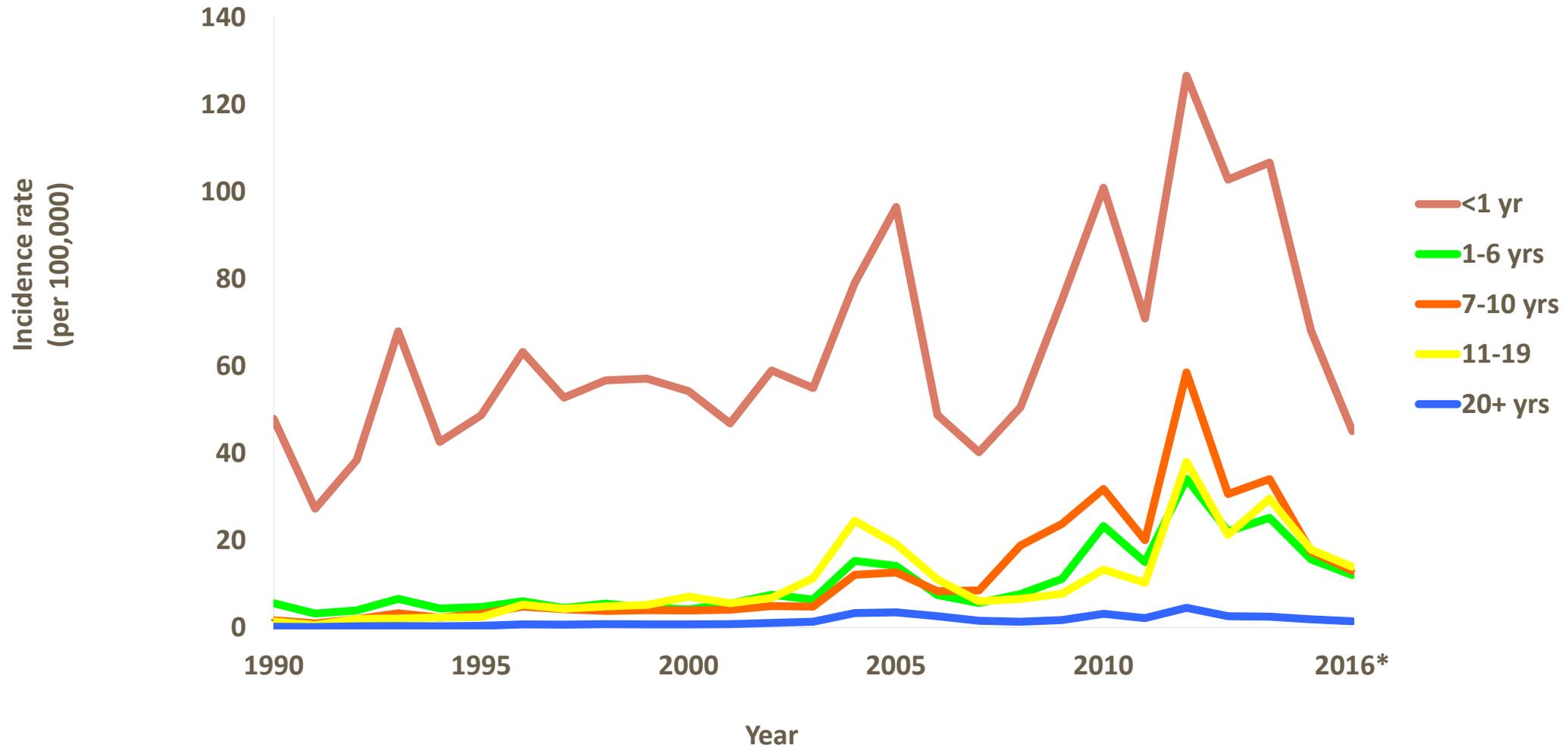
SOURCE: CDC, National Notifiable Diseases Surveillance System

Year

Year

\*2016 through 2017 data are provisional.

# Reported Pertussis Incidence by Age Group: 1990 through 2016\*



\*2016 data are provisional.

Source: CDC, National Notifiable Diseases Surveillance System and Supplemental Pertussis Surveillance System

# Pertussis Deaths in the United States, 2012–2018

## Age at onset

Less than 12 months	12 months and older	Total
59 (72%)	23 (28%)	82

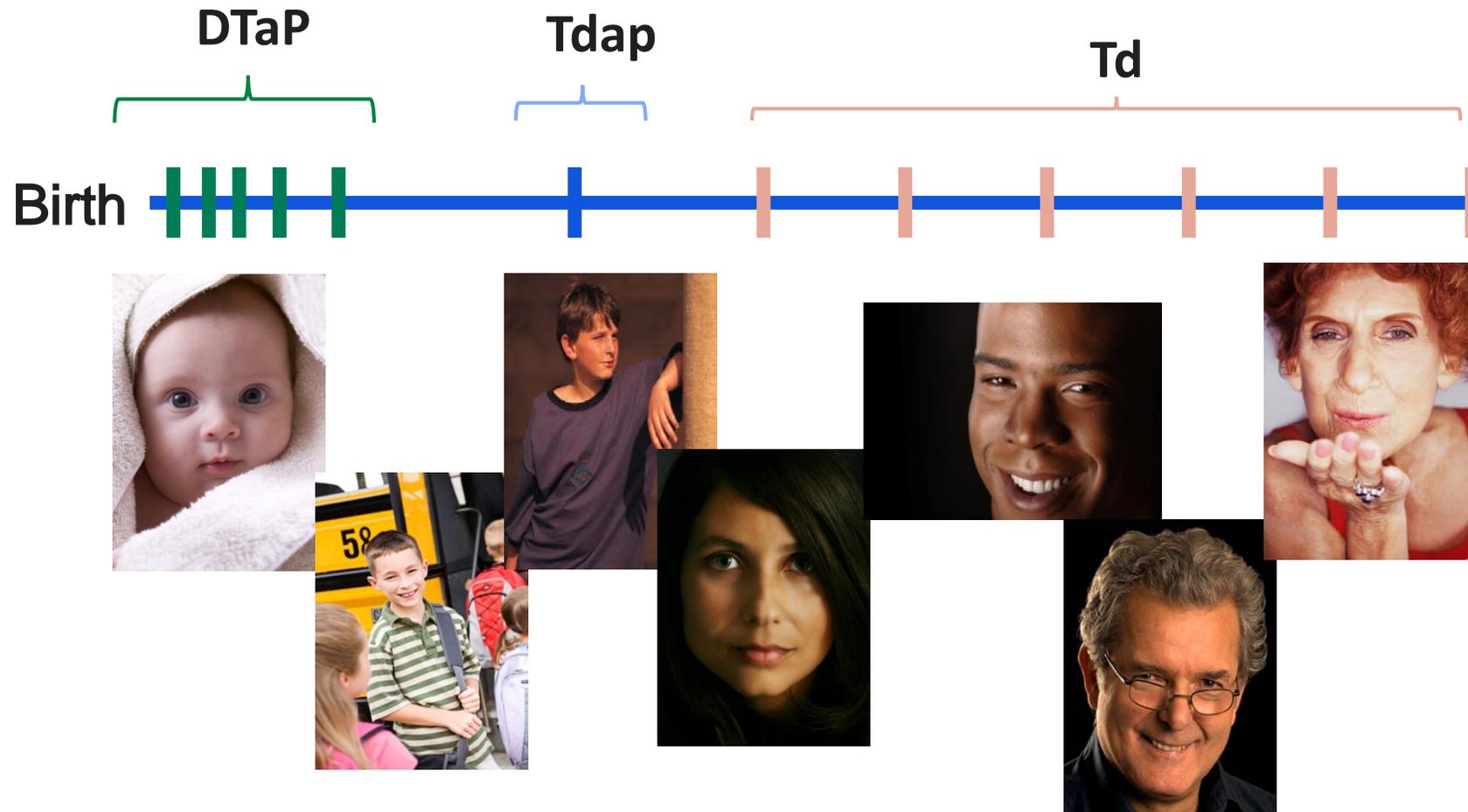
# Why Adolescents and Adults Need Pertussis Vaccine

- **20,762 pertussis cases reported in the U.S. in 2015, 15,737 cases in 2016**
  - >50% of cases in those 11 years and older
- **Infection may be asymptomatic or may present as classic pertussis.**
- **Disease often milder than in infants and children**
  - Persons with mild disease may transmit the infection.
- **Older persons and household contacts often source of infection for infants and children**

# Pertussis Complications Among Adolescents and Adults

- **Difficulty sleeping**
- **Urinary incontinence**
- **Pneumonia**
- **Rib fracture**
- **Plus:**
  - **Medical costs**
  - **Missed school and work**
  - **Impact on public health system**

# Vaccinate Throughout a Lifetime!



4

**DTaP/DT  
Vaccine**

# DTaP – containing Vaccine Products

Product (mfr)	Component(s)	Use for ages	Use for DTaP doses	Route
Daptacel (SP)	DTaP	6 wks thru 6 yrs	1 thru 5	IM
Infanrix (GSK)	DTaP	6 wks thru 6 yrs	1 thru 5	IM
Pediarix (GSK)	DTaP-HepB-IPV	6 wks thru 6 yrs	1 thru 3	IM
Pentacel (SP)	DTaP-IPV/Hib	6 wks thru 4 yrs	1 thru 4	IM
Kinrix (GSK), Quadracel (SP)	DTaP-IPV	4 thru 6 yrs	5	IM
Vaxelis (Merck)	Dtap-IPV-Hib-HepB	6 wks thru 4 years	3-dose series	IM

**Order, administer, and document the correct vaccine!**

# DTaP-HepB-IPV (Pediatrix)

- **Components: DTaP, HepB, and IPV**
- **Licensed for:**
  - Children 6 weeks through 6 years of age
  - Doses 1 through 3
- **Not approved for doses 4 or 5**
- **Can be given to infants who received a birth dose of hepatitis B vaccine**
  - Total of 4 doses of HepB vaccine

# DTaP-IPV/Hib (Pentacel)

- **Components: DTaP, IPV, and Hib**
- **Licensed for:**
  - Children 6 weeks through 4 years of age
  - Doses 1 through 4
- **Not approved for the 5th dose of DTaP series or for children older than 5 years**

# DTaP-IPV/Hib (Pentacel)

- Must be reconstituted (mixed) prior to administration
- Use **ONLY** the manufacturer-supplied vaccine diluent (DTaP-IPV)



Hib vaccine

+



DTaP-IPV diluent

=



Pentacel vaccine

# DTaP-IPV (Kinrix and Quadracel)

- **Components: DTaP and IPV**
- **Licensed for:**
  - Children 4 through 6 years of age
  - Dose 5 only
- **Do NOT use for doses 1 through 4 or for children younger than 4 years of age.**

# DTaP, IPV, Hib, HepB (Vaxelis)

- **Components: DTaP, IPV, Hib, HepB**
- **Licensed for:**
  - Children 6 weeks through 4 years
  - 3-dose series (2, 4, 6 months of age)
- **Do NOT use for 4<sup>th</sup> or 5<sup>th</sup> doses.**

# Interchangeability of Different Brands of DTaP Vaccine

- Whenever feasible, the same DTaP vaccine should be used for all doses of the series.
- Limited data suggest that “mix and match” DTaP schedules do not adversely affect safety and immunogenicity.
- If the vaccine used for earlier doses is not known or not available, any brand may be used to complete the series.

# 5

**Clinical  
Considerations**

# Primary DTaP Schedule



Dose	Routine Age	Minimum Interval to Next Dose
Primary 1	2 months	4 weeks
Primary 2	4 months	4 weeks
Primary 3	6 months	6 months
Primary 4	15–18 months	

# Fourth DTaP Dose

- Routinely recommended at 15 through 18 months
- May be given earlier if:
  - Child is at least 12 months of age and
  - At least 6 months since DTaP dose 3 and
  - The child is unlikely to return at 15 through 18 months of age.

# Fifth DTaP Dose

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Diphtheria, tetanus, & acellular pertussis (DTaP: <7 yrs)			1 <sup>st</sup> dose	2 <sup>nd</sup> dose	3 <sup>rd</sup> dose				← 4 <sup>th</sup> dose →			5 <sup>th</sup> dose					

- Administer a 5<sup>th</sup> dose of DTaP when the 4<sup>th</sup> dose was given *before* age 4 years.
- All DTaP products are approved for use for the 5th dose except:
  - Pediarix (DTaP-HepB-IPV)
  - Pentacel (DTaP-IPV/Hib)

# Diphtheria and Tetanus Toxoid DT Vaccine

- Given as a 3- or 4-dose series
- DT should only be used for children with a true contraindication to pertussis vaccine.

# Pediatric DT Schedule

- **First dose of DT at younger than 1 year of age**
  - Total of 4 doses
- **First dose of DT at 1 year of age or older**
  - Total of 3 doses
- **4<sup>th</sup> or 5<sup>th</sup> dose at school entry not needed if pertussis vaccine is not being administered**

# DTaP Contraindications

- Severe allergic reaction to vaccine component or following a prior dose
- Encephalopathy not due to another identifiable cause occurring within 7 days after vaccination

# DTaP Precautions

- Moderate or severe acute illness
- Progressive or unstable neurologic disorder, including infantile spasms, uncontrolled seizures, or progressive encephalopathy
- Guillain-Barré syndrome <6 weeks after previous dose of tetanus-toxoid-containing vaccine
- History of Arthus-type hypersensitivity reactions after a previous dose of tetanus- or diphtheria-toxoid-containing vaccines

# DTaP Adverse Reactions

- **Local reactions  
(pain, redness, swelling)** Up to 40%
- **Fever** Up to 27%
- **More severe adverse reactions** Not common

# Adverse Reactions

## Following the 4<sup>th</sup> and 5<sup>th</sup> DTaP Doses

- Local adverse reactions and fever increased.
- Reports of swelling of entire limb
  - Self-limited and resolves without sequelae
- Limb swelling after 4<sup>th</sup> dose NOT a contraindication to 5<sup>th</sup> dose

6

**Tdap/Td  
Vaccine**

# Tdap and Td Vaccines

Vaccine product	Age indications
Tdap vaccines	
Boostrix	10 years and older
Adacel	10 through 64 years
Td vaccines	
TDVAX	7 years and older
TENIVAC	7 years and older

7

**Clinical  
Considerations**

# ACIP Tdap/Td Vaccine Recommendations

Vaccine	Birth	1 mo	2 mos	4 mos	6 mos	9 mos	12 mos	15 mos	18 mos	19-23 mos	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Tetanus, diphtheria, & acellular pertussis (Tdap: ≥7 yrs)														Tdap			

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap, then Td or Tdap booster every 10 years			

# Tdap Recommendations: Adolescent

- Routinely recommended at 11 or 12 years of age
- Catch up adolescents 13 years of age and older who were not vaccinated.

# Tdap Recommendations: Adults

- Administer Tdap vaccine to persons 19 years of age and older who were **NOT *previously vaccinated*** and to those with unknown **vaccination status**.
  - Persons who were vaccinated with Tdap during adolescence (or at another time) = *previously vaccinated*, including:
    - Health care personnel
    - New fathers
    - Close contacts of newborns
    - Day care workers or babysitters
  - No additional doses are recommended.

# Tdap Recommendations: Children 7 through 10 Years of Age\*

- **Children who have not completed a primary series**
  - Tdap should be administered first.
  - If additional doses are needed, Td or Tdap should be administered.
- **Those not fully immunized against pertussis (i.e., did not complete a series of pertussis-containing vaccine before their 7<sup>th</sup> birthday) should receive a single dose of Tdap.**
  - If additional doses are needed, Td or Tdap should be administered.
- **Adolescents who received Tdap inadvertently or as part of the catch-up series between 7 through 9 years of age should be given the routine adolescent Tdap dose at 11 or 12 years of age.**

\*Off-label ACIP recommendation

MMWR 67(2):1-44

# Tdap Recommendations: Pregnant Women

- Administer a dose of Tdap during each pregnancy, regardless of the patient's prior history of receiving the vaccine.
- Tdap should be administered between 27 and 36 weeks' gestation, although it may be given at any time during pregnancy.
  - Currently available data suggest that vaccinating earlier in the 27- through 36-week time period will maximize passive antibody transfer to the infant.

# Tdap and Pregnant Women

## ■ Vaccination coverage for pregnant women:

- 2010 and earlier <1%
- 2013 28%
- 2015 53%

## ■ 96% of Tdap vaccinations were administered in physicians' offices or clinics.

### Maternal Vaccination



Resources for healthcare professionals

Vaccines help keep your pregnant patients and their growing families healthy.

Last Updated September, 2016

Vaccine	Before pregnancy	During pregnancy	After pregnancy	Type of vaccine
Influenza	Yes	Yes, during flu season	Yes	Inactivated
Tdap	May be recommended; it is better to vaccinate during pregnancy when possible	Yes, during <b>each</b> pregnancy	Yes, immediately postpartum, if Tdap never received in lifetime; it is better to vaccinate during pregnancy	Toxoid/ Inactivated
Td	May be recommended	May be recommended, but Tdap is preferred	May be recommended	Toxoid
Hepatitis A	May be recommended	May be recommended	May be recommended	Inactivated
Hepatitis B	May be recommended	May be recommended	May be recommended	Inactivated
Meningococcal	May be recommended	Base decision on risk vs. benefit; inadequate data for specific recommendation	May be recommended	Inactivated
Pneumococcal	May be recommended	Base decision on risk vs. benefit; inadequate data for specific recommendation	May be recommended	Inactivated
HPV	May be recommended (through 26 years of age)	No	May be recommended (through 26 years of age)	Inactivated
MMR	May be recommended; once received, avoid conception for 4 weeks	No	May be recommended	Live
Varicella	May be recommended; once received, avoid conception for 4 weeks	No	May be recommended	Live

For more information, visit: [www.cdc.gov/vaccines/pregnancy](http://www.cdc.gov/vaccines/pregnancy)

Get an answer to your specific question by e-mailing [cdcinfo@cdc.gov](mailto:cdcinfo@cdc.gov) or calling 800-CDC-INFO (232-4636)



U.S. Department of Health and Human Services  
Centers for Disease Control and Prevention

CS1408215-000-100 09/27/2016

# Maternal Tdap Vaccination Is Very Effective in Prevention of Infant Pertussis Infection

		Definitions	
	Vaccine effectiveness (95% confidence intervals)	Infant age at pertussis onset	Mother gestational age received Tdap
<b><u>United Kingdom</u></b>			
Observational, <sup>1</sup> screening method	91% (83–95%)	Younger than 3 months	At least 28 days before birth*
Case-Control, <sup>2</sup> retrospective	91% (77–97%), unadjusted 93% (81–97%), adjusted <sup>¶</sup>	Younger than 2 months	Cases: 31.5 weeks (range, 28–38) Controls: 33 weeks (range, 26–38)
<b><u>United States</u></b>			
Cohort, <sup>3</sup> retrospective	85% (33–98%)	Younger than 2 months	27–36 weeks
Case-Control, <sup>4</sup> retrospective	78% (44–91%)	Younger than 2 months	27–36 weeks

\*2012 UK recommendation: Tdap between 28 and 38 weeks

¶Adjusted for sex, geographical area, and birth period

<sup>1</sup>Amirthalingam G, et al. 2014; <sup>2</sup>Dabrera G, et al. 2015; <sup>3</sup>Winter K, et al. 2016; <sup>4</sup>CDC, unpublished

# ACIP Conclusions: Safety of Tdap for Every Pregnancy

- Data reassuring on 2 doses of Tdap
- Data and experience with tetanus toxoid vaccine suggest no excess risk of adverse events.
  - ~5% of women would receive 4 or more doses.
- CDC provides ongoing monitoring to address concerns about the safety of Tdap given during subsequent pregnancies.

# Postpartum Women and Close Contacts of Infants

- **Previously unvaccinated EVER or vaccination status unknown—administer Tdap**
- **Previously vaccinated persons—Tdap is NOT indicated**
  - Including mothers, fathers, siblings, and grandparents
  - Any previous, documented dose counts.

# Tdap for Persons Without History of DTP or DTaP

- All adolescents and adults should have documentation of having received a primary series of DTaP, DTP, DT, Tdap, or Td.
- Persons without documentation who have never been vaccinated or have unknown status should receive a 3-dose primary series.
- One dose should be Tdap, preferably the first.

# Tdap for Persons Without History of DTP or DTaP

- Preferred schedule:

- Dose 1      Tdap
- Dose 2      Td at least 4 weeks after dose 1
- Dose 3      Td at least 6 months after dose 2
- Booster     Td every 10 years

# Tdap and Health Care Personnel



# Tdap and Health Care Personnel (HCP)

- Previously unvaccinated HCP should receive a single dose of Tdap as soon as feasible, regardless of time since last Td dose.
- After receipt of 1 dose of Tdap, health care personnel should receive routine Td booster doses according to the recommended schedule.
- Additional doses of Tdap are not recommended for previously vaccinated HCP.\*

\*Except pregnant women

MMWR 2006;55(RR-17):1-37

# Knowledge Check

- A 21-year-old woman has a history of a complete series of DTaP vaccine and a dose of Tdap at 11 years of age. She is not pregnant. May she receive a dose of Tdap at her next well visit?

A) Yes

B) No



# Answer

- A 21-year-old woman has a history of a complete series of DTaP vaccine and a dose of Tdap at 11 years of age. She is not pregnant. May she receive a dose of Tdap at her next well visit?
- YES



# Tetanus Prophylaxis



**TABLE 6. Guide to tetanus prophylaxis in routine wound management**

No. doses of adsorbed tetanus toxoid-containing vaccines	Clean and minor wound		All other wounds*	
	DTaP, Tdap, or Td†§	TIG	DTaP, Tdap, or Td†	TIG§
Unknown or <3	Yes	No	Yes	Yes
≥3	No¶	No	No**	No

**Abbreviations:** DTaP = diphtheria and tetanus toxoids and acellular pertussis vaccine; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis; Td = tetanus and diphtheria toxoids; TIG = tetanus immune globulin.

\* Such as, but not limited to, wounds contaminated with dirt, feces, soil, and saliva; puncture wounds; avulsions; and wounds resulting from missiles, crushing, burns, and frostbite.

† DTaP is recommended for children aged <7 years. Tdap is preferred to Td for persons aged ≥11 years who have not previously received Tdap. Persons aged ≥7 years who are not fully immunized against pertussis, tetanus or diphtheria should receive one dose of Tdap for wound management and as part of the catch-up series.

§ Persons with HIV infection or severe immunodeficiency who have contaminated wounds should also receive TIG, regardless of their history of tetanus immunization.

¶ Yes, if >10 years since the last tetanus toxoid-containing vaccine dose.

\*\* Yes, if ≥5 years since the last tetanus toxoid-containing vaccine dose.

# Tdap Contraindications

- Severe allergic reaction to vaccine component or following a prior dose
- Encephalopathy not due to another identifiable cause within 7 days of administration of a pertussis-containing vaccine

# Tdap Precautions

- History of Guillain-Barré syndrome within 6 weeks after a prior dose of tetanus-toxoid-containing vaccine
- Progressive neurologic disorder until the condition has stabilized
- History of a severe local reaction (Arthus reaction) following a prior dose of a tetanus- and/or diphtheria-toxoid-containing vaccine
- Moderate or severe acute illness

# Tdap/Td Adverse Reactions

- **Local reactions (pain, redness, induration)**
  - 21 to 66%
- **Temp of 100.4°F or higher**
  - 1.4% Tdap
  - 1.1% Td
- **Adverse reactions occur at approximately the same rate as Td alone (without acellular pertussis vaccine).**

**Questions**

# Continuing Education Information

- CE credit, go to: [www.cdc.gov/GetCE](http://www.cdc.gov/GetCE)
- Search course number: **WD4344-080520**
- CE credit expires: **July 1, 2022**
- CE instructions are available on the EpiVac Pink Book Web-on-Demand Series web page
- Questions and additional help with the online CE system, e-mail [CE@cdc.gov](mailto:CE@cdc.gov)

Training and Continuing Education Online (TCEO)



TRAINING AND CONTINUING EDUCATION ONLINE

- TCEO Home
- Search Courses
- Create Account
- 9 Simple Steps to Earn CE
- Frequently Asked Questions
- Contact TCEO

**New to TCEO?**  
Visit [Create Account](#). Once your account has been created, you will be able to search for courses and complete requirements to receive CE.

**Already have a TCEO account from the previous system?**  
To move your account to the new system please sign in above using your existing TCEO username and password. Once signed in, follow the prompts to verify and update your account. After your account is updated forward you will use this email address and password to sign in.

**Not sure how to get started?**  
Follow these [9 Simple Steps](#) to earn continuing education for the courses you have taken or conferences you have attended!



Welcome to TCEO

Training and Continuing Education Online (TCEO) is a system that provides access to CDC educational activities for continuing education (CE). Use TCEO to search for CE opportunities, complete course

# E-mail Your Immunization Questions to Us

[NIPINFO@cdc.gov](mailto:NIPINFO@cdc.gov)

Write “Web-on-Demand–  
DTaP/Tdap” in the subject line



# EpiVac Pink Book Web-on-Demand Resources

- Comprehensive list of resources for ALL sessions
- Located on the web page for this web-on-demand session at [www.cdc.gov/vaccines/ed/webinar-epv/index.html](http://www.cdc.gov/vaccines/ed/webinar-epv/index.html)
- Additional materials located on this webpage include:
  - DTaP/Tdap slide set
  - Web-on-demand questions and answers
  - Transcript of this session
  - Continuing education instructions

## COURSE RESOURCES

### Epidemiology and Prevention of Vaccine-Preventable Diseases

- ▶ Epidemiology and Prevention of Vaccine-Preventable Diseases (Pink Book) Supplement: [www.cdc.gov/vaccines/pubs/pinkbook/supplement.html](http://www.cdc.gov/vaccines/pubs/pinkbook/supplement.html)

#### Overall Resources

- ▶ Current childhood and adult immunization schedules: [www.cdc.gov/vaccines/schedules/index.html](http://www.cdc.gov/vaccines/schedules/index.html)
- ▶ CDC Vaccine Schedules App for Health Care Providers: [www.cdc.gov/vaccines/schedules/hcp/schedule-app.html](http://www.cdc.gov/vaccines/schedules/hcp/schedule-app.html)
- ▶ Advisory Committee on Immunization Practices (ACIP) recommendations: [www.cdc.gov/vaccines/hcp/acip-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/index.html)
- ▶ CDC General Best Practice Guidelines for Immunization: [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html)
- ▶ CDC Continuing Education Information: [www.cdc.gov/vaccines/ed/ce-credit-how-to.html](http://www.cdc.gov/vaccines/ed/ce-credit-how-to.html)
- ▶ Health Care Personnel Vaccination Recommendations: [www.immunize.org/catg.d/p2017.pdf](http://www.immunize.org/catg.d/p2017.pdf)
- ▶ Pink Book Webinar Series: [www.cdc.gov/vaccines/ed/webinar-epv/index.html](http://www.cdc.gov/vaccines/ed/webinar-epv/index.html)
- ▶ Vaccines Licensed for Use in the United States Package Inserts: [www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm](http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm)
- ▶ You Call the Shots: [www.cdc.gov/vaccines/ed/youcalltheshots.html](http://www.cdc.gov/vaccines/ed/youcalltheshots.html)

#### Course Intro and Objectives

- ▶ What is the Advisory Committee on Immunization Practices (ACIP)?: [www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-acip-color-office.pdf](http://www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-acip-color-office.pdf)
- ▶ CDC Immunization Resources for You and Your Patients: [www.cdc.gov/vaccines/hcp/admin/downloads/Resource-Booklet.pdf](http://www.cdc.gov/vaccines/hcp/admin/downloads/Resource-Booklet.pdf)
- ▶ Parents' Guide to Childhood Immunizations: [www.cdc.gov/vaccines/parents/tools/parents-guide/index.html](http://www.cdc.gov/vaccines/parents/tools/parents-guide/index.html)
- ▶ Order Information for Free CDC Immunization Materials for Providers and Patients: [www.cdc.gov/pubs/CDCInfoOnDemand.aspx](http://www.cdc.gov/pubs/CDCInfoOnDemand.aspx)

#### Principles of Vaccination

- ▶ Immune System Research: [www.niaid.nih.gov/research/immune-system-research](http://www.niaid.nih.gov/research/immune-system-research)
- ▶ What is the Immune System?: [www.vaccines.gov/basics/work/prevention](http://www.vaccines.gov/basics/work/prevention)
- ▶ Understanding How Vaccines Work: [www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-understand-color-office.pdf](http://www.cdc.gov/vaccines/hcp/conversations/downloads/vacsafe-understand-color-office.pdf)
- ▶ Vaccines Work: [www.vaccines.gov/basics/work/index.html](http://www.vaccines.gov/basics/work/index.html)
- ▶ Vaccine Basics: How Vaccines Work: [www.vaccineinformation.org/how-vaccines-work/](http://www.vaccineinformation.org/how-vaccines-work/)
- ▶ The History of Vaccines: How Vaccines Work: [www.historyofvaccines.org/content/how-vaccines-work](http://www.historyofvaccines.org/content/how-vaccines-work)

#### General Best Practice Guidelines

- ▶ Ask the Experts-Scheduling Vaccines FAQs: [www.immunize.org/askexperts/scheduling-vaccines.asp](http://www.immunize.org/askexperts/scheduling-vaccines.asp)
- ▶ Ask the Experts-Combination Vaccines FAQs: [www.immunize.org/askexperts/experts\\_combo.asp](http://www.immunize.org/askexperts/experts_combo.asp)
- ▶ Ask the Experts-Precautions and Contraindications FAQs: [www.immunize.org/askexperts/precautions-contraindications.asp](http://www.immunize.org/askexperts/precautions-contraindications.asp)
- ▶ Foreign Language Vaccine-Preventable Disease Terms: [www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/foreign-products-tables.pdf](http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/foreign-products-tables.pdf)
- ▶ Guide to Contraindications and Precautions to Commonly Used Vaccines: [www.immunize.org/catg.d/p3072a.pdf](http://www.immunize.org/catg.d/p3072a.pdf)
- ▶ Guidelines for Vaccinating Pregnant Women: [www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html](http://www.cdc.gov/vaccines/pregnancy/hcp/guidelines.html)
- ▶ IDSA 2013 Clinical Practice Guideline for Vaccination of the Immunocompromised Host: [www.idsociety.org/Guidelines/Patient\\_Care/IDSA\\_Practice\\_Guidelines/Vaccination\\_of\\_the\\_Immunocompromised\\_Host/](http://www.idsociety.org/Guidelines/Patient_Care/IDSA_Practice_Guidelines/Vaccination_of_the_Immunocompromised_Host/)
- ▶ Interval Between Antibody-Containing Products and Measles- and Varicella-Containing Vaccines: [www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/mmr\\_ig.pdf](http://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/a/mmr_ig.pdf)



# Thank You From Atlanta!

