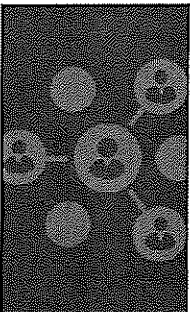


Reconnect & Rediscover:
A Convening Pediatric Experts
and Advocates
Oct. 2-4, 2021

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Pediatric Nurse Practitioners
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Experts in pediatrics, Advocates for children. 1

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**2021 Update on
Immunizations**

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Disclosure

- No conflicts to disclose

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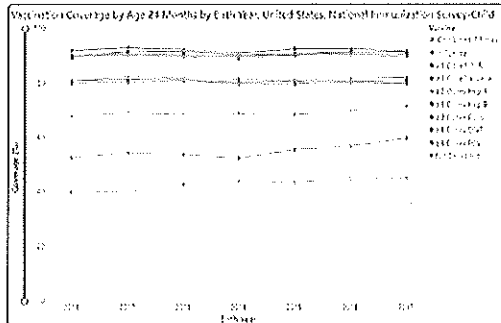
Learning Objectives

- At the end of this session participants will have the most current information from the CDC regarding immunizations
- At the end of this session participants will be familiar with the most current information regarding vaccine safety and efficacy
- At the end of this session participants will be aware of vaccines in development



4

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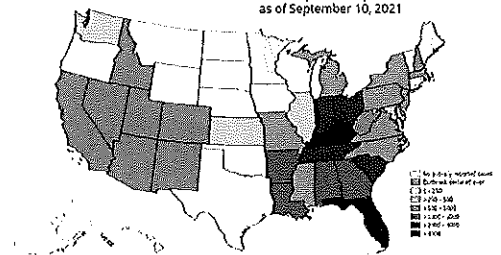


<https://www.cdc.gov/vaccines/imz-managers/coverage/childvaxview/interactive-reports/index.html>

5

Hepatitis A

State-Reported Hepatitis A Outbreak Cases as of September 10, 2021



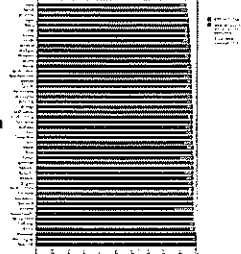
<https://www.cdc.gov/hepatitis/outbreaks/2017March-HepatitisA.htm>

6

Kindergarten Vaccine Coverage 2019-2020

- 2 doses MMR – 95%
- 5 doses DTaP – 94.4%
- 2 doses varicella – 94.6%
- Exemptions - 2.7%

- MMR
 - Alabama, Idaho, Kansas and Hawaii are lowest
 - Mississippi $\geq 99.1\%$



Selthier et al, 2021

7

Teen vaccine coverage by age 17 yrs (2020)

- Tdap ≥ 1 dose – 90.1%
- MenACWY
 - 1 dose – 89.7%
 - 2 doses – 54.5%
- HPV
 - All adolescents UTD – 58.6%
 - ≥ 1 dose 75.1%
 - Females UTD – 61.4%
 - Males UTD – 56.0%
 - Males
- MenB ≥ 1 dose – 28.4%

- MMR 2 doses – 92.4%
- Hep A 2 doses – 82.1%
- Hep B ≥ 3 doses – 92.6%
- Varicella 2 doses or hx of disease – 92.6%

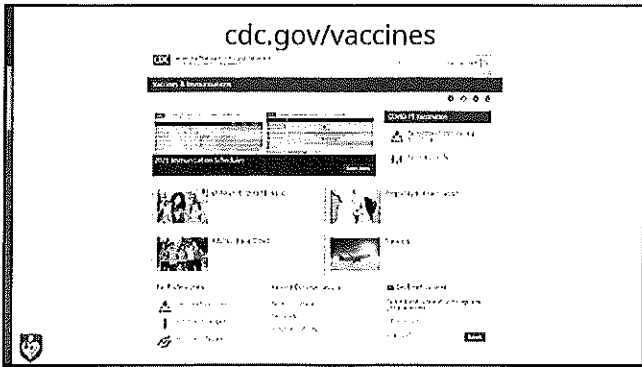
Pinnall et al 2021

8

WHO Global Vaccine Coverage

- Global coverage dropped from 86% in 2019 to 83% in 2020
- An estimated 23 million children under the age of one year did not receive basic vaccines, which is the highest number since 2009
- In 2020, the number of completely unvaccinated children increased by 3.4 million.
- 1.6 million more girls were not fully protected against human papillomavirus (HPV) in 2020, compared to the previous year
 - 2020 the WHA adopted the global strategy towards eliminating cervical cancer setting a target of 90% coverage

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Table 1 Recommended Child and Adolescent Immunization Schedule for ages 11 years to young adults
Approved by the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) in 2019. Last updated: 2021.

Vaccine	Age 11-12 years		Age 13-15 years		Age 16-17 years		Age 18-24 years	
	11-12	13-15	16-17	18-24	18-24	18-24	18-24	
Adolescent Tdap	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MMr	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MMrV	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
HPV	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MenACWY	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MenB	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MenP	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
Polio	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
Typhoid	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
Yellow fever	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	

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Table 2 Recommended Child and Adolescent Immunization Schedule by Medical Indication
Approved by the Advisory Committee on Immunization Practices (ACIP) and the American Academy of Pediatrics (AAP) in 2019. Last updated: 2021.

Vaccine	Age 11-12 years		Age 13-15 years		Age 16-17 years		Age 18-24 years	
	11-12	13-15	16-17	18-24	18-24	18-24	18-24	
Adolescent Tdap	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MMr	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MMrV	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
HPV	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MenACWY	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MenB	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
MenP	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
Polio	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
Typhoid	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	
Yellow fever	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	1 dose	

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Updates to 2021 Immunization Schedule

- **DTaP/Tdap:** A "Special situations" section has been added regarding the recommendation for use of DTaP/Tdap vaccine in wound management
- **Hib:** A bullet has been added to indicate that no further doses are needed if a dose was administered at age ≥ 15 months
- **HepB:** Additional text has been added to emphasize the birth dose
- **HPV:** updated to clarify that if the vaccination schedule is interrupted, the series does not need to be restarted
- **Pneumococcal vaccination:** Text has been added to the "Special situations" section of the note to clarify the recommendations for administering PPSV23 after PCV13



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Accelerated Hep A/Hep B schedule

- Combined Hep A/Hep B (Twinrix)
- Adolescents age 18 years or older may receive the combined HepA and HepB vaccine
 - as a 3-dose series (0, 1, and 6 months) or
 - 4-dose series (3 doses at 0, 7, and 21-30 days followed by a booster dose at 12 months).



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Influenza Vaccine Update on 2021 Schedule

- The abbreviation LAIV was changed to LAIV4
- LAIV4 should not be used were updated to include children aged < 2 years
- LAIV4 after receipt of influenza antiviral medications
 - oseltamivir or zanamivir within the previous 48 hours
 - peramivir within the previous 5 days
 - baloxavir within the previous 17 days



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Vaxelis (DTaP-IPV-Hib-HepB)

- 2, 4, and 6 months
- Can be used to complete the series started Pediarix or Pentacel
- Fact sheet available
 - <https://www.cdc.gov/vaccines/hcp/admin/downloads/YCTS-vaxellis.pdf>



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YOU CALL THE SHOTS

Vaxelis (DTaP-IPV-Hib-HepB) Fact Sheet

SAMPLE IMMUNIZATION SCHEDULES

Completing any DTaP, IPV, and Hib (through 18 months) using all single component vaccines

Vaccine	2 months	4 months	6 months ^a	12-15 months ^b	18-24 months ^c
DTaP	DTaP	DTaP	DTaP	DTaP	DTaP
IPV	IPV	IPV	IPV	IPV	IPV
Hib	Hib	Hib	Hib	Hib	Hib
HepB	HepB	HepB	HepB	HepB	HepB

Using Vaxelis

Vaccine	2 months	4 months	6 months ^a	12-15 months ^b	18-24 months ^c
DTaP	Vaxelis (DTaP)	Vaxelis (DTaP)	Vaxelis (DTaP)	Vaxelis (DTaP)	DTaP
IPV	Vaxelis (IPV)	Vaxelis (IPV)	Vaxelis (IPV)	Vaxelis (IPV)	IPV
Hib	Vaxelis (Hib)	Vaxelis (Hib)	Vaxelis (Hib)	Vaxelis (Hib)	Hib
HepB	Vaxelis (HepB)	Vaxelis (HepB)	Vaxelis (HepB)	Vaxelis (HepB)	HepB

Using Vaxelis to complete the vaccine series started with Pediarix

Vaccine	2 months	4 months	6 months ^a	12-15 months ^b	18-24 months ^c
DTaP	DTaP	DTaP	DTaP	Vaxelis (DTaP)	DTaP
IPV	IPV	IPV	IPV	Vaxelis (IPV)	IPV
Hib	Hib	Hib	Hib	Vaxelis (Hib)	Hib
HepB	HepB	HepB	HepB	Vaxelis (HepB)	HepB

Using Vaxelis to complete the vaccine series started with Pentacel

Vaccine	2 months	4 months	6 months ^a	12-15 months ^b	18-24 months ^c
DTaP	DTaP	DTaP	DTaP	Vaxelis (DTaP)	DTaP
IPV	IPV	IPV	IPV	Vaxelis (IPV)	IPV
Hib	Hib	Hib	Hib	Vaxelis (Hib)	Hib
HepB	HepB	HepB	HepB	Vaxelis (HepB)	HepB



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Ebola vaccine

- FDA Approved
- 100% efficacy
- ACIP recommends:
 - preexposure vaccination with Ervebo for adults aged ≥ 18 years in the U.S. population who are at highest risk for potential occupational exposure to Ebola virus species
 - responding to an outbreak of EVD
 - work as health care personnel at federally designated Ebola treatment centers in the United States, or
 - work as laboratorians or other staff at biosafety level 4 facilities in the United States.
- ADRs: arthralgias, arthritis



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COVID-19 vaccination

Vaccines & Immunizations

COVID-19 Vaccination

Request by U.S. Vaccine

Cost & Coverage

Provider Requirements and Support

Training and Education

Vaccine Receipt


Resources

COVID-19 Vaccination

Clinical Resources for Each COVID-19 Vaccine

Find information for COVID-19 vaccination administration, storage and handling, reporting, and patient education for each specific vaccine.

Product Information by U.S. Vaccine



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Resources for Talking to Parents

CDC Center for Disease Control and Prevention

Vaccines & Immunizations

How to Talk with Parents about COVID-19 Vaccination

Tips for Pediatricians, Family Medicine Physicians, and Other Pediatric Providers



1. Know the facts about COVID-19 vaccination. 2. Know the benefits of COVID-19 vaccination. 3. Know the risks of COVID-19 vaccination. 4. Know the safety of COVID-19 vaccination. 5. Know the effectiveness of COVID-19 vaccination. 6. Know the availability of COVID-19 vaccination. 7. Know the cost of COVID-19 vaccination. 8. Know the insurance coverage for COVID-19 vaccination. 9. Know the location of COVID-19 vaccination sites. 10. Know the hours of operation for COVID-19 vaccination sites.

<https://www.cdc.gov/vaccines/covid-19/hcp/pediatrician.html>

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V-safe

COVID-19

Home Your Health Vaccines Cases & Data Work & School Healthcare Workers Health Dept Science More

V-safe After Vaccination Health Checker



Get vaccinated. Get your smartphone. Get started with v-safe.

<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/vsafe.html>

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COVID19 vaccine for children

- Potential approval of Pfizer for 5 to 11 yr olds by end of October
 - Currently in phase III trials
 - 6mo to 11 yrs being studied
- Moderna
 - Currently studying age 6 mo to 11 yrs
 - Phase II/III trials
- Johnson & Johnson
 - Adolescent trials in process



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cdc.gov/travel

Travelers' Health

- Destinations
- Travel Alerts
- Travel Health Notices
- COVID-19
- Vaccines
- Travel Insurance

Destinations



COVID-19 Travel Health Notices



23

23

CDC Division of Field Epidemiology

Travelers' Health

- Destinations
- Travel Alerts
- Travel Health Notices
- COVID-19
- Vaccines
- Travel Insurance

Malaysia



COVID-19 Travel Information

Where are you going?

Malaysia



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Measles before International Travel

Infants under 12 months old


- Get an early dose at 6-11 months
- Follow the recommended schedule and get a second dose at 12-15 months and a third dose at 18-24 months

Children over 12 months old

- Get first dose immediately
- Get second dose 28 days after first dose

Teens and adults with no evidence of immunity*

- Get first dose immediately
- Get second dose 28 days after first dose



Countries in Africa with reported measles outbreaks (June 2011)

25

Measles: Traveling Abroad (www.cdc.gov/measles)

Measles (rubella)

Traveling Abroad? Check if You're Protected Against Measles

The person should get the dose of MMR1 as soon as they return home. They should also be vaccinated at least 2 weeks before any trip if possible. This dose does not count towards CDC's routine immunization schedule. They should get the dose of MMR2 at least 2 months after the first dose of MMR1 vaccine at 12-15 months and a second dose at 18 years of age and 28 days later.

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Measles: Traveling Abroad (www.cdc.gov/measles)

Measles (rubella)

Traveling Abroad? Check if You're Protected Against Measles

The person should get the dose of MMR1 as soon as they return home. They should also be vaccinated at least 2 weeks before any trip if possible. This dose does not count towards CDC's routine immunization schedule. They should get the dose of MMR2 at least 2 months after the first dose of MMR1 vaccine at 12-15 months and a second dose at 18 years of age and 28 days later.

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Protect your child from measles

Measles is still common in many parts of the world. Unvaccinated travelers who get measles in other countries can bring the disease into the United States.

Give your child the best protection against measles with two doses of measles, mumps, and rubella (MMR) vaccine.

1st dose at 12-15 months

2nd dose at 4-6 years

Traveling abroad with your child? Start at 11 months and a 2nd dose of measles vaccine before heading abroad. Give a 2nd dose and other routine doses before travel. Check with your pediatrician before traveling to help make sure your child is protected.

<https://www.cdc.gov/measles/travel>

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MMR + Hepatitis A vaccine for International Travel

- Simultaneous administration of MMR and HepA vaccines is recommended for infants aged 6-11 months traveling internationally
- IG cannot be given with MMR
- Doses given < 12 months do not count toward routine 2-dose series

Nelson et al, 2018

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Vaccine Adverse Event Reporting System (VAERS)

1. VAERS is a national vaccine safety surveillance program that helps to detect unusual or unexpected reporting patterns of adverse events for vaccines.
2. VAERS accepts reports from anyone, including patients, family members, healthcare providers and vaccine manufacturers.
3. VAERS is not designed to determine if a vaccine caused or contributed to an adverse event. A report to VAERS does not mean the vaccine caused the event.
4. VAERS is a passive surveillance system, meaning it relies on people sending in reports of their experiences after vaccination.
5. Healthcare providers and vaccine manufacturers are required by law to report certain events after vaccination.
6. If VAERS detects a pattern of adverse events following vaccination, other vaccine safety monitoring systems conduct follow up studies.

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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
- Healthcare providers are strongly **encouraged** to report to VAERS:
 - Any adverse event that occurs after the administration of a vaccine licensed in the United States, whether it is or is not clear that a vaccine caused the adverse event
 - Vaccine administration errors



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COVID vaccine VAERS reporting

- Healthcare providers are **required** to report to VAERS the following adverse events after COVID-19 vaccination and other adverse events if later revised by CDC:
 - Vaccine administration errors, whether or not associated with an adverse event (AE)
 - Serious AEs regardless of causality. Serious AEs per FDA are defined as:
 - Death;
 - A life-threatening AE;
 - Inpatient hospitalization or prolongation of existing hospitalization;
 - A persistent or significant incapacity or substantial disruption of the ability to conduct normal life functions;
 - A congenital anomaly/birth defect;
 - An important medical event that based on appropriate medical judgement may jeopardize the individual and may require medical or surgical intervention to prevent one of the outcomes listed above.
 - Cases of Multisystem Inflammatory Syndrome
 - Cases of COVID-19 that result in hospitalization or death



<https://vaers.hhs.gov/faq.html>

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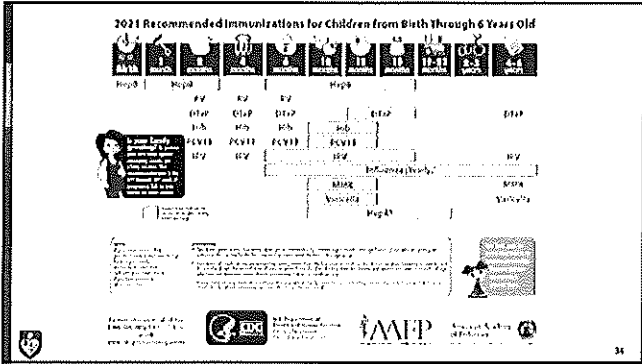
VAERS Table of Reportable Events Following Vaccination*

Vaccine/Toxoid	Event and Interval** from vaccination
Tetanus in any combination: DTaP, DTP, DTP-Hb, DT, Td, TT, Tdsp, DTaP-IPV, DTaP-IPV/Hb, DTaP-HepB-IPV	A. Anaphylaxis or anaphylactic shock (7 days) B. Brachial neuritis (28 days) C. Shoulder Injury Related to Vaccine Administration (7 days) D. Vasovagal syncope (7 days) E. Any acute complications or sequelae (including death) of above events (interval - not applicable) F. Events described in manufacturer's package insert as contraindications to additional doses of vaccine (interval - see package insert)
Perussis in any combination: DTaP, DTP, DTP-Hb, Tdsp, DTaP-IPV, DTaP-IPV/Hb, DTaP-HepB-IPV	A. Anaphylaxis or anaphylactic shock (7 days) B. Encephalopathy or encephalitis (7 days) C. Shoulder Injury Related to Vaccine Administration (7 days) D. Vasovagal syncope (7 days) E. Any acute complications or sequelae (including death) of above events (interval - not applicable)



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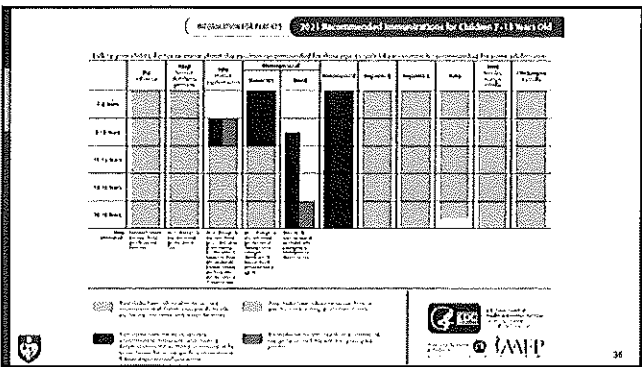
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Disease	Vaccine	Disease spread by	Disease symptoms	Disease complications
Cholera	Orally rehydrating solution (ORS)	Water contact	Diarrhea, muscle loss	Severe dehydration, shock, death
Diphtheria	DTaP	Airborne contact	Difficulty breathing, swollen tonsils, white patches in throat	Heart failure, kidney failure, paralysis, death
IPV	Polio vaccine	Contaminated food/water	Paralysis, muscle weakness	Permanent paralysis, death
Hepatitis A	HepA	Contaminated food/water, person-to-person	Yellowing of skin/eyes, fatigue, loss of appetite	Liver failure, death
Hepatitis B	HepB	Blood, sexual contact, mother to child	Chronic liver disease, liver cancer	Liver failure, death
Measles (MM)	MMR	Respiratory droplets	High fever, cough, sore throat, rash	Brain swelling (encephalitis), death
Mumps	MMR	Saliva, respiratory droplets	Swollen salivary glands, fever, sore throat	Deafness, meningitis, death
Peritonsillar abscess	DTaP	Respiratory droplets	Severe throat pain, difficulty swallowing	Death
Polio	IPV	Contaminated food/water	Paralysis, muscle weakness	Permanent paralysis, death
Prevention of HIV	PrEP	Sexual contact, blood	N/A	AIDS, death
Scarlet fever	DTaP	Respiratory droplets	High fever, sore throat, rash	Death
Tetanus	DTaP	Contaminated wounds	Stiff muscles, spasms	Death

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www.cdc.gov/vaccines

Download the App

Note: If you previously downloaded the app, check that you have version 8.0.1 with 2021 schedules and footnotes.

Download "CDC Vaccine Schedules" free for iOS and Android devices.




Product Specs
Version: 7.0.1

Requirements: Requires iOS 9.0 or later and Android 4.0 or later; optimized for tablets and useful on smartphones.

Updates: Changes in the app are released through app updates.

Download app free for iOS



Download app free for Android

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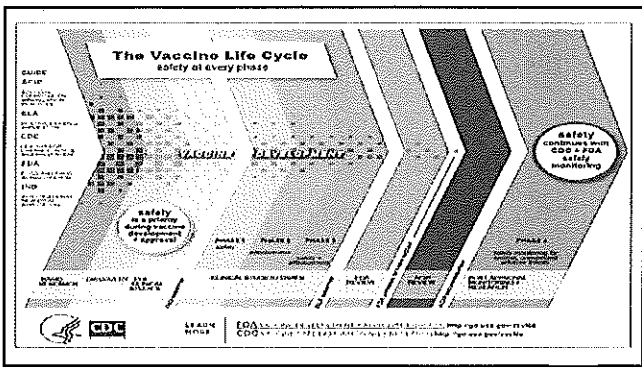
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Vaccines on the Horizon

- PCV20 (Pfizer)
- PCV15 (Merck)
- RSV vaccine in phase III trials
 - Moderna mRNA single dose vaccine on FDA fast track (8/21)
 - Pfizer phase III trials in adults > age 60 yrs (9/2/21)
- Malaria vaccine (Mosquirix™)
- Chikungunya vaccine in phase II trials
- Norovirus vaccine in clinical trials
- 2 TB vaccines are in Phase IIb infant trials

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Add final resources/contact

If desired

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