



# EPIC<sup>®</sup> Immunization 2022 Update Children & Adolescents (Brief Version)

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# EPIC<sup>®</sup> is presented by:

Georgia Chapter - American Academy of Pediatrics  
Ga. Dept. of Public Health/Immunization Program

*In Cooperation with:*

Georgia Academy of Family Physicians

Georgia Chapter - American College of Physicians

Georgia OB/Gyn Society

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# Faculty Disclosure Information

- In accordance with ACCME\* and ANCC-COA\*\* Standards, all faculty members are required to disclose to the program audience any real or apparent conflict of interest to the content of their presentation.
- This presentation will include the most current ACIP recommendations for frequently used vaccines but is not a comprehensive review of all available vaccines.
- Some ACIP recommendations for the use of vaccines have not currently been approved by the FDA.
- Detailed information regarding all ACIP Recommendations is available at [www.cdc.gov/vaccines/acip/recs/index.html](http://www.cdc.gov/vaccines/acip/recs/index.html)

\*Accreditation Council for Continuing Medical Education

\*\*American Nurses Credentialing Center Commission on Accreditation

# Objectives

At the end of this presentation, you will be able to:

- Recall the role vaccines have played in preventing diseases
- Discuss the importance of vaccines for children, adolescents and adults
- Summarize the most recent CDC recommendations for storage and handling of vaccines
- List at least 2 reliable sources for immunization information



Diphtheria

Tetanus



Pertussis



# Diphtheria, Tetanus and Pertussis Vaccines for Children

## ACIP Recommendations

### DTaP vaccine

- Recommended for children ages 6 weeks through 6 years
- Administered as a 3-dose primary series at ages 2, 4, and 6 months
- Booster doses at 15-18 months and 4-6 years
- NOT recommended for children 7 years and older

# ADMINISTER THE RIGHT VACCINE!

PRODUCT	COMPONENT(S)	USE FOR AGES	USE FOR DTaP DOSES	ROUTE
Daptacel (SP)	DTaP	6 wks. thru 6 yrs.	Doses 1 thru 5	IM
Infanrix (GSK)	DTaP	6 wks. thru 6 yrs.	Doses 1 thru 5	IM
Pediarix (GSK)	DTaP-HepB-IPV	6 wks. thru 6 yrs.	Doses 1 thru 3	IM
Pentacel (SP)	DTaP-IPV/Hib	6 wks. thru 4 yrs.	Doses 1 thru 4	IM
Kinrix (GSK)	DTaP-IPV	4 thru 6 yrs.	Dose 5	IM
Quadracel (SP)	DTaP-IPV	4 thru 6 yrs.	Dose 5	IM
Vaxelis (Merck & SP)	DTaP-IPV-Hib-Hep B	6 wks. thru 4 yrs.	Doses 1 thru 3	IM



# Diphtheria, Tetanus and Pertussis Vaccines for Children, Adolescents, and Adults

## ACIP Recommendations

### **Tdap---can now be used any time Td is indicated**

- Children and adolescents starting at 11 or 12 years of age
- Any adult who has not received a Tdap dose – regardless of time since the last Td dose
- Routine decennial booster
- Tetanus prophylaxis for wound management
- Unvaccinated persons 7-18 yrs. of age
  - 3 doses of Td or Tdap, given at appropriate intervals—see Catch-up Schedule
  - Children 7-9 years of age who receive Tdap as part of the catch-up series should be given Tdap again at ages 11-12 years
- No minimum interval between doses of Td and Tdap

<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-dtap> and

<https://www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html> and

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm>



# *Haemophilus influenzae* type b (Hib)

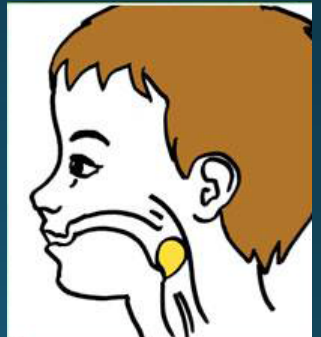
ACIP recommends:

3-4 doses of Hib (depending on brand)

- 3 dose series (PedVaxHIB<sup>®</sup>): 2 and 4 months, booster dose age 12-15 months
- 4-dose series (**ActHIB<sup>®</sup>**, **Hiberix<sup>®</sup>**, **Pentacel<sup>®</sup>**, or **Vaxelis<sup>®</sup>**): 2, 4 and 6 months, booster age 12-15 months

Note: Booster dose @ 12 through 15 months of age (Vaxelis<sup>®</sup> is NOT recommended for use as a booster dose.)

- One dose of Hib for unimmunized persons 5 years and older who have asplenia, sickle cell disease or for unimmunized persons 5-18 years with HIV infection.
- One dose of Hib may be given to adults with immunocompromising conditions.



<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-hib> and  
<https://www.cdc.gov/vaccines/pubs/pinkbook/hib.html>

# Polio

## ACIP Recommendation:

Children: Four dose series of IPV at : 2, 4, 6 through 18 months and 4 through 6 years of age.

- Minimum interval from dose 3 to dose 4 is six months
- Final dose at 4 years of age or older, regardless of the number of previous doses

## Adults:

Routine poliovirus vaccination of adults residing in the United States is not necessary.

### •**For Adults at increased risk of exposure to poliovirus with:**

- No evidence of a complete polio vaccination series (i.e., at least 3 doses): administer remaining doses (1, 2, or 3 doses) to complete a 3-dose series
  - Evidence of completed polio vaccination series (i.e., at least 3 doses): may administer one lifetime IPV booster
- 
- Travelers---A booster dose may be recommended, depending on destination and traveler's history of polio vaccination. [www.cdc.gov/polio/what-is-polio/travelers.html](http://www.cdc.gov/polio/what-is-polio/travelers.html)

<https://www.cdc.gov/vaccines/pubs/pinkbook/polio.html> And  
<https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/polio.html> and  
<https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html>

3/1/2023



# MEASLES\*

- Incubation period---11 to 12 days from exposure to onset of symptoms
- Symptoms: fever, cough, coryza, conjunctivitis, maculopapular rash and Koplik spots
- Complications: otitis media, pneumonia, croup, diarrhea, encephalitis and death
- Subacute sclerosing panencephalitis (SSPE) is a progressive neurological disorder that is rare but always fatal. It usually occurs 7-10 years after measles infection.



Source: Immunization  
Action Coalition

# Measles, Mumps, Rubella

## Measles (M)



Source: American Academy of Pediatrics  
Red Book On Line Visual Library

## Mumps (M)



Source: Creative Commons

## Rubella (R)



## Congenital Rubella (R)



# MMR Vaccine

ACIP recommendations:

Children: 2 doses of MMR:

- Dose 1 @ 12 through 15 months of age
- Dose 2 @ 4 through 6 years of age

Second dose can be given 28 days after first dose, if necessary.

Adults:

- At least 1 dose MMR for unvaccinated adults
- 2 doses MMR for students entering colleges, universities, technical and vocational schools, and other post-high-school educational institutions
- 2 doses MMR for measles and mumps and 1 dose MMR for rubella for healthcare personnel
- Travelers to foreign countries should be appropriately immunized with MMR before leaving U.S.
- Infants 6-12 mos. of age traveling abroad should receive 1 dose of MMR. This dose must be repeated at age 12 -15 months of age and a second dose at least 4 weeks later.
- A 3<sup>rd</sup> MMR may be recommended in the instance of a public health-declared mumps outbreak.

# MMR Vaccine

- Antibodies develop in approximately 95% of children vaccinated at age 12 months and over 99% of children who receive 2 doses
- Immunity long-term and probably lifelong in most persons
- Evidence of Immunity: Generally, persons can be considered immune to measles if they were:
  - born before 1957,
  - have serologic evidence of measles immunity (equivocal test results should be considered negative),
  - laboratory confirmation of disease,
  - have documentation of adequate vaccination for measles.
- Healthcare providers and health departments should not accept verbal reports of vaccination without written documentation as presumptive evidence of immunity.

# Measles Containing Vaccines

- MMR-II
- PRIORIX (GSK). ACIP Recommended June 2022
  - First licensed in Germany in 1997 and approved in over 100 countries
  - Contains equivalent vaccine virus strains as MMR II (Merck)
  - No significant differences found in safety or side effects when comparing Priorix to MMR-II.
  - PRIORIX and M-M-R II are fully interchangeable.
  - ACIP General Best Practices states a preference that doses of vaccine in a series come from the same manufacturer; however, vaccination should not be deferred when the manufacturer of the previously administered vaccine is unknown or when the vaccine from the same manufacturer is unavailable
  - Studies have shown that PRIORIX is safe and immunogenic when administered as a second dose after M-M-R II
- MMRV





## Varicella\* (Chickenpox)



ACIP recommends 2 doses of Varicella Vaccine

- Dose 1 @ 12 months through 15 months of age
- Dose 2 @ 4 through 6 years of age
- Those 13 years of age or older without evidence of immunity should receive 2 doses separated by 4 to 8 weeks.

<https://www.cdc.gov/vaccines/pubs/pinkbook/varicella.html>

and

<https://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html#note-varicella>

# ACIP Recommendations for use of MMRV (ProQuad <sup>®</sup>)\*

Licensed for ages 12 months through 12 years

- Dose 1 at ages 12 through 47 months
  - Either separate MMR and varicella vaccines or MMRV vaccine may be used.
  - CDC recommends separate doses of MMR and varicella at early age
    - Slightly increased risk of febrile seizures with combination vaccine
    - Providers should discuss benefits and risks of both vaccination options with parents
- Dose 1 or 2 given at ages 48 months and older
  - MMRV vaccine generally is preferred over separate injections of its equivalent component vaccines (i.e., MMR and varicella vaccines).

# Pneumococcal Conjugate Vaccine (PCV13, PCV15) ACIP Recommendations

## Children

- All children PCV13 or PCV15: 4-dose series at 2, 4, 6 months and 12-15 months
- On June 22, 2022, the ACIP recommended use of PCV15 as an option for pneumococcal conjugate vaccination of persons aged <19 years, according to currently recommended PCV13 dosing and schedules.
- For older children and adolescents (2 years through 18 years) with underlying medical conditions, see detailed recommendations at <https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-pneumo>

<https://www.cdc.gov/vaccines/schedules/> and  
<https://www.cdc.gov/vaccines/pubs/pinkbook/pneumo.html> and  
<https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html> and  
<https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html> and  
<https://www.cdc.gov/mmwr/volumes/71/wr/mm7137a3.htm>

# Pneumococcal Polysaccharide Vaccine (PPSV23)

## ACIP Recommendations:

- For children and adolescents 2 years through 18 years and
- Adults 19 years and older

See Summary of recommendations of PPSV23 and timing at:  
<https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html>

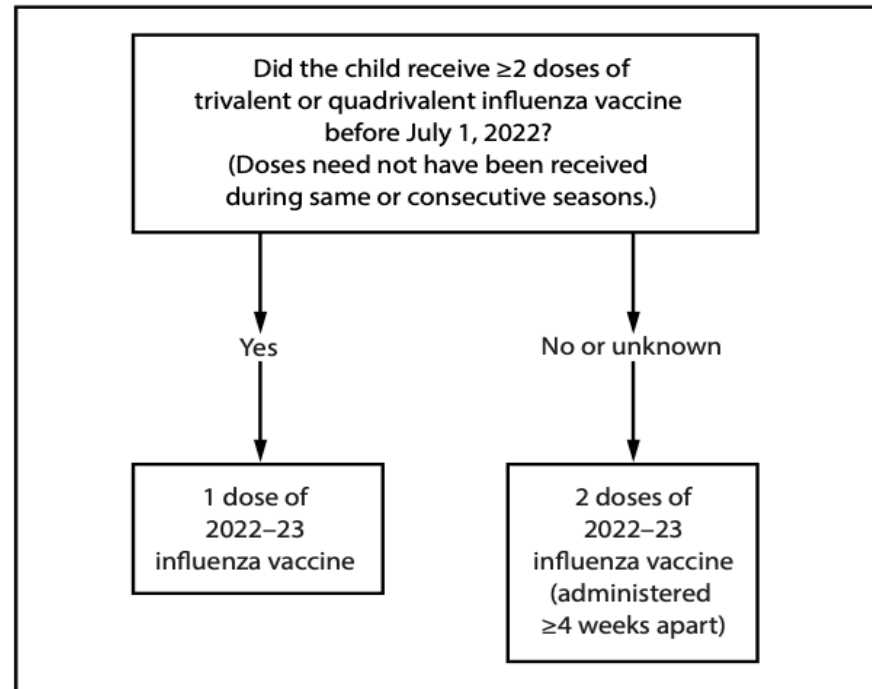
# FDA Recommended Influenza Antigens for 2022-2023 Season in the U.S.

• Egg-based influenza vaccines	Cell culture–based inactivated (ccIIV4) and recombinant (RIV4) influenza vaccines
<ul style="list-style-type: none"><li>• an influenza A/Victoria/2570/2019 (H1N1)pdm09-like virus</li><li>• an influenza A/Darwin/9/2021 (H3N2)-like virus</li><li>• an influenza B/Austria/1359417/2021 (Victoria lineage)- like virus, and</li><li>• an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus</li></ul>	<ul style="list-style-type: none"><li>• an influenza A/Wisconsin/588/2019 (H1N1)pdm09-like virus</li><li>• an influenza A/Darwin/6/2021 (H3N2)-like virus</li><li>• an influenza B/Austria/1359417/2021 (Victoria lineage)- like virus,</li><li>• an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus</li></ul>

**ACIP recommends annual influenza vaccine for all persons 6 months of age and older who do not have contraindications.**

# Dosing for children 6 months through 8 years of age

**FIGURE. Influenza vaccine dosing algorithm for children aged 6 months through 8 years\* — Advisory Committee on Immunization Practices, United States, 2022–23 influenza season**



\* Children aged 6 months through 8 years who require 2 doses of influenza vaccine should receive their first dose as soon as possible (including during July and August, if vaccine is available) to allow the second dose (which must be administered  $\geq 4$  weeks later) to be received, ideally, by the end of October. For children aged 8 years who require 2 doses of vaccine, both doses should be administered even if the child turns age 9 years between receipt of dose 1 and dose 2.

SOURCE: MMWR CDC

**TABLE 4. Dose volumes for inactivated influenza vaccines approved for children aged 6 through 35 months\* — United States, 2022–23 influenza season**

Trade name (Manufacturer)	Dose volume for children aged 6 through 35 mos (μg HA per vaccine virus)
Afluria Quadrivalent (Seqirus)	0.25 mL (7.5 μg) <sup>†</sup>
Fluarix Quadrivalent (GlaxoSmithKline)	0.5 mL (15 μg)
Flucelvax Quadrivalent (Seqirus)	0.5 mL (15 μg)
FluLaval Quadrivalent (GlaxoSmithKline)	0.5 mL (15 μg)
Fluzone Quadrivalent (Sanofi Pasteur)	0.5 mL (15 μg) <sup>§</sup>

The cell-culture based inactivated influenza vaccine (ccIIV, Flucelvax Quadrivalent, Seqirus) is licensed and recommended for all people age 6 months and older. All standard dose IIVs are now approved for use beginning at age 6 months.



## Influenza Vaccine Products for the 2022–2023 Influenza Season

Manufacturer	Trade Name (vaccine abbreviation) <sup>1</sup>	How Supplied	Mercury Content (mcg Hg/0.5mL)	Age Range	CVX Code	Vaccine Product Billing Code <sup>2</sup>
						CPT
AstraZeneca	FluMist (LAIV4)	0.2 mL (single-use nasal spray)	0	2 through 49 years	149	90672
GlaxoSmithKline	Fluarix (IIV4)	0.5 mL (single-dose syringe)	0	6 months & older <sup>3</sup>	150	90686
	FluLaval (IIV4)	0.5 mL (single-dose syringe)	0	6 months & older <sup>3</sup>	150	90686
Sanofi	Flublok (RIV4)	0.5 mL (single-dose syringe)	0	18 years & older	185	90682
	Fluzone (IIV4)	0.5 mL (single-dose syringe)	0	6 months & older <sup>3</sup>	150	90686
		0.5 mL (single-dose vial)	0	6 months & older <sup>3</sup>	150	90686
		5.0 mL multi-dose vial (0.25 mL dose)	25	6 through 35 months <sup>3</sup>	158	90687
		5.0 mL multi-dose vial (0.5 mL dose)	25	6 months & older	158	90688
	Fluzone High-Dose (IIV4-HD)	0.7 mL (single-dose syringe)	0	65 years & older	197	90662
Seqirus	Afluria (IIV4)	5.0 mL multi-dose vial (0.25 mL dose)	24.5	6 through 35 months <sup>3</sup>	158	90687
		5.0 mL multi-dose vial (0.5 mL dose)	24.5	3 years & older	158	90688
		0.5 mL (single-dose syringe)	0	3 years & older <sup>3</sup>	150	90686
	Fluad (aIIV4)	0.5 mL (single-dose syringe)	0	65 years & older	205	90694
	Flucelvax (ccIIV4)	0.5 mL (single-dose syringe)	0	6 months & older <sup>3</sup>	171	90674
		5.0 mL multi-dose vial (0.5 mL dose)	25	6 months & older <sup>3</sup>	186	90756

### NOTES

1. IIV4 = egg-based quadrivalent inactivated influenza vaccine (injectable); where necessary to refer to cell culture-based vaccine, the prefix "cc" is used (e.g., ccIIV4); RIV4 = quadrivalent recombinant hemagglutinin influenza vaccine (injectable); aIIV4 = adjuvanted quadrivalent inactivated influenza vaccine.

2. An administration code should always be reported in addition to the vaccine product code. Note: Third party payers may have specific policies and guidelines that might require providing additional information on their claim forms.

3. Dosing for infants and children age 6 through 35 months:

- Afluria 0.25 mL
- Fluarix 0.5 mL
- Flucelvax 0.5 mL
- FluLaval 0.5 mL
- Fluzone 0.25 mL or 0.5 mL

4. Afluria is approved by the Food and Drug Administration for intramuscular administration with the PharmaJet Stratis Needle-Free Injection System for persons age 18 through 64 years.



FOR PROFESSIONALS [www.immunize.org](http://www.immunize.org) / FOR THE PUBLIC [www.vaccineinformation.org](http://www.vaccineinformation.org)

[www.immunize.org/catg.d/p4072.pdf](http://www.immunize.org/catg.d/p4072.pdf)  
Item #P4072 (8/2022)



Scan for PDF

# Live, Attenuated Influenza Vaccine (LAIV4)\*

FluMist® MedImmune (Nasal Spray)

- Licensed for healthy persons 2 through 49 years of age

**LAIV4 MAY be used in the 2022-2023 season.**

Contraindications to LAIV include:

- Children 2-4 yrs. of age with a diagnosis of asthma
- Persons receiving aspirin-containing medications – potential risk for Reye syndrome
- Persons who are immunocompromised, by medication or disease, have a CSF leak or cochlear implant, or asplenia
- Close contacts and caregivers of severely immunosuppressed persons
- Persons who have received influenza antiviral medications within the previous days (dependent on antiviral)
- Persons with a cranial CSF leak; people with cochlear implants
- Persons with a severe allergic reaction to any component of the vaccine or to a previous dose of any influenza vaccine (exception for allergy to egg)
- Pregnancy

# Hepatitis A Vaccine for Children and Adolescents

ACIP recommends 2 doses of hepatitis A vaccine for:

- All children 12 through 23 months of age (Separate the 2 doses by a minimum of 6 months)
- Any child or adolescent 2 through 18 years, not previously vaccinated
- All persons >1 year of age at increased risk for HAV infection or at increased risk for severe disease from HAV infection including persons experiencing homelessness, persons with chronic liver disease, persons living with HIV
- 1 dose of Hep A Vaccine for Infants 6-11 mos. traveling outside the U.S. when protection against HAV is recommended. Revaccinate with 2 doses, separated by at least 6 months, between age 12-23 months.

<https://www.cdc.gov/vaccines/pubs/pinkbook/hepa.html> and  
<https://www.cdc.gov/vaccines/vpd/hepa/index.html> and  
<https://www.cdc.gov/vaccines/schedules/> and  
<https://www.cdc.gov/mmwr/volumes/69/rr/rr6905a1.htm>

# Hepatitis B

Hepatitis B is an infectious liver disease caused by the hepatitis virus (HBV) that can lead to cirrhosis, liver cancer, and premature death.

## Transmission:

- Percutaneous or mucosal exposure to infected blood or body fluids (e.g. skin puncture, sexual contact, contaminated surfaces)
- Vertical transmission from a HBsAg-positive mother to her newborn at birth
- Infected infants have 90% risk of developing chronic infection if not given HepB vaccine and HBIG at birth

## ACIP vaccine recommendations: children and adolescents

- Administer hepatitis B vaccine to all newborns within 24 hours of birth, using single antigen vaccine; Dose 2 at 1-2 mos. of age and Dose 3 at 6-18 mos. of age
- All children and adolescents less than 19 years of age who did not complete the series as an infant

# Hepatitis B-Exposed Infants and Children

Postexposure Prophylaxis (PEP) for infants born to mothers who are HBsAg-positive,

- Administer hepatitis B immune globulin (HBIG) AND hepatitis B vaccine within 12 hours of birth

For infants born to mothers whose HBsAg status is unknown, administer the Hep B vaccine within 12 hours of birth.

- And administer HBIG within 12 hours of birth for infants who weigh less than 2000 grams,
- HBIG can be administered up to 7 days after birth for infants weighing at least 2000 grams if the mother's hepatitis B surface antigen (HBsAg) lab result is unavailable at delivery and mother is determined to be HBsAg-positive during that time period

For further details on dosing, please visit:

<https://www.cdc.gov/vaccines/pubs/pinkbook/hepb.html>, Epidemiology and Prevention of Vaccine-Preventable Diseases, Hepatitis B chapter

# Post-vaccination serologic testing (PVST)

## ACIP Recommendations re: PVST

- PVST recommended for infants born to HBsAg-positive and HBsAg-unknown mothers
- Testing is recommended 1 to 2 months after completion of the final dose of the HepB vaccine series, at 9-12 months of age (not recommended before 9 mos. of age)
- PVST must include hepatitis B surface antigen (HBsAg) **AND** hepatitis B surface antibody (anti-HBs) tests

\*Prevention of Hepatitis B Virus Infection in the United States: Recommendations of the Advisory Committee on Immunization Practices. MMWR Recommendations and Reports 2018;67(No. RR-1):1–31.

<https://www.cdc.gov/vaccines/pubs/pinkbook/hepb.html>

# Meningococcal Disease (caused by *N. meningitidis*)

- Usually presents as meningitis, bacteremia or both
  - Transmitted through direct contact with respiratory tract secretions from patients and asymptomatic carriers
  - Nasopharyngeal carriage rate is highest in adolescents and young adults in the U.S.
  - Incidence of meningococcal disease declined during 2020– 2021, but increased in 2022
  - Recent outbreaks in the US (people experiencing homelessness, men who have sex with men)
  - New strains emerging in the US – Predominantly affecting racial and ethnic minority groups – Unclear how this will change overall epidemiology
  - More complete 2021 and 2022 data are needed
  - More years of data needed to understand post-COVID-19 epidemiology

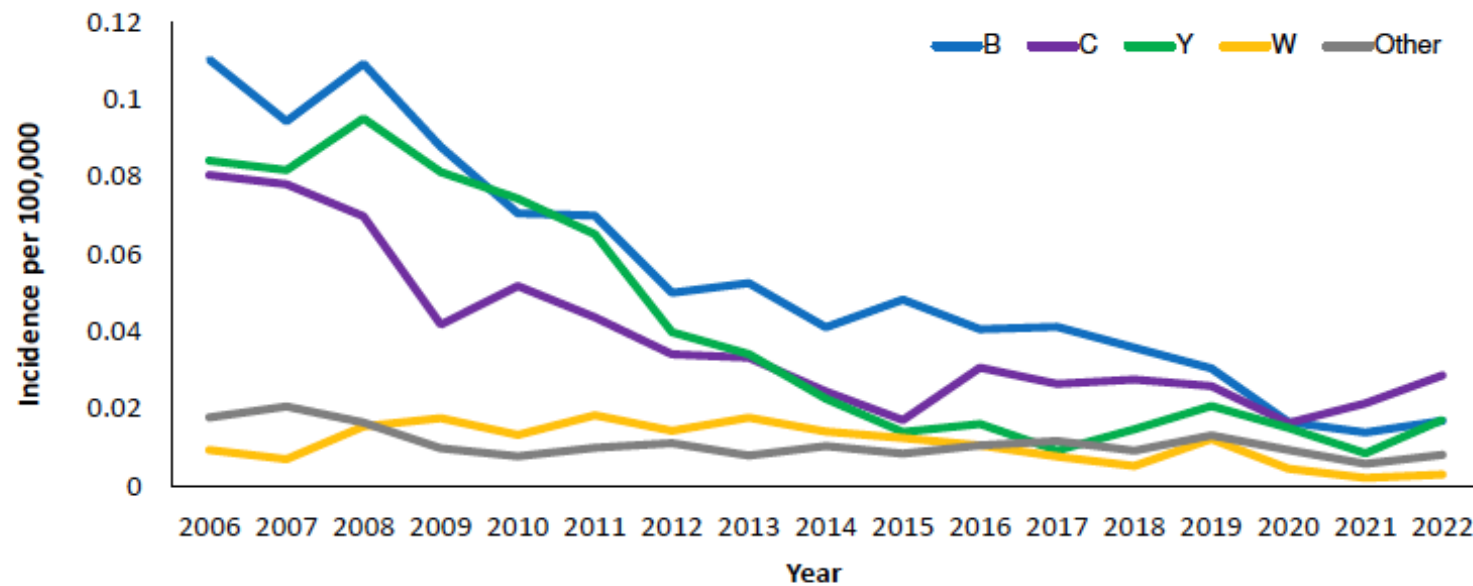
<https://www.cdc.gov/vaccines/schedules/>  
<https://www.cdc.gov/vaccines/pubs/pinkbook/mening.html>

And

<https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-02/slides-02-23/Mening-02-Rubis-508.pdf>



## Trends in Meningococcal Disease Incidence by Serogroup – United States, 2006–2022\*



Source: NNDSS data with additional serogroup data from Active Bacterial Core surveillance (ABCs) and state health departments

\*2021 and 2022 data are preliminary

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# Signs and Symptoms of Meningococcal Disease

- Symptoms of meningitis
  - Sudden onset of fever
  - Headache
  - Stiff neck
  - Photophobia
  - Nausea and vomiting
- Symptoms of meningococemia
  - All of the above are possible
  - Cold hand and feet
  - Pruritic rash
- Risk factors
  - Persistent complement component deficiencies
  - Asplenia,
  - HIV infection
  - Exposure during an outbreak; Travel/residence in a country where disease is endemic/epidemic
  - Household crowding, smoking,
  - Unvaccinated college freshmen in dorms (particularly serogroup B)
  - Military recruits



# Quadrivalent Meningococcal Conjugate Vaccine (MCV4) (Men A,C,W, Y)

Menactra™ licensed for 9 mos. through 55 years

Menveo® licensed for ages 2 mos. through 55 years

MenQuadfi® licensed for ages  $\geq 2$  yrs. of age

ACIP recommends for adolescents:

- Dose 1---age 11-12 years preferred
- Booster dose---age 16 years
- If 1<sup>st</sup> dose is received  $\geq 16$  years of age, a 2<sup>nd</sup> dose is not needed, unless they become at increased risk for meningococcal disease
- **Effective July 1, 2021, for the 2021-2022 school year, a meningococcal conjugate (MCV4/MenACWY) booster was required for all high school students entering the 11th grade and who are 16 years of age or older.**
- **First-year college students who live in residential housing (if not previously vaccinated at age 16 years or older) or military recruits**

# Meningococcal Vaccines for High Risk Persons 6 weeks – 55 years\*

Menactra™ licensed for 9 mos. through 55 years

Menveo® licensed for ages 2 mos. through 55 years

MenQuadfi® licensed for ages  $\geq 2$  yrs. of age

Recommended for persons **2 months through 55 years\*\***:

- human immunodeficiency virus (HIV)\*\*\*
- Persistent complement component deficiency, complement inhibitor
- functional or anatomic asplenia (sickle cell disease)
- microbiologists exposed to isolates of *N. meningitidis*
- part of a community outbreak due to vaccine serogroups
- persons traveling internationally to regions with endemic meningococcal disease

**For persons in any of these categories, consult the current  
ACIP Immunization Schedules for specific dosages and guidelines**

# Serogroup B Meningococcal Vaccine

Bexsero® licensed for ages 10 through 25 years (2 dose)

Trumenba® licensed for ages 10 through 25 years (2 or 3 dose)

ACIP recommends serogroup B meningococcal vaccine for\*:

- Persons with persistent complement component deficiencies
- Persons with anatomic or functional asplenia
- Persons receiving complement inhibitor
- Microbiologists routinely exposed to isolates of *Neisseria meningitidis*
- Persons considered at greater risk because of a serogroup B meningococcal disease outbreak\*\*

Based on shared clinical decision making:

A Men B vaccine series may be administered to adolescents and young adults 16 through 23 years of age to provide short-term protection against most strains of Men B. Preferred age is 16-18 years.

# Serogroup B Meningococcal Vaccine Administration

Bexsero® licensed for ages 10 through 25 years (2 dose)

Trumenba® licensed for ages 10 through 25 years (2 dose or 3 dose)

The 2 vaccine products are not interchangeable.

## MenB-FHbp (Trumenba®)

- 2 dose schedule – administered at 0, 6 months
- Given to healthy adolescents who are not at increased risk for meningococcal disease
- 3 dose schedule – administered at 0, 1-2, 6 months
- Given to persons at increased risk for meningococcal disease and for use during serogroup B outbreaks

## MenB-4C (Bexsero®)

- 2 dose schedule – 0, 1-2 months
- Given to healthy adolescents who are not at increased risk for meningococcal disease
- Given to persons at increased risk for meningococcal disease and for use during serogroup B outbreaks

<https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm> and

<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-mening>

# Meningococcal Vaccine Booster Recommendations\*

For persons at continued risk

- Meningococcal quadrivalent vaccine for persons who remain at increased risk
- Persons  $\geq 10$  years of age who previously received a MenB vaccine series
- **See \*MMWR: Tables 2-11**  
**[https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm#B1\\_down](https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm#B1_down) for further details.**

<https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/mening.html>



# Rotavirus Vaccines

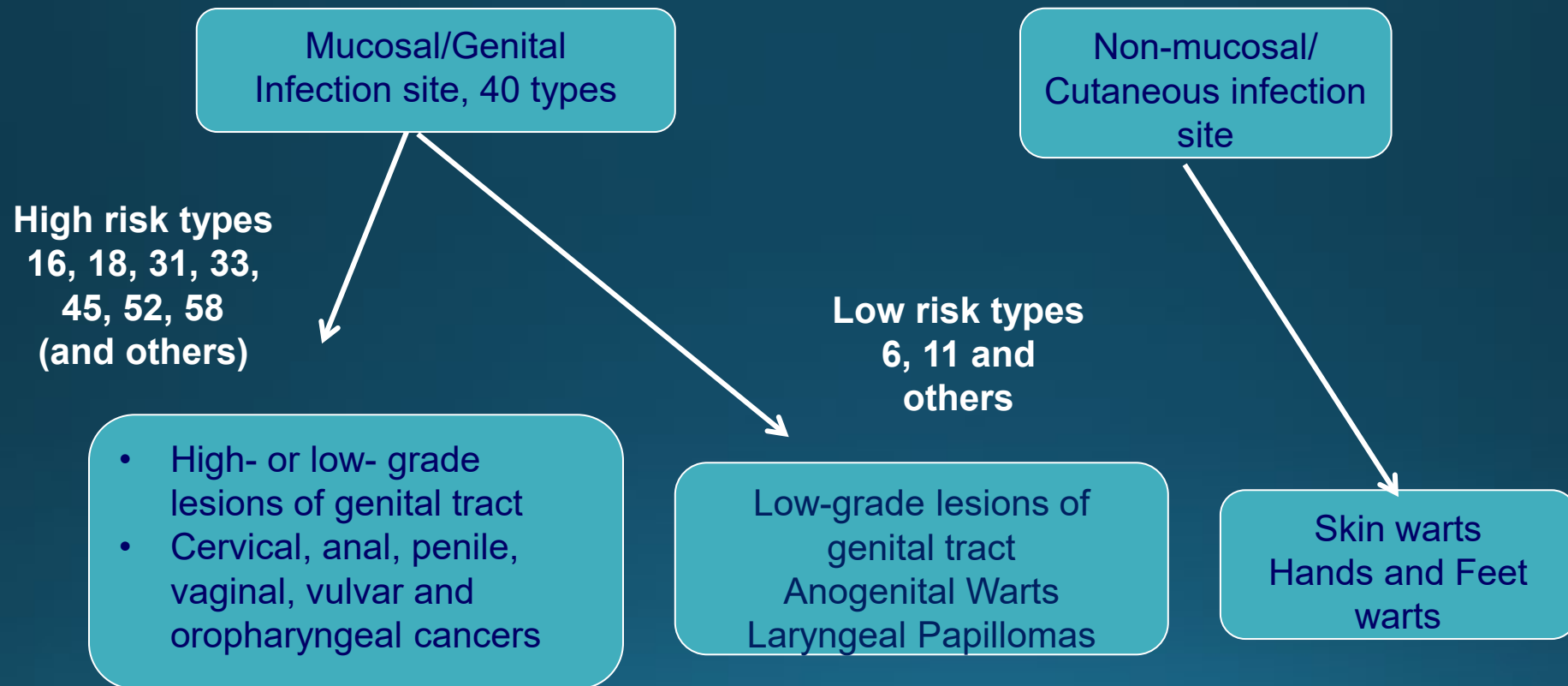
## RotaTeq® (Merck) and Rotarix® (GSK)\*

- RV 5, RotaTeq®: 3 doses; ages 2, 4, 6 months
- RV 1, Rotarix®: 2 doses; ages 2 and 4 months
- ACIP recommendation:
- 2-3 doses depending on brand
- Administer either vaccine as directed below:
  - Minimum age for first dose: 6 weeks
  - Maximum age for first dose: 14 weeks 6 days. Do not start the series on or after age 15 weeks, 0 days
  - Minimum interval between doses: 4 weeks
  - Maximum age for any dose: 8 months 0 days
- If any dose is RotaTeq®, 3 doses are required
- Use RotaTeq® if allergy to latex

<https://www.cdc.gov/vaccines/vpd/rotavirus/index.html> and  
<https://www.cdc.gov/vaccines/vpd/rotavirus/hcp/recommendations.htm>  
and <https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-rotavirus>

# Types of Human Papilloma Virus (HPV)\*

(More Than 200 Types Identified)



\*Epidemiology and Prevention of Vaccine Preventable Diseases 14<sup>th</sup> Edition, 2021

\*Red Book – AAP 2018 Report of the Committee on Infectious Diseases

\* MMWR, August 29, 2014, RR Vol. 63, No. 5

# HPV Vaccine

**Gardasil 9<sup>®</sup> (9vHPV)** HPV types 6, 11, 16, 18, 31, 33, 45, 52, 58

ACIP recommends HPV vaccine starting at age 11 or 12 years for:

- All males and females through 26 years of age
- Catch-up vaccination for persons through age 26 who are not adequately vaccinated

Gardasil 9 is now also licensed for all persons 9 through 45 yrs. of age\*\*

- Use the 3-dose schedule for persons 15-45 years of age
- Based on shared clinical decision making, the series may be given to persons ages 27-45.

<https://www.cdc.gov/vaccines/pubs/pinkbook/hpv.html>  
And <https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/hpv.html> and  
<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-rotavirus>

# ACIP Recommendations and Schedule

## 2 Dose Schedule:

HPV vaccine initiated between 9-14 years can be given in two doses: 0, 6-12 months.  
(If the 2<sup>nd</sup> dose is administered at least 5 months after 1<sup>st</sup> dose, it can be counted).

## 3 Dose Schedule:

HPV vaccine initiated after the 15<sup>th</sup> birthday or in persons with certain immunocompromising conditions should be vaccinated with the 3 dose schedule:  
0, 1-2, 6 months

Dose 2 should be given at least 1 to 2 months after first dose (1 month minimum); Dose 3 should be given at least 6 months after the first dose  
(minimum of 3 months between dose 2 and 3)

# Reasons to Immunize Against HPV at age 11-12 Years

- Higher antibody level attained when given to pre-teens rather than to older adolescents or women
- At this age, more likely to be administered before onset of sexual activity
- HPV can be transmitted by other skin-to-skin contact, not just sexual intercourse
- There is no link between vaccine and riskier sexual behavior
- Even those who abstain from sex until marriage can be infected by their marital partner
- Individuals need to complete the series for full protection
- This is an anti-cancer vaccine, and.....

**Over 90% of HPV cancers are preventable through HPV vaccination.**

**Bottom line: NOT receiving a healthcare provider's recommendation for HPV vaccine was one of the main reasons parents reported for not vaccinating their adolescent children.\*\***

Presented by Anne Schuchat, MD, RADM US Public Health Service, Asst. Surgeon General, Director NCIRD at Immunize Georgia Conference, Atlanta, GA, 9-11-14

Increasing HPV Vaccination Rates Among Adolescents: Challenges and Opportunities. PolicyLab: The Children's Hospital of Philadelphia, 2016.

[http://www.immunize.org/askexperts/experts\\_hpv.asp](http://www.immunize.org/askexperts/experts_hpv.asp)

# Other vaccine news February 2023

RSV – The VRBPAC (Vaccines and Related Biological Products Advisory Committee) of the FDA has voted to approved two new RSV vaccines for adults 60 years and older. The ACIP has not yet met to vote and provide any recommendations. Stay tuned!

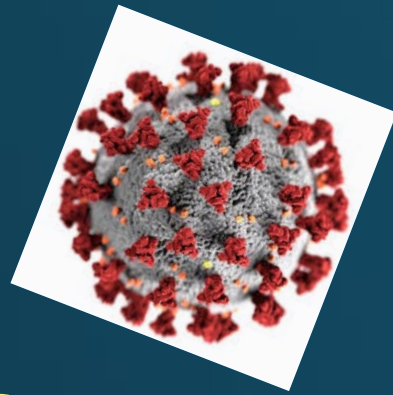
<https://www.cnn.com/2023/02/28/health/fda-rsv-vaccine/index.html#:~:text=Over%20the%20course%20of%20a,vaccines%20against%20the%20common%20virus.>

Monkeypox – ACIP approved the following recommendation by majority vote at its February 22-24, 2023, meeting:

- ACIP recommends the 2-dose JYNNEOS vaccine series for persons aged 18 years and older at risk of mpox during an mpox outbreak.

<https://www.cdc.gov/vaccines/acip/index.html>





# SARS-CoV-2 virus (COVID-19 disease and vaccines)

Insert slides from Full COVID-19 set or Brief Set as applicable  
Also include FAQs on COVID at the end

# Critical Elements for Immunization Services



# 2023 Childhood and Adolescent Immunization Schedules\*

- Recommended Schedule for Children Ages 0-18 Years
- Catch-up Schedule
- Vaccines that might be indicated for children and adolescents aged 18 years or younger based on medical indications

## Changes

- Clarification of the charts
- Additional information in the Notes section

**READ THE FOOTNOTES TO  
ACCESS SPECIFIC VACCINE  
ADMINISTRATION DETAILS!**

<https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html>  
5/1/2023

**Table 1 Recommended Child and Adolescent Immunization Schedule for ages 18 years or younger, United States, 2021**

These recommendations must be read with the notes that follow. For those who did not start the vaccine series at birth, the schedule is indicated by the green bars. The schedule is indicated by the yellow bars. For those who did not start the vaccine series at birth, the schedule is indicated by the green bars. The schedule is indicated by the yellow bars.

**Table 2 Recommended Catch-up Immunization Schedule for Children and Adolescents Who Start Late or Who Are More than 1 Month Behind, United States, 2021**

Use this table to determine the catch-up schedule for children and adolescents who start late or who are more than 1 month behind. The schedule is indicated by the green bars. The schedule is indicated by the yellow bars.

**Table 3 Recommended Child and Adolescent Immunization Schedule by Medical Indication, United States, 2021**

Always use this table in conjunction with Table 1 and the notes that follow.

# Recommended Healthcare Personnel Vaccinations

- Hepatitis B (exposure risk) check immunity
- Influenza (annual)
- Measles, Mumps, Rubella (MMR)
- Varicella (Chickenpox)
- Tetanus, Diphtheria, Pertussis (Tdap)
- Meningococcal (recommended for microbiologists who are routinely exposed to isolates of *N. meningitidis*).
- COVID-19 vaccine

## Are YOU up to date?

5/1/2023

## Healthcare Personnel Vaccination Recommendations<sup>1</sup>

### VACCINES AND RECOMMENDATIONS IN BRIEF

**Hepatitis B** – If previously unvaccinated, give a 2-dose (Heplisav-B) or 3-dose (Engerix-B or Recombivax HB) series. Give intramuscularly (IM). For HCP who perform tasks that may involve exposure to blood or body fluids, obtain anti-HBs serologic testing 1–2 months after dose #2 (for Heplisav-B) or dose #3 (for Engerix-B or Recombivax HB).

**Influenza** – Give 1 dose of influenza vaccine annually. Inactivated injectable vaccine is given IM. Live attenuated influenza vaccine (LAIV) is given intranasally.

**MMR** – For healthcare personnel (HCP) born in 1957 or later without serologic evidence of immunity or prior vaccination, give 2 doses of MMR, 4 weeks apart. For HCP born prior to 1957, see below. Give subcutaneously (Subcut).

**Varicella (chickenpox)** – For HCP who have no serologic proof of immunity, prior vaccination, or diagnosis or verification of a history of varicella or herpes zoster (shingles) by a healthcare provider, give 2 doses of varicella vaccine, 4 weeks apart. Give Subcut.

**Tetanus, diphtheria, pertussis** – Give 1 dose of Tdap as soon as feasible to all HCP who have not received Tdap previously and to pregnant HCP with each pregnancy (see below). Give Td or Tdap boosters every 10 years thereafter. Give IM.

**Meningococcal** – Give both MenACWY and MenB to microbiologists who are routinely exposed to isolates of *Neisseria meningitidis*. As long as risk continues: boost with MenB after 1 year, then every 2–3 years thereafter; boost with MenACWY every 5 years. Give MenACWY and MenB IM.

*Hepatitis A, typhoid, and polio vaccines are not routinely recommended for HCP who may have on-the-job exposure to fecal material.*

### Hepatitis B

Unvaccinated healthcare personnel (HCP) and/or those who cannot document previous vaccination should receive either a 2-dose series of Heplisav-B at 0 and 1 month or a 3-dose series of either Engerix-B or Recombivax HB at 0, 1, and 6 months. HCP who perform tasks that may involve exposure to blood or body fluids should be tested for hepatitis B surface antibody (anti-HBs) 1–2 months after dose #2 of Heplisav-B or dose #3 of Engerix-B or Recombivax HB to document immunity.

- If anti-HBs is at least 10 mIU/mL (positive), the vaccinee is immune. No further serologic testing or vaccination is recommended.
- If anti-HBs is less than 10 mIU/mL (negative), the vaccinee is not protected from hepatitis B virus (HBV) infection, and should receive another 2-dose or 3-dose series of HepB vaccine on the routine schedule, followed by anti-HBs testing 1–2 months later. A vaccinee whose anti-HBs remains less than 10 mIU/mL after 2 complete series is considered a “non-responder.”

**For non-responders:** HCP who are non-responders should be considered susceptible to HBV and should be counseled regarding precautions to prevent HBV infection and the need to obtain HBIG prophylaxis for any known or probable parenteral exposure to hepatitis B surface antigen (HBsAg)-positive blood or blood with unknown HBsAg status. It is also possible that non-responders are people who are HBsAg positive. HBsAg testing is recommended. HCP found

to be HBsAg positive should be counseled and medically evaluated.

**For HCP with documentation of a complete 2-dose (Heplisav-B) or 3-dose (Engerix-B or Recombivax HB) vaccine series but no documentation of anti-HBs of at least 10 mIU/mL (e.g., those vaccinated in childhood):** HCP who are at risk for occupational blood or body fluid exposure might undergo anti-HBs testing upon hire or matriculation. See references 2 and 3 for details.

### Influenza

All HCP, including physicians, nurses, paramedics, emergency medical technicians, employees of nursing homes and chronic care facilities, students in these professions, and volunteers, should receive annual vaccination against influenza. Live attenuated influenza vaccine (LAIV) may be given only to non-pregnant healthy HCP age 49 years and younger. Inactivated injectable influenza vaccine (IIV) is preferred over LAIV for HCP who are in close contact with severely immunosuppressed patients (e.g., stem cell transplant recipients) when they require protective isolation.

### Measles, Mumps, Rubella (MMR)

HCP who work in medical facilities should be immune to measles, mumps, and rubella.

- HCP born in 1957 or later can be considered immune to measles, mumps, or rubella only if they have documentation of (a) laboratory confirmation of disease or immunity or (b) appropriate vaccination against measles, mumps, and rubella (i.e., 2 doses of live

measles and mumps vaccines given on or after the first birthday and separated by 28 days or more, and at least 1 dose of live rubella vaccine). HCP with 2 documented doses of MMR are not recommended to be serologically tested for immunity; but if they are tested and results are negative or equivocal for measles, mumps, and/or rubella, these HCP should be considered to have presumptive evidence of immunity to measles, mumps, and/or rubella and are not in need of additional MMR doses.

- Although birth before 1957 generally is considered acceptable evidence of measles, mumps, and rubella immunity, 2 doses of MMR vaccine should be considered for unvaccinated HCP born before 1957 who do not have laboratory evidence of disease or immunity to measles and/or mumps. One dose of MMR vaccine should be considered for HCP with no laboratory evidence of disease or immunity to rubella. For these same HCP who do not have evidence of immunity, 2 doses of MMR vaccine are recommended during an outbreak of measles or mumps and 1 dose during an outbreak of rubella.

### Varicella

It is recommended that all HCP be immune to varicella. Evidence of immunity in HCP includes documentation of 2 doses of varicella vaccine given at least 28 days apart, laboratory evidence of immunity, laboratory confirmation of disease, or diagnosis or verification of a history of varicella or herpes zoster (shingles) by a healthcare provider.

### Tetanus/Diphtheria/Pertussis (Td/Tdap)

All HCPs who have not or are unsure if they have previously received a dose of Tdap should receive a dose of Tdap as soon as feasible, without regard to the interval since the previous dose of Td. Pregnant HCP should be revaccinated during each pregnancy. All HCPs should then receive Td or Tdap boosters every 10 years thereafter.

### Meningococcal

Vaccination with MenACWY and MenB is recommended for microbiologists who are routinely exposed to isolates of *N. meningitidis*. The two vaccines may be given concomitantly but at different anatomic sites, if feasible.

### REFERENCES

1. CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*, 2011; 60(RR-7).
2. CDC. Prevention of Hepatitis B Virus Infection in the United States. Recommendations of the Advisory Committee on Immunization Practices. *MMWR*, 2018; 67(RR1):1–30.
3. IAC. Pre-exposure Management for Healthcare Personnel with a Documented Hepatitis B Vaccine Series Who Have Not Had Post-vaccination Serologic Testing. Accessed at [www.immunize.org/catg.d/p2108.pdf](http://www.immunize.org/catg.d/p2108.pdf).

For additional specific ACIP recommendations, visit CDC's website at [www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/index.html](http://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/index.html) or visit IAC's website at [www.immunize.org/acip](http://www.immunize.org/acip).

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[www.immunize.org/catg.d/p2017.pdf](http://www.immunize.org/catg.d/p2017.pdf) • Item #P2017 (2/21)

Available at [www.immunize.org](http://www.immunize.org), P#2017

# Updated Vaccine Storage and Handling Recommendations\*

- Use stand-alone refrigerator and stand-alone freezer units. If combined, use only refrigerator part.
- Do not store any vaccine in a dormitory-style or bar-style combined refrigerator/freezer unit.
- Use a bio-safe glycol-encased probe or a similar temperature buffered probe
- Probes should be calibrated every 1-2 yrs. or according to manufacturers' guidelines
- Use digital data loggers.
- Do not store ANYTHING ELSE in refrigerator.
- Review vaccine expiration dates and rotate vaccine stock weekly.



# Maintaining Appropriate Vaccine Storage & Handling\*

- Assign a primary and alternate vaccine coordinator.
- Store all vaccines as recommended by manufacturer and IN ORIGINAL PACKAGING, WITH THE LID CLOSED.
- Monitor and record temperatures of refrigerator and freezer twice daily.
- Correct ranges: refrigerator 36° F to 46° F; freezer -58° F to +5° F
- Maintain temperature log records for 3 years.
- Take immediate action for all out-of-range temps.
- Implement a vaccine emergency system.
- If it is necessary to transport vaccine, do NOT use dry ice. See Vaccine Storage and Handling Toolkit, Section 6 for Transport System Recommendations.
- For COVID-19 vaccine, see specific vaccine guidelines.



# Vaccine Administration Best practices – Route, Dose, Site, Needle Size

## Administering Vaccines: Dose, Route, Site, and Needle Size

Vaccine	Dose	Route	Injection Site and Needle Size
<b>COVID-19</b> Pfizer-BioNTech • age 5 to <12 yrs: 0.2 mL pediatric formulation ("orange cap") • age ≥12 yrs: 0.3 mL adult/adolescent formulation for primary and booster doses Moderna; ≥18 yrs: 0.5 mL primary series*; 0.25 mL booster Janssen: ≥18 yrs: 0.5 mL for primary & booster doses		IM	<b>Subcutaneous (Subcut) injection</b> Use a 23–25 gauge needle. Choose the injection site that is appropriate to the person's age and body mass.
<b>Diphtheria, Tetanus, Pertussis</b> (DTaP, DT, Tdap, Td)	0.5 mL	IM	
<b>Haemophilus influenzae type b</b> (Hib)	0.5 mL	IM	
<b>Hepatitis A</b> (HepA)	≤18 yrs: 0.5 mL ≥19 yrs: 1.0 mL	IM	
<b>Hepatitis B</b> (HepB) <i>Persons 11–15 yrs may be given Recombivax HB (Merck)</i> <i>1.0 mL adult formulation on a 2-dose schedule.</i>	Engerix-B; Recombivax HB ≤19 yrs: 0.5 mL ≥20 yrs: 1.0 mL Heplisav-B ≥18 yrs: 0.5 mL	IM	
<b>Human papillomavirus</b> (HPV)	0.5 mL	IM	
<b>Influenza, live attenuated</b> (LAIV)	0.2 mL (0.1 mL in each nostril)	Intra-nasal spray	
<b>Influenza, inactivated</b> (IIV); for ages 6–35 months	Afluria: 0.25 mL Fluzone: 0.25 or 0.5 mL Fluarix, Flucelvax, FluLaval: 0.5 mL	IM	
<b>Influenza, inactivated</b> (IIV), ≥3 yrs; <b>recombinant</b> (RIV), ≥18 yrs; <b>high-dose</b> (HD-IIV) ≥65 yrs	0.5 mL FluZone HD: 0.7 mL	IM	

AGE	NEEDLE LENGTH	INJECTION SITE
Infants (1–12 mos)	5/8"	Fatty tissue over anterolateral thigh muscle
Children 12 mos or older, adolescents, and adults	5/8"	Fatty tissue over anterolateral thigh muscle or fatty tissue over triceps
<b>Intramuscular (IM) injection</b> Use a 22–25 gauge needle. Choose the injection site and needle length that is appropriate to the person's age and body mass.		
AGE	NEEDLE LENGTH	INJECTION SITE
Newborns (1st 28 days)	5/8" <sup>1</sup>	Anterolateral thigh muscle
Infants (1–12 mos)	1"	Anterolateral thigh muscle
Toddlers (1–2 years)	1–1¼"	Anterolateral thigh muscle <sup>2</sup>
	5/8–1"	Deltoid muscle of arm
Children (3–10 years)	5/8–1"	Deltoid muscle of arm <sup>2</sup>
	1–1¼"	Anterolateral thigh muscle
Adolescents and teens (11–18 years)	5/8–1"	Deltoid muscle of arm <sup>2</sup>
	1–1½"	Anterolateral thigh muscle
Adults 19 years or older		

<b>Measles, Mumps, Rubella</b> (MMR)	0.5 mL	Subcut	Female or male <130 lbs	5/8–1" <sup>1</sup>	Deltoid muscle of arm
<b>Meningococcal serogroups A, C, W, Y</b> (MenACWY)	0.5 mL	IM	Female or male 130–152 lbs	1"	Deltoid muscle of arm
<b>Meningococcal serogroup B</b> (MenB)	0.5 mL	IM	Female 153–200 lbs Male 153–260 lbs	1–1½"	Deltoid muscle of arm
<b>Pneumococcal conjugate</b> (PCV)	0.5 mL	IM	Female 200+ lbs Male 260+ lbs	1½"	Deltoid muscle of arm
<b>Pneumococcal polysaccharide</b> (PPSV)	0.5 mL	IM or Subcut	Female or male, any weight	1½"	Anterolateral thigh muscle
<b>Polio, inactivated</b> (IPV)	0.5 mL	IM or Subcut			
<b>Rotavirus</b> (RV)	Rotarix: 1.0 mL Rotateq: 2.0 mL	Oral			
<b>Varicella</b> (VAR)	0.5 mL	Subcut			
<b>Zoster</b> (Zos)	Shingrix: 0.5 <sup>†</sup> mL	IM			
<b>Combination Vaccines</b>					
DTaP-HepB-IPV (Pediarix) DTaP-IPV/Hib (Pentacel) DTaP-IPV (Kinrix; Quadracel) DTaP-IPV-Hib-HepB (Vaxelis)	0.5 mL	IM			
MMRV (ProQuad)	≤12 yrs: 0.5 mL	Subcut			
HepA-HepB (Twinrix)	≥18 yrs: 1.0 mL	IM			

<sup>1</sup> A 5/8" needle may be used in newborns, preterm infants, and patients weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle only if the skin stretched tight, the subcutaneous tissue is not bunched, and the injection is made at a 90-degree angle to the skin.

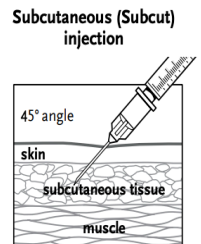
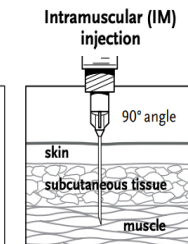
<sup>2</sup> Preferred site

**NOTE:** Always refer to the package insert included with each biologic for complete vaccine administration information. CDC's Advisory Committee on Immunization Practices (ACIP) recommendations for the particular vaccine should be reviewed as well. Access the ACIP recommendations at [www.immunize.org/acip](http://www.immunize.org/acip).

\* If immunocompromised, Moderna 0.5 mL for 3-dose primary series, then 0.25 mL for booster dose.

<sup>†</sup> The Shingrix vial might contain more than 0.5 mL. Do not administer more than 0.5 mL.

**Intranasal (NAS) administration of Flumist (LAIV) vaccine**



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[www.immunize.org/catg.d/p3085.pdf](http://www.immunize.org/catg.d/p3085.pdf) · Item #P3085 (11/21)

# How to administer IM and SC vaccine injections

## How to Administer Intramuscular and Subcutaneous Vaccine Injections Administration by the Intramuscular (IM) Route

### Administer these vaccines via IM route

- Diphtheria-tetanus-pertussis (DTaP, Tdap)
- Diphtheria-tetanus (DT, Td)
- *Haemophilus influenzae* type b (Hib)
- Hepatitis A (HepA)
- Hepatitis B (HepB)
- Human papillomavirus (HPV)
- Inactivated influenza (IIV)
- Meningococcal serogroups A, C, W, Y (MenACWY)
- Meningococcal serogroup B (MenB)
- Pneumococcal conjugate (PCV13)
- Zoster, recombinant (RZV)

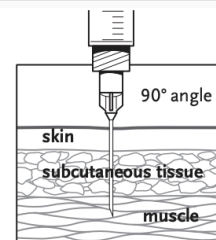
Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPSV23) vaccines either IM or subcutaneously (Subcut).

PATIENT AGE	INJECTION SITE	NEEDLE SIZE
Newborn (0–28 days)	Anterolateral thigh muscle	5/8"† (22–25 gauge)
Infant (1–12 mos)	Anterolateral thigh muscle	1" (22–25 gauge)
Toddler (1–2 years)	Anterolateral thigh muscle	1–1¼" (22–25 gauge)
	Alternate site: Deltoid muscle of arm if muscle mass is adequate	5/8"–1" (22–25 gauge)
Children (3–10 years)	Deltoid muscle (upper arm)	5/8"–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1¼" (22–25 gauge)
Children and adults (11 years and older)	Deltoid muscle (upper arm)	5/8"†–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1½" (22–25 gauge)

\* A 5/8" needle usually is adequate for neonates (first 28 days of life), preterm infants, and children ages 1 through 18 years if the skin is stretched flat between the thumb and forefinger and the needle is inserted at a 90° angle to the skin.

† A 5/8" needle may be used in patients weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle only if the skin is stretched flat between the

thumb and forefinger and the needle is inserted at a 90° angle to the skin; a 1" needle is sufficient in patients weighing 130–152 lbs (60–70 kg); a 1–1¼" needle is recommended in women weighing 153–200 lbs (70–90 kg) and men weighing 153–260 lbs (70–118 kg); a 1½" needle is recommended in women weighing more than 200 lbs (91 kg) or men weighing more than 260 lbs (118 kg).



### Needle insertion

Use a needle long enough to reach deep into the muscle.

Insert needle at a 90° angle to the skin with a quick thrust.

(Before administering an injection of vaccine, it is not necessary to aspirate, i.e., to pull back on the syringe plunger after needle insertion.¶)

Multiple injections given in the same extremity should be separated by a minimum of 1", if possible.

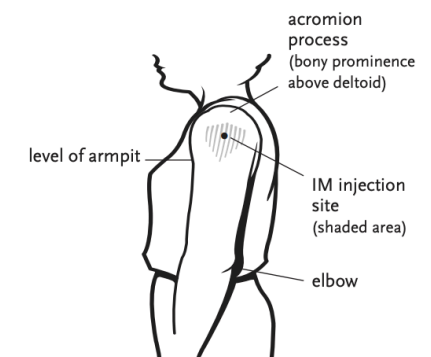
¶ CDC. "General Best Practices Guidelines for Immunization: Best Practices Guidance of the ACIP" at <https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf>

### Intramuscular (IM) injection site for infants and toddlers



Insert needle at a 90° angle into the anterolateral thigh muscle.

### Intramuscular (IM) injection site for children and adults



Give in the central and thickest portion of the deltoid muscle – above the level of the armpit and approximately 2–3 fingerbreadths (~2") below the acromion process. See the diagram. To avoid causing an injury, do not inject too high (near the acromion process) or too low.

<https://www.immunize.org/catg.d/p2020.pdf>

CONTINUED ON THE NEXT PAGE ►

# Training Tools: Skills Checklist for Vaccine Administration

## Skills Checklist for Vaccine Administration

During the COVID-19 pandemic, the CDC recommends additional infection control measures for vaccination (see [www.cdc.gov/vaccines/pandemic-guidance/index.html](https://www.cdc.gov/vaccines/pandemic-guidance/index.html)).

The Skills Checklist is a self-assessment tool for healthcare staff who administer immunizations. To complete it, review the competency areas below and the clinical skills, techniques and procedures outlined for each area. Score yourself in the Self-Assessment column. If you check **Needs to Improve**, you indicate further study, practice, or change is needed. When you check **Meets or Exceeds**, you indicate you believe you are performing at the expected level of competence, or higher.

**Supervisors:** Use the Skills Checklist to clarify responsibilities and expectations for staff who administer vaccines. When you use it to assist with performance reviews, give staff the opportunity to score themselves in advance. Next, observe their performance as they

administer vaccines to several patients, and score in the Supervisor Review columns. If improvement is needed, meet with them to develop a Plan of Action (see bottom of page 3) to help them achieve the level of competence you expect; circle desired actions or write in others.

The video "Immunization Techniques: Best Practices with Infants, Children, and Adults" helps ensure that staff administer vaccines correctly. (View at [www.youtube.com/watch?v=W6Z6NEjffI](https://www.youtube.com/watch?v=W6Z6NEjffI) or order online at [www.immunize.org/dvd/](https://www.immunize.org/dvd/).) Another helpful resource is CDC's Vaccine Administration eLearn course, available at [www.cdc.gov/vaccines/hcp/admin/resource-library.html](https://www.cdc.gov/vaccines/hcp/admin/resource-library.html).

COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	Self-Assessment		Supervisor Review		
		NEEDS TO IMPROVE	MEETS OR EXCEEDS	NEEDS TO IMPROVE	MEETS OR EXCEEDS	PLAN OF ACTION
<b>A</b> Patient/Parent Education	1. Welcomes patient/family and establishes rapport.					
	2. Explains what vaccines will be given and which type(s) of injection(s) will be done.					
	3. Answers questions and accommodates language or literacy barriers and special needs of patient/parents to help make them feel comfortable and informed about the procedure.					
	4. Verifies patient/parents received Vaccine Information Statements (VISs) for indicated vaccines and has had time to read them and ask questions.					
	5. Screens for contraindications (if within employee's scope of work).					
	6. Reviews comfort measures and aftercare instructions with patient/parents, and invites questions.					
<b>B</b> Medical and Office Protocols	1. Identifies the location of the medical protocols (e.g., immunization protocol, emergency protocol, reporting adverse events to the Vaccine Adverse Event Reporting system [VAERS], reference material).					
	2. Identifies the location of epinephrine, its administration technique, and clinical situations where its use would be indicated.					
	3. Maintains up-to-date CPR certification.					
	4. Understands the need to report any needlestick injury and to maintain a sharps injury log.					
	5. Demonstrates knowledge of proper vaccine handling (e.g., maintains and monitors vaccine at recommended temperature and protects from light).					

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### Skills Checklist for Vaccine Administration (continued)

COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	Self-Assessment		
		NEEDS TO IMPROVE	MEETS OR EXCEEDS	NEEDS TO IMPROVE
<b>C</b> Vaccine Preparation	1. Performs proper hand hygiene prior to preparing vaccine.			
	2. When removing vaccine from the refrigerator or freezer, looks at the storage unit's temperature to make sure it is in proper range.			
	3. Checks vial expiration date. Double-checks vial label and contents prior to drawing up.			
	4. Prepares and draws up vaccines in a designated clean medication area that is not adjacent to areas where potentially contaminated items are placed.			
	5. Selects the correct needle size for IM and Subcut based on patient age and/or weight, site, and recommended injection technique.			
	6. Maintains aseptic technique throughout, including cleaning the rubber septum (stopper) of the vial with alcohol prior to piercing it.			
	7. Prepares vaccine according to manufacturer instructions. Inverts vial and draws up correct dose of vaccine. Rechecks vial label.			
	8. Prepares a new sterile syringe and sterile needle for each injection. Checks the expiration date on the equipment (syringes and needles) if present.			
	9. Labels each filled syringe or uses labeled tray to keep them identified.			
<b>D</b> Administering Immunizations	1. Verifies identity of patient. Rechecks the provider's order or instructions against the vial and the prepared syringes.			
	2. Utilizes proper hand hygiene with every patient and, if it is office policy, puts on disposable gloves. (If using gloves, changes gloves for every patient.)			
	3. Demonstrates knowledge of the appropriate route for each vaccine.			
	4. Positions patient and/or restrains the child with parent's help.			
	5. Correctly identifies the injection site (e.g., deltoid, vastus lateralis, fatty tissue over triceps).			
	6. Locates anatomic landmarks specific for IM or Subcut injections.			
	7. Preps the site with an alcohol wipe, using a circular motion from the center to a 2" to 3" circle. Allows alcohol to dry.			

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### Skills Checklist for Vaccine Administration (continued)

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COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	Self-Assessment		Supervisor Review		
		NEEDS TO IMPROVE	MEETS OR EXCEEDS	NEEDS TO IMPROVE	MEETS OR EXCEEDS	PLAN OF ACTION
<b>D</b> Administering Immunizations (continued)	8. Controls the limb with the non-dominant hand; holds the needle an inch from the skin and inserts it quickly at the appropriate angle (90° for IM or 45° for Subcut).					
	9. Injects vaccine using steady pressure; withdraws needle at angle of insertion.					
	10. Applies gentle pressure to injection site for several seconds (using, e.g., gauze pad, bandaid).					
	11. Uses strategies to reduce anxiety and pain associated with injections.					
	12. Properly disposes of needle and syringe in "sharps" container.					
<b>E</b> Records Procedures	13. Properly disposes of vaccine vials.					
	1. Fully documents each vaccination in patient chart: date, lot number, manufacturer, site, VIS date, name/initials.					
	2. If applicable, demonstrates ability to use state/local immunization registry or computer to call up patient record, assess what is due today, and update computerized immunization history.					
	3. Asks for and updates patient's vaccination record and reminds them to bring it to each visit.					

### Plan of Action

Circle desired next steps and write in the agreed deadline for completion, as well as date for the follow-up performance review.

- Watch video on immunization techniques and review CDC's Vaccine Administration eLearn, available at [www.cdc.gov/vaccines/hcp/admin/resource-library.html](https://www.cdc.gov/vaccines/hcp/admin/resource-library.html).
- Review office protocols.
- Review manuals, textbooks, wall charts, or other guides (e.g., Key Vaccination Resources for Healthcare Professionals at [www.immunize.org/catg.d/p2005.pdf](https://www.immunize.org/catg.d/p2005.pdf)).
- Review package inserts.
- Review vaccine storage and handling guidelines or video.
- Observe other staff with patients.

- Practice injections.
- Read Vaccine Information Statements.
- Be mentored by someone who has demonstrated appropriate immunization skills.
- Role play (with other staff) interactions with parents and patients, including age appropriate comfort measures.
- Attend a skills training or other appropriate courses/training.
- Attend healthcare customer satisfaction or cultural competency training.
- Renew CPR certification.
- Other \_\_\_\_\_

File the Skills Checklist in the employee's personnel folder.

PLAN OF ACTION DEADLINE	_____
DATE OF NEXT PERFORMANCE REVIEW	_____

EMPLOYEE SIGNATURE	DATE
SUPERVISOR SIGNATURE	DATE

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<https://www.immunize.org/catg.d/p7010.pdf>

5/1/2023

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# Improper Immunization Administration Practices with Any Vaccine\*

DO NOT re-use needles or syringes, due to the possibility of:

- Transmission of blood-borne viruses (HCV, HBV, HIV)
- Referral of providers to licensing boards for disciplinary action
- Malpractice suits filed by patients

Never use partial doses from 2 or more vials to obtain a dose of vaccine.\*\*

Per OSHA and the CDC, you MAY use the same needle to withdraw a diluent, inject this into a lyophilized vaccine vial, and then administer to a patient, providing the needle or syringe has not otherwise been contaminated.\*\*

\*CDC, NCEZIZ, DHQP. Injection Safety Information for Providers: [www.cdc.gov/injectionsafety/providers.html](http://www.cdc.gov/injectionsafety/providers.html)

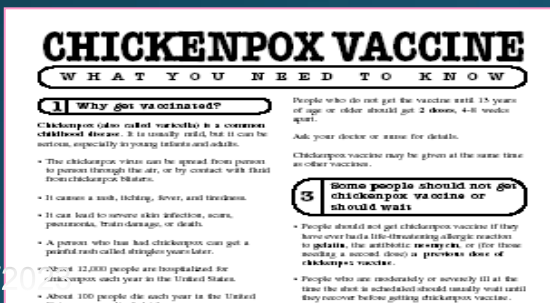
\*\*<http://www.immunize.org/askexperts/administering-vaccines.asp>

\*\*Vaccine Storage and Handling Toolkit, January, 2020



# Always Document...

- Accept only written documentation of prior immunizations
- Provide VIS prior to administration of vaccine
- After vaccine administration, document:
  - ✓ Publication date of VIS & date VIS given
  - ✓ Date, site, route, antigen(s), manufacturer, lot #
  - ✓ Person administering vaccine, practice name and address
  - ✓ Vaccine refusals with a signed “Refusal to Vaccinate Form”—see Online Resources slide for link to this form
  - ✓ GA law does not require signed consent for immunizations



Refusal to Vaccinate	
Child's Name _____ Child's DOB _____	
Parent's/Guardian's Name _____	
My child's doctor/nurse, _____ has advised me that my child (named above) should receive the following vaccines:	
<b>Recommended</b>	<b>Declined</b>
<input type="checkbox"/> Hepatitis B vaccine	<input type="checkbox"/>
<input type="checkbox"/> Diphtheria, tetanus, acellular pertussis (DTaP or Tdap) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Diphtheria tetanus (DT or Td) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Pneumococcal conjugate or polysaccharide vaccine	<input type="checkbox"/>
<input type="checkbox"/> Inactivated poliovirus (IPV) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Measles mumps rubella (MMR) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Varicella (chickenpox) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Influenza (flu) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Meningococcal conjugate or polysaccharide vaccine	<input type="checkbox"/>
<input type="checkbox"/> Hepatitis A vaccine	<input type="checkbox"/>
<input type="checkbox"/> Rotavirus vaccine	<input type="checkbox"/>
<input type="checkbox"/> Human papillomavirus (HPV) vaccine	<input type="checkbox"/>
<input type="checkbox"/> Other _____	<input type="checkbox"/>

That some vaccine-preventable diseases are common in other countries and that my unvaccinated child could easily get one of these diseases while traveling or from a traveler.

If my child does not receive the vaccine(s) according to the medically accepted schedule, the consequences may include:

- Contracting the illness the vaccine is designed to prevent (the outcomes of these illnesses may include one or more of the following: certain types of cancer, pneumonia, illness requiring hospitalization, death, brain damage, paralysis, meningitis, seizures, and deafness; other severe and permanent effects from these vaccine-preventable diseases are possible as well).
- Transmitting the disease to others (including those too young to be vaccinated or those with immune problems), possibly requiring my child to stay out of child care or school and requiring someone to miss work to stay home with my child during disease outbreaks.

My child's doctor and the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all strongly recommend that the vaccine(s) be given according to recommendations.

Nevertheless, I have decided at this time to decline or defer the vaccine(s) recommended for my child, as indicated above, by checking the appropriate box under the column titled "Declined." I know that my child is at risk of contracting these diseases.



## A 'Birth to Death' Immunization Registry

- Providers administering vaccines in Georgia must provide appropriate information to GRITS.
- GRITS personnel can work with your EHR/EMR vendor to create an interface between your system and GRITS.
- Use GRITS to generate reminders on medical records and/or notify patients when vaccines are needed.
- Assess your immunization rates using GRITS to improve patient care, HEDIS scores, and identify problem areas.



# Exemptions From School/Day Care Requirements

## **Medical Exemption** O.C.G.A. §20-2-771(d)

- Used when a physical disability or medical condition contraindicates a particular vaccine.
- Requires an annual review.
- The medical exemption is documented in GRITS.

## **Religious Exemption** O.C.G.A. §20-2-771(e)

- Parent or guardian must be directed to <http://dph.georgia.gov/immunization-section> to obtain an Affidavit of Religious Objection to Immunization form.
- This form must be signed and notarized and provided to the school.
- Must be kept on file at school/facility in lieu of an immunization certificate.
- Affidavit does not expire.

# Monitoring Vaccine Safety



- **VAERS—Vaccine Adverse Event Reporting System**

- **Option 1 - Report Online to VAERS (Preferred)**

- Submit a VAERS report online. The report must be completed online and submitted in one sitting and cannot be saved and returned to at a later time. Your information will be erased if you are inactive for 20 minutes; you will receive a warning after 15 minutes.

- **Option 2 - Report using a Writable PDF Form**

- Download the Writable PDF Form to a computer. Complete the VAERS report offline if you do not have time to complete it all at once. Return to this page to upload the completed Writable PDF form by clicking here.

- If you need further assistance with reporting to VAERS, please email [info@VAERS.org](mailto:info@VAERS.org) or call 1-800-822-7967.**

- **FDA and Vaccine Data Link Safety Project**

- **VERP: VACCINE ERROR REPORTING SYSTEM**

- ✓ On line reporting at <http://verp.ismp.org/>
  - ✓ Report even if no adverse events associated with incident
  - ✓ Will help identify sources of errors to help develop prevention strategies

# Invalid Contraindications to Vaccine\*

- Mild illness or injury
- Antibiotic therapy
- Disease exposure or convalescence
- Pregnancy or immunosuppression in household
- Family history of an adverse event to a vaccine
- Breastfeeding
- Prematurity
- Allergies to products not in vaccine
- Need for TB skin testing
- Need for multiple vaccines

\*<https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html>

# Vaccine Risk Perception

Many parents of young children are not familiar with vaccine-preventable diseases and perceive the risks of vaccines outweigh the benefits

## Concerns

- Immune system overload
- Children get too many shots at one visit
- Vaccines have side effects (adverse reactions)
- Immunity from the disease is better than immunity from a vaccine (ie. chicken pox)
- Vaccines cause autism

# Provider Strategies to Improve Vaccination Rates\*

- **Strengthening vaccination recommendations**
  - Increased emphasis in the practice on training re: vaccine safety and efficacy for ALL employees having patient contact
  - Having OB doctors begin the promotion of vaccines with expectant mothers, for themselves and for their newborn
  - Be alert to avoid missed opportunities
  - Decrease acceptance of alternative schedules
- **Strengthening vaccine mandates**
  - Eliminating nonmedical exemptions
  - Increased enforcement of state mandates by schools and childcare facilities

\*Children's Hospital of Philadelphia, Vaccine Update for Healthcare Providers, "News & Views: Addressing Vaccine Hesitancy," March 21, 2017

# Provider Strategies\* (cont'd)

- **Attention to requirements of “informed refusal”\*\***
  - Explain basic facts/uses of proposed vaccine
  - Review risks of refusing the vaccine(s)
  - Discuss anticipated outcomes with and without vaccination
  - Parental/patient completion of Refusal to Vaccinate form each visit
- **Importance of documenting informed refusal to vaccinate\*\***
  - Claims of failure to warn of consequences of failing to vaccinate have resulted in successful lawsuits
  - Documented informed refusal creates a record of interaction between parents/patients and providers

\*Children’s Hospital of Philadelphia, Vaccine Update for Healthcare Providers, “News & Views: Addressing Vaccine Hesitancy,” March 21, 2017

\*\*AAP Publications, “Document informed refusal just as you would informed consent,” James P. Scibilia, M.D. FAAP, October 30, 2018



# Vaccine Schedules Varying From ACIP/AAP/AAFP Recommendations

## Alternate Schedules

- Dr. Bob's Selective Vaccine Schedule
- Dr. Bob's Alternative Vaccine Schedule
- Parent-derived schedules
- Parent/caretaker refusal of all vaccines

## Concerns re: alternate schedules

- Alternate or delayed schedules have not been tested
- No studies to prove they are safer

**If any of these Alternate Schedules are requested, the health care provider and staff must spend additional time educating the parent/caretaker about the appropriate use of vaccines.**

# Anti-Vaccine Movement

- Promotes the idea that there is less evidence of disease today and immunizations are no longer needed
- Sends confusing & conflicting information
- Uses stories, personal statements, and books to play on the emotional side of concerned parents

Encourage parents/patients to:

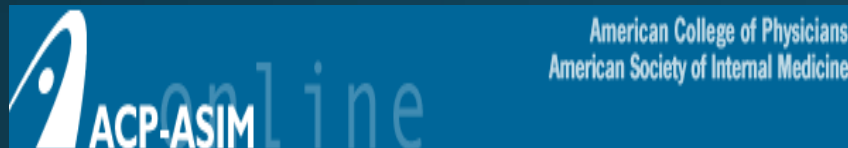
- Get the facts
- Consider the source
- Discuss their concerns with you



Global Vaccine Awareness League



# Resources for Factual & Responsible Vaccine Information



[www.vaccinesafetynet.org](http://www.vaccinesafetynet.org)



# Stay Current!



- Sign up for listserv sites which provide timely information pertinent to your practice  
[www.immunize.org/resources/emailnews.asp](http://www.immunize.org/resources/emailnews.asp)
- AAP Newsletter
- CDC immunization websites (32 in all)
- CHOP Parents Pack Newsletter
- IAC Express, Needle Tips and Vaccinate Adults
- Websites specific to particular vaccines



**YOU ARE ALL PART OF THE TEAM THAT CAN  
MAKE SURE YOUR PATIENTS RECEIVE THE  
IMMUNIZATIONS THEY NEED!**

## Online Resources\*

Current Childhood and Adult Immunization Schedules –  
[www.cdc.gov/vaccines/schedules/index.html](http://www.cdc.gov/vaccines/schedules/index.html)

Parent's 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 – [wwwn.cdc.gov/pubs/CDCInfoOnDemand.aspx](http://wwwn.cdc.gov/pubs/CDCInfoOnDemand.aspx)

Vaccine Labels to Organize a Storage Unit –  
[www.cdc.gov/vaccines/hcp/admin/storage/guide/vaccine-storage-labels.pdf](http://www.cdc.gov/vaccines/hcp/admin/storage/guide/vaccine-storage-labels.pdf)

\*Course Resource—Epidemiology & Prevention of Vaccine-Preventable Diseases—C296544-E



Vaccine Information Statements (VISs) –  
[www.cdc.gov/vaccines/hcp/vis/current-vis.html](http://www.cdc.gov/vaccines/hcp/vis/current-vis.html)

Refusal to Vaccinate Form –  
[https://www.aap.org/en-us/documents/immunization\\_refusaltovaccinate.pdf](https://www.aap.org/en-us/documents/immunization_refusaltovaccinate.pdf)

Standing Orders (Explanation and Templates) –  
[www.immunize.org/standing-orders/](http://www.immunize.org/standing-orders/)

Ask the Experts – [www.immunize.org/askexperts/](http://www.immunize.org/askexperts/)

General Best Practice Guidelines for Immunization –  
<https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/index.html>

# Questions?

## Contacts for more immunization information and resources!

### National Center for Immunization and Respiratory Diseases, CDC

E-mail      ► [NIPInfo@cdc.gov](mailto:NIPInfo@cdc.gov)

Hotline      800.CDC.INFO

Website      <http://www.cdc.gov/vaccines>

### Georgia Immunization Program

E-mail      [DPH-Immunization@dph.ga.gov](mailto:DPH-Immunization@dph.ga.gov)

Hotline      404-657-3158

Website      <http://dph.georgia.gov/immunization-section>

### Immunization Action Coalition

E-mail      [admin@immunize.org](mailto:admin@immunize.org)

Phone      651.647.9009

Website      [www.immunize.org](http://www.immunize.org)