



- EPIC® Immunization
 - 2023 Update
- Immunizing Adolescents

Updated August
2023

EPIC[®] 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

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

Objectives

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

- Name four vaccines recommended for adolescents
- Explain the importance of preventing these diseases in adolescents
- Discuss strategies practitioners can use to increase immunization rates in adolescents
- Examine parental hesitation regarding HPV vaccine for young adolescents
- List at least 2 reliable sources for immunization information

Vaccines Work!

CDC statistics demonstrate dramatic declines in vaccine-preventable diseases when compared with the pre-vaccine era

DISEASE	PRE-VACCINE ERA ESTIMATED ANNUAL MORBIDITY ¹	MOST RECENT REPORTS OR ESTIMATES OF U.S. CASES	PERCENT DECREASE
Diphtheria	21,053	2 ²	>99%
<i>H. influenzae</i> (invasive, <5 years of age)	20,000	14 ^{2,3}	>99%
Hepatitis A	117,333	(est) 24,900 ⁴	79%
Hepatitis B (acute)	66,232	(est) 21,600 ⁴	67%
Measles	530,217	1,287 ²	>99%
Meningococcal disease (all serotypes)	2,886 ⁵	329 ²	89%
Mumps	162,344	3,509 ²	98%
Pertussis	200,752	15,662 ²	92%
Pneumococcal disease (invasive, <5 years of age)	16,069	1,700 ⁷	93%
Polio (paralytic)	16,316	0 ²	100%
Rotavirus (hospitalizations, <3 years of age)	62,500 ⁸	30,625 ⁹	51%
Rubella	47,745	4 ²	>99%
Congenital Rubella Syndrome	152	0 ²	100%
Smallpox	29,005	0 ²	100%
Tetanus	580	19 ²	96%
Varicella	4,085,120	102,128 ¹⁰	>98%

<https://www.immunize.org/catg.d/p4037.pdf>

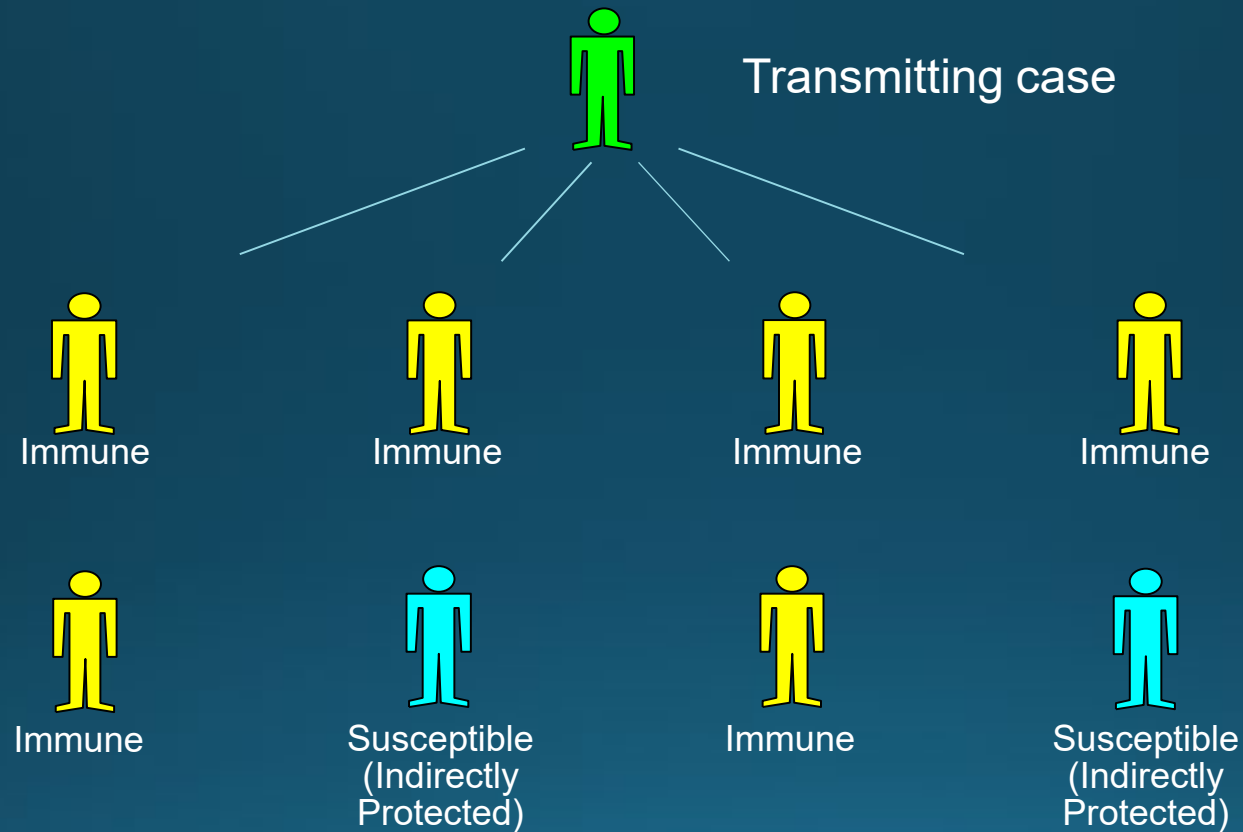
Advisory Committee on Immunization Practices (ACIP)

- 15 voting members with expertise in one or more of the following:
 - Vaccinology
 - Immunology
 - Infectious diseases
 - Pediatrics
 - Internal Medicine
 - Preventive medicine
 - Public health
 - Consumer perspectives and/or social and community aspects of immunization programs
- ACIP develops recommendations and schedules for the use of licensed vaccines



Community Immunity

Formerly known as “Herd Immunity”*



*Presentation from Immunize Georgia, September 9, 2016 by Walt A. Orenstein, MD, Professor of Medicine Global, Health, Epidemiology and Pediatrics
Emory Department of Medicine, Associate Director, Emory Vaccine Center Director, Vaccine Policy and Development, Emory University, Atlanta, GA

8/14/23

Vaccines Recommended During Adolescence

- Tetanus-diphtheria-acellular pertussis vaccine (Tdap)
- Influenza (flu) vaccine---every year
- Meningococcal Vaccines: MCV4 and MenB
- Human papillomavirus vaccine (HPV)
- COVID-19

Other vaccines not received during childhood may be administered during adolescence depending on age, risk factors.



Tetanus



Diphtheria



Pertussis



Pertussis in Adolescents

- Prolonged cough (3 months or longer)
 - Complications (pneumonia, rib fractures)
 - Hospitalization
 - Missed school and work
 - Impact on public health system
- Vomiting after prolonged coughing
- Weight loss
- Multiple medical visits and extensive medical evaluations
- Loss of sleep
- Transmission to infants

Why Do Adolescents Need Pertussis Vaccine?

- Pertussis is endemic in the United States
Reported cases in U.S. and in Georgia
 - 2014: 32,118 – 407 in Georgia
 - 2015: 20,762 -- 244 in Georgia
 - 2016: 15, 737 – 170 in Georgia
 - 2017: 15,808 -- 163 in Georgia
 - 2018: 15,609 – 134 in Georgia
 - 2019: 15,662 -- 28 in Georgia
 - 2022: 2,388 – 41 in Georgia (2022 provisional pertussis report)

<https://www.cdc.gov/pertussis/surv-reporting.html>

https://www.cdc.gov/mmwr/volumes/65/wr/mm6552md.htm?s_cid=mm6552md_w

Summary of Notifiable Infectious Diseases

Why Do Adolescents Need Pertussis Vaccine?

- Protection provided by the DTaP vaccine series wanes, so adolescents need Tdap as a booster
- Increasing Tdap immunization rates among adolescents is an important strategy for reducing pertussis among adolescents and infants too young to be fully immunized.

<https://www.cdc.gov/pertussis/surv-reporting.html>

https://www.cdc.gov/mmwr/volumes/65/wr/mm6552md.htm?s_cid=mm6552md_w

Diphtheria, Tetanus and Pertussis Vaccines for 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
- 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
- Routine decennial booster
- Tetanus prophylaxis for wound management
- Any adult who has not received a Tdap dose – regardless of time since the last Td dose
- No minimum interval between doses of Td and Tdap

Tdap during Pregnancy

ACIP recommends:

One dose of Tdap during each pregnancy, regardless of a prior history of receiving Tdap.

Optimal timing:

- Between 27- and 36-weeks gestation.
- Vaccinating earlier in the 27 through 36-week window will maximize passive antibody transfer to the infant.
- This has been shown to be 80%-91% effective.
- If Tdap is not given during pregnancy, then administer Tdap immediately postpartum.

Importance of protecting the unborn child and newborn infants

MMWR, January 24, 2020/ Vol.69/No. 3 and
https://www.cdc.gov/mmwr/volumes/67/rr/rr6702a1.htm?s_cid=rr6702a1_w and
<https://www.cdc.gov/vaccines/pubs/pinkbook/tetanus.html>

Influenza and Adolescents

- Flu spreads when infected people cough or sneeze. Flu can cause mild to severe illness, and in some cases it can cause death.
- Most preteens and teens who get sick with the flu recover within a couple of weeks
 - Some will get complications like sinus infections, or pneumonia.
- Preteens and teens who have chronic health problems like diabetes (type 1 and 2) or asthma, are at a greater risk for complications from the flu
 - But even healthy adolescents can get very sick from the flu.

U.S. Department of Health and Human Services Centers for Disease Control and Prevention: Flu Vaccines for Preteens and Teens

Influenza Vaccine Coverage 2021-2022 Season

Influenza vaccine coverage among children and adolescents 6 months through 17 years. Rates traditionally have decreased with increasing age:

	U.S.
6 mos. - 4 years	66.7%
5 -12 years	58.4%
13-17 years	49.8%
6 mos – 17 yrs	57.8% (50.7% in Georgia)

Overall Coverage in U.S. (all persons 6 months and older) **51.4%**

FDA Recommended Influenza Antigens for 2023-2024 Season in the U.S.

The 2023-2024 season U.S. flu vaccines will contain an updated influenza A(H1N1)pdm09 component:

- A/Victoria/4897/2022 (H1N1)pdm09-like virus for egg-based vaccines and
- A/Wisconsin/67/2022 (H1N1)pdm09-like virus for cell-based or recombinant vaccines.

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

Influenza Vaccine Products for the 2022–2023 Influenza Season

Manufacturer	Trade Name (vaccine abbreviation) ¹	How Supplied	Mercury Content (mcg Hg/0.5mL)	Age Range	CVX Code	Vaccine Product Billing Code ² 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 ³	150	90686
	FluLaval (IIV4)	0.5 mL (single-dose syringe)	0	6 months & older ³	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 ³	150	90686
		0.5 mL (single-dose vial)	0	6 months & older ³	150	90686
		5.0 mL multi-dose vial (0.25 mL dose)	25	6 through 35 months ³	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 ³	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 ³	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 ³	171	90674
		5.0 mL multi-dose vial (0.5 mL dose)	25	6 months & older ³	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 / FOR THE PUBLIC www.vaccineinformation.org

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**

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

History of egg allergy and egg-based Influenza vaccines (Updates June 2023 ACIP Meeting)

- All persons ages ≥ 6 months with egg allergy should receive influenza vaccine. Any influenza vaccine (egg based or non-egg based) that is otherwise appropriate for the recipient's age and health status can be used.
- Affirm the updated *MMWR Recommendations and Reports*, “Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices—United States, 2023-24 Influenza Season”. (when it becomes available)

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

Co-administration

- Inactivated influenza vaccines(IIV4s) and RIV4 may be administered simultaneously or sequentially with other inactivated vaccines (including COVID-19 vaccines) or live vaccines.
- LAIV4 can be administered simultaneously with other live or inactivated vaccines (including COVID-19 vaccines).
 - However, if two live vaccines are not given simultaneously, then after administration of one live vaccine (such as LAIV4), at least 4 weeks should pass before another live vaccine is administered

Timing of Influenza Vaccination (Updated June 2023)

- September and October are the best times for most people to get vaccinated. Flu vaccination in July and August is not recommended for most people, but there are several considerations regarding vaccination in July and August for specific groups of people
- For adults (especially those 65 years old and older) and pregnant people in the first and second trimesters, vaccination in July and August should be avoided unless it won't be possible to vaccinate in September or October.
- Pregnant people in their third trimester can get a flu vaccine in July or August to ensure their babies are protected from flu after birth when they are too young to get vaccinated.

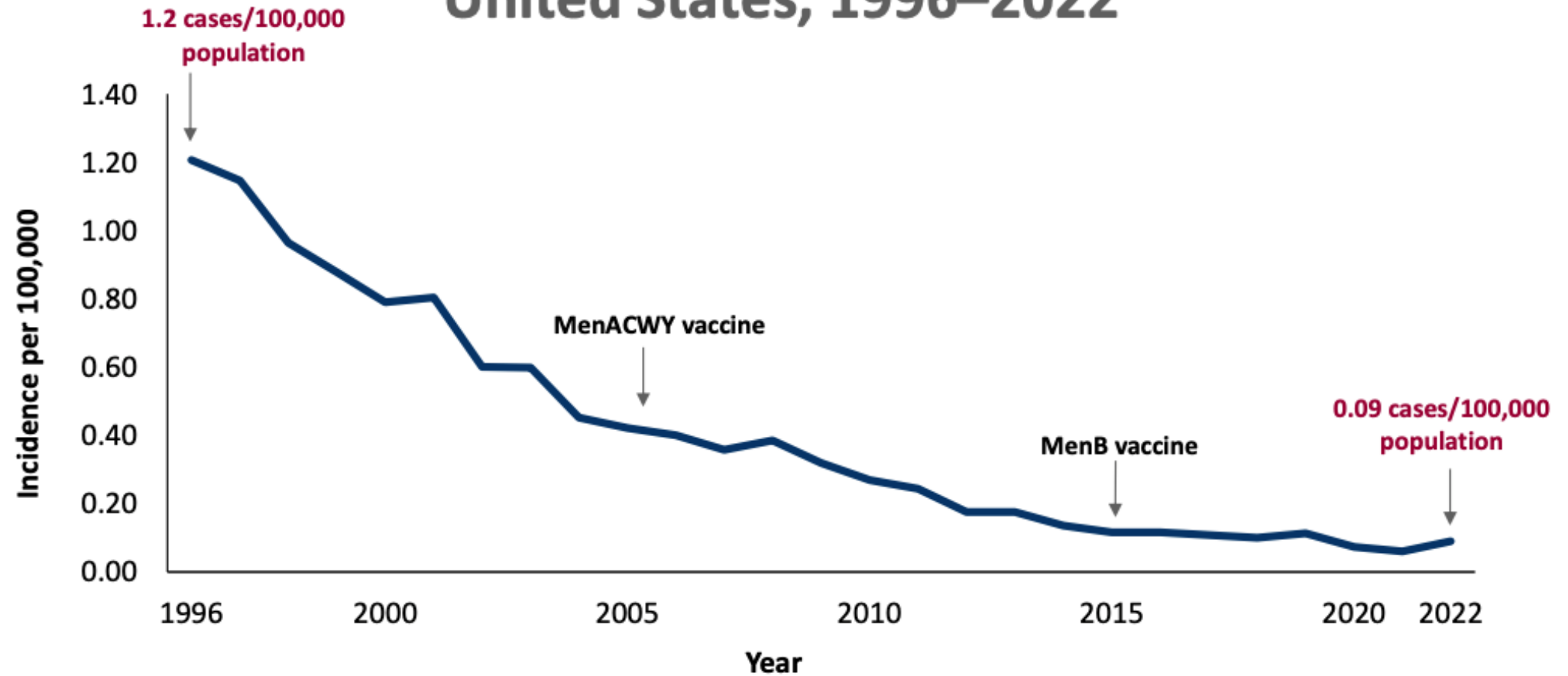
Timing of Influenza Vaccination (Updated June 2023) - 2

- Children who need two doses of flu vaccine should get their first dose of vaccine as soon as vaccine becomes available. The second dose should be given at least four weeks after the first.
- Vaccination in July or August can be considered for children who have health care visits during these months, if there might not be another opportunity to vaccinate them. For example, some children might have medical visits in the late summer before school starts and might not return to see a health care provider in September or October.
- CDC continues to recommend vaccination as long as flu viruses pose a threat. During some seasons, that can be as late as May or June. CDC has recommended annual vaccination for everyone 6 months and older since 2010.

Meningococcal Disease (caused by *N. meningitidis*)

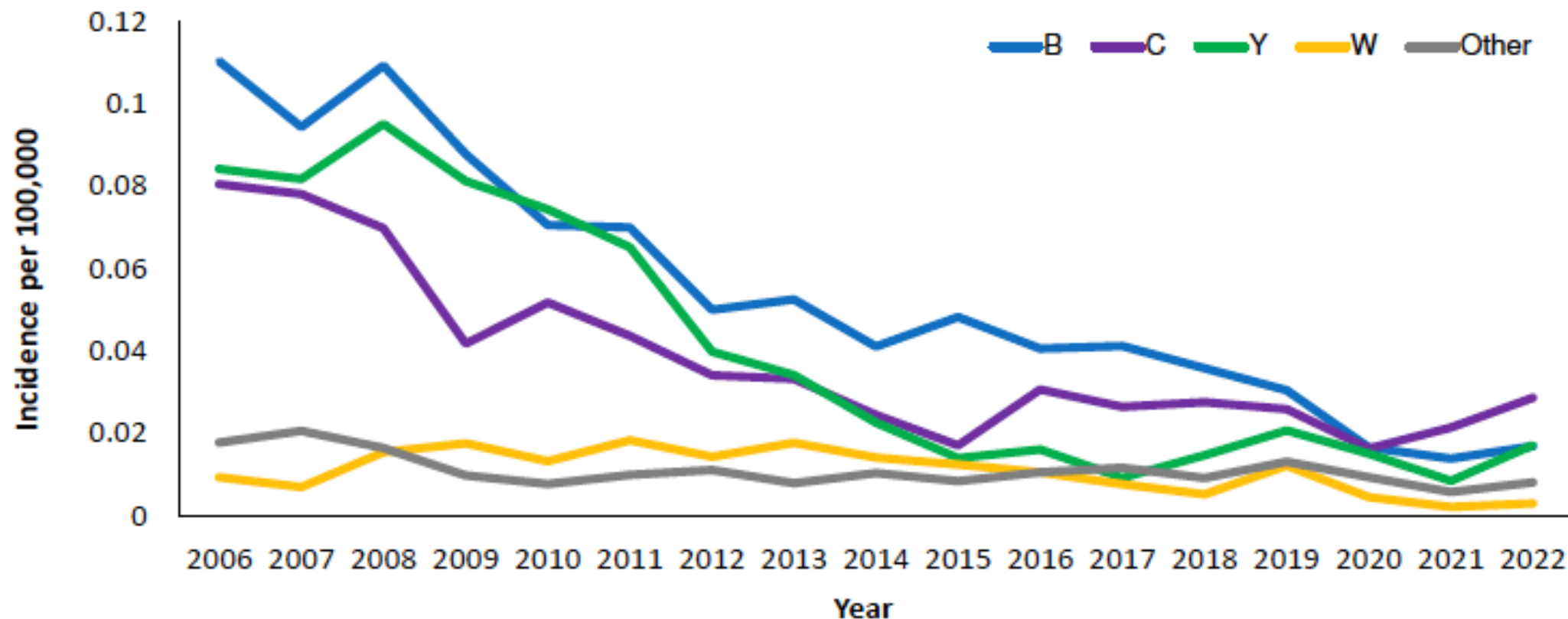
- Usually presents as meningitis, bacteremia or both
 - Transmitted through direct contact with respiratory tract secretions from patients and asymptomatic carriers
 - Nasopharyngeal carriage rate is highest in adolescents and young adults in the U.S.
 - Incidence of meningococcal disease declined during 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

Meningococcal Disease Incidence – United States, 1996–2022*



Abbreviations: MenACWY vaccine = quadrivalent conjugate meningococcal vaccine against serogroups A, C, W, Y; MenB vaccine = serogroup B meningococcal vaccine 7
Source: 1996–2022 NNDSS Data. *2021–2022 NNDSS data are preliminary.

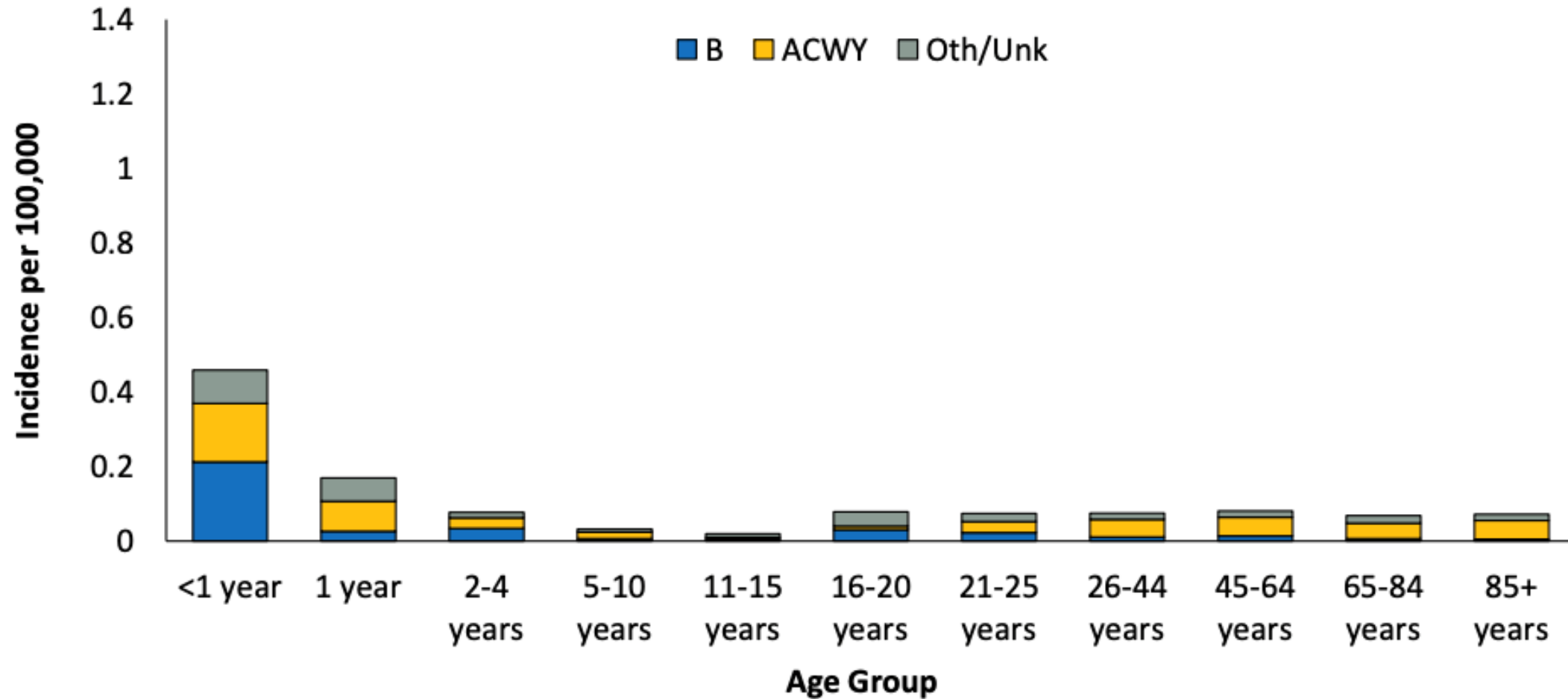
Trends in Meningococcal Disease Incidence by Serogroup – United States, 2006–2022*



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

*2021 and 2022 data are preliminary

Average Annual Meningococcal Disease Incidence by Age-Group and Serogroup—United States, 2020–2022*



Source: NNDSS data with additional serogroup data from ABCs and state health departments

*2021 and 2022 data are preliminary

10

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



Vulnerability of Adolescents and Young Adults to Meningococcal Disease

- Spread through respiratory and throat secretions
 - Coughing, sneezing
 - Kissing
 - Sharing eating utensils, water bottles, etc.
- Crowded settings facilitate transmission
 - College dormitory
 - Crowded household
 - Military barracks
 - Nightclubs, bars

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 ≥ 2 yrs. of age

ACIP recommends for adolescents:

- Dose 1---age 11-12 years preferred
- Booster dose---age 16 years
- If 1st dose is received ≥ 16 years of age, a 2nd 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**

Why Boost at 16 Years of Age?

- Studies indicate that protective levels of circulating antibody decline 3 to 5 years after a single MCV4 dose.
- Vaccine effectiveness case–control study suggests that many adolescents are not protected 5 years after vaccination.
- According to ACIP a single dose of meningococcal conjugate vaccine administered at age 11 or 12 years is unlikely to protect most adolescents through the period of increased risk at ages 16 through 21 years.

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 ≥ 2 yrs. of age

Recommended for persons **6 weeks through 55 years****:

- human immunodeficiency virus (HIV)***
- complement component deficiency
- 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

Meningococcal Conjugate Vaccine (MCV4) For Adolescents with Certain Medical Conditions*

Two-dose primary series in adolescents with

- HIV infection
- Asplenia
- Complement component deficiency

Minimal interval of 8 weeks between Dose 1 and 2

Persons Who Have Persistent Complement Component Deficiencies (C3, C5-9, Properdin, Factor D, and Factor H) and Anatomic or Functional Asplenia should receive a booster dose every 5 years.

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

Meningitis B Vaccine

Since licensed and designated a permissive recommendation for healthy adolescents and adults, some colleges and universities have added this vaccine to their list of optional vaccines. Families may inquire about this vaccine.

KEY POINTS

- It is not a replacement for the meningococcal conjugate vaccine.
- Insurance coverage has improved since the permissive designation and most plans that cover vaccines will cover this one.
- Consider discussing with your vaccine representative about purchasing requirements (ex. number of doses to be purchased).

Meningococcal Vaccine Booster Recommendations*

For persons at continued risk

- Meningococcal quadrivalent vaccine for persons who remain at increased risk
- Persons ≥ 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 for further details.

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

Test Your Knowledge!

Simon received MPSV4 at 5 years of age for international travel and a dose of MCV4 at age 11.

Does he need a booster dose of MCV4 vaccine at age 16?

Test Your Knowledge!

Simon received MPSV4 at 5 years of age for international travel and a dose of MCV4 at age 11.

Does he need a booster dose of MCV4 vaccine at age 16?*

- Yes. Any meningococcal vaccination given prior to the tenth birthday (either with MCV4 or MPSV4) does NOT count toward routinely recommended doses.

*Immunization Action Coalition, Ask the Experts - Reviewed September 2013

Test Your Knowledge!

Which individuals who are not in risk groups are recommended to be vaccinated against meningococcal serogroup B disease?

Recommendation?

Test Your Knowledge!

Which individuals who are not in risk groups are recommended to be vaccinated against meningococcal serogroup B disease?

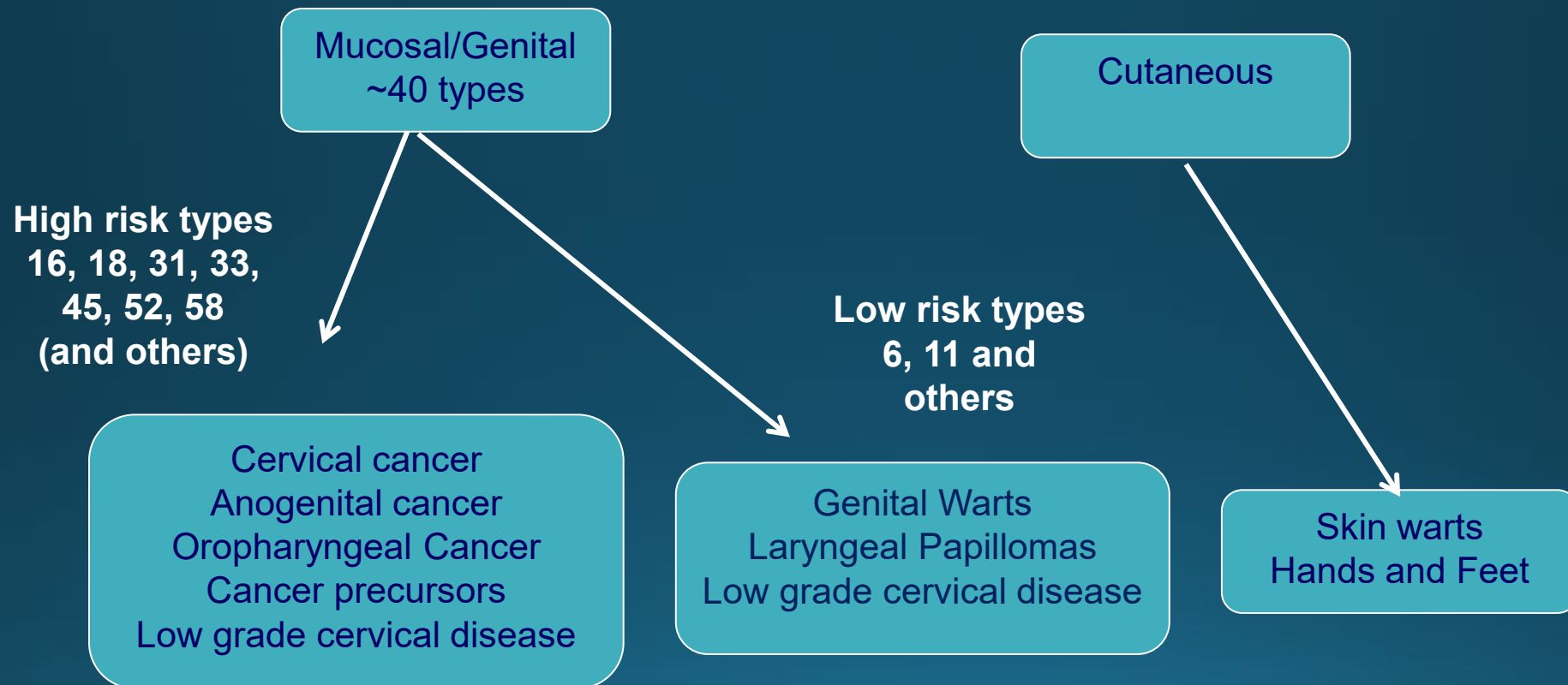
Recommendation?*

ACIP recommends that a MenB vaccine series (Bexero, MenB-4C, GSK; Trumenba, MenB-FHbp, Pfizer) may be administered to people 16 through 23 years of age with a preferred age of vaccination of 16 through 18 years.

This permissive recommendation gives clinicians an opportunity to discuss the value of MenB vaccination with their patients and to make a shared clinical decision together about the individual's need or desire for the vaccine based on risks, benefits, and wish for protection from the disease.

Types of Human Papilloma Virus (HPV)*

(More Than 200 Types Identified)



*Epidemiology and Prevention of Vaccine Preventable Diseases 13th Edition, 2015

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

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

HPV Vaccine

Gardasil 9[®] (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.

HPV Vaccine: Special Situations*

Vaccine can still be given, even if

- History of genital warts
- History of abnormal Pap test result
- Patient is immunocompromised
- Female patient is breastfeeding

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 2nd dose is administered at least 5 months after 1st dose, it can be counted).

3 Dose Schedule:

HPV vaccine initiated after the 15th 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.**

Evidence of Reduction in HPV Prevalence*

National Health and Nutrition Examination Survey (NHANES) Data

Prevalence of HPV 6,11,16,18 in U.S. girls age 14-19

2003-2006: **11.5%**

HPV Vaccine
Licensed in 2006



2011-2014: **3.3%**

In Summary - HPV

Each year, more than 46,000 people in the US are diagnosed with HPV-related cancers. The HPV vaccine prevents 90% of cancers caused by HPV in both boys and girls.

HPV is a common virus—75% of 15-24 year olds are exposed to HPV, and HPV can be spread through skin-to-skin contact.

Pre-teens produce more antibodies after 2 doses of HPV vaccine, while older teens require 3 doses. Protecting adolescents through HPV vaccination before high school and before they are exposed to the virus takes advantage of HPV's natural vulnerabilities—earlier is better.

The HPV vaccine has an excellent safety profile. Patients may have mild to moderate symptoms like a sore arm with redness or swelling where the shot was given after vaccination, and some kids may have a mild fever. However, since the vaccine was licensed in 2006, no serious effects have been linked to it.

<https://www.aap.org/en/patient-care/immunizations/human-papillomavirus-vaccines/>

Test Your Knowledge!

Dakota is an 18 year girl who will be starting her first year of college in August. At the age of 18 years old, she had her first dose of HPV vaccine on April 5 and her second dose on May 8. She will not be coming home again until late November.

Should you give her the third dose of HPV vaccine before she leaves home in mid August?

Test Your Knowledge!

Dakota is an 18 year girl who will be starting her first year of college in August. She had her first dose of HPV vaccine on April 5 and her second dose on May 8. She will not be coming home again until late November.

Should you give her the third dose of HPV vaccine before she leaves home in mid August?*

No! The minimum interval between the second and third doses of vaccine is 12 weeks. The minimum interval between the first and third doses is 24 weeks.

*Immunization Action Coalition, Ask the Experts, April 2012

Test Your Knowledge!

If dose #1 of HPV vaccine was given before the 15th birthday and it has been more than a year since that dose was given, would the series be complete with just one additional dose?

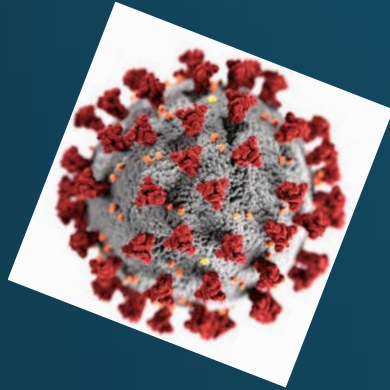
Recommendation?

Test Your Knowledge!

If dose #1 of HPV vaccine was given before the 15th birthday and it has been more than a year since that dose was given, would the series be complete with just one additional dose?

Recommendation?*

Yes. Adolescents and adults who started the HPV vaccine series prior to the 15th birthday and who are not immunocompromised are considered to be adequately vaccinated with just one additional dose of HPV vaccine.



SARS-CoV-2 virus (COVID-19 disease)*

SARS-CoV-2, the virus that causes COVID-19 disease affects the respiratory system primarily, but other organ systems may also be impacted

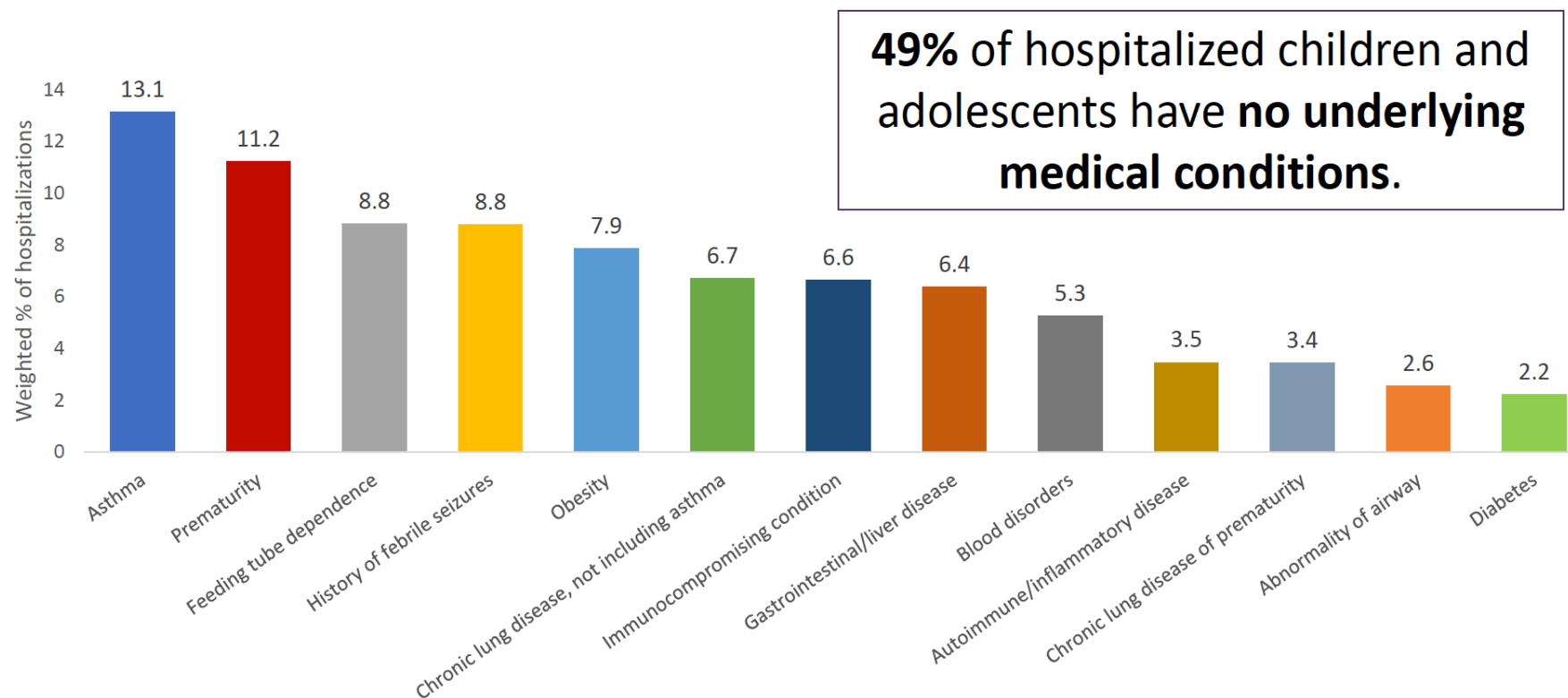
Transmission is through droplet and respiratory spread but may also include indirect contact with contaminated objects

Access current data on COVID-19 cases and deaths in Georgia** and nationally***

[*Georgia data](#) [**Georgia data \(2\)](#)

Hospitalizations among Children

Underlying Medical Conditions among Children and Adolescents Ages ≤ 17 Years — COVID-NET, June–November 2022



Data are limited to hospitalizations where COVID-19 is a likely primary reason for admission.

9

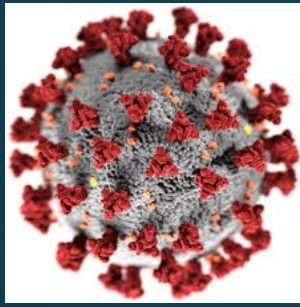
Similar to adults there is a wide range in prevalence of post-COVID conditions among children

- Symptoms lasting 4 weeks or longer following SARS-CoV-2 infection are common among children and adolescents.
- The most common symptoms include:
 - Headache or respiratory symptoms (~7%)
 - Sleep disorders (~8%)
 - Fatigue (9%)
 - Mood disorders (~16%)



[Zimmermann et al. The Challenge of Studying Long COVID: An Updated Review : The Pediatric Infectious Disease Journal \(lww.com\)](#)

[Lopez-Leon et al. Long-COVID in Children and Adolescents: A Systematic Review and Meta-analyses | medRxiv](#)



MIS-C in children and adolescents

Multisystem inflammatory syndrome in children (MIS-C) is a rare condition that can occur in children and adolescents who develop COVID-19 disease. However, though rare, when it occurs, it can be serious.

In MIS-C, different body parts can become inflamed, including the heart, lungs, kidneys, brain, skin, eyes, or gastrointestinal organs. We do not yet know what causes MIS-C. MIS-C can be serious, even deadly, but most children diagnosed with this condition have gotten better with medical care.

Over 9300 MIS-C cases and over 76 deaths due to MIS-C have been reported in the U.S. as of February 2023. Half of children with MIS-C were between the ages of 5 and 13 years, with a median age of 9 years. MIS-C cases have occurred in children and adolescents from <1 year old to 20 years old.

Myocarditis and pericarditis

- A rare risk for myocarditis and pericarditis has been observed following receipt of mRNA COVID-19 vaccines (i.e., Moderna or Pfizer-BioNTech) and Novavax COVID-19 Vaccine.
- Rare cases of myocarditis and pericarditis have occurred most frequently, in adolescent and young adult males within the first week after receiving the second dose.
- People who have experienced myocarditis/pericarditis after a dose of COVID-19 vaccine, generally should not receive a subsequent dose of any COVID-19 vaccine.

Myocarditis and pericarditis (2)

- People receiving Moderna, Novavax, and Pfizer-BioNTech COVID-19 vaccines, especially males ages 12–39 years, should be made aware of the rare risk of myocarditis and pericarditis following receipt of these vaccines and the benefit of COVID-19 vaccination in reducing the risk of severe outcomes from COVID-19, including the possibility of cardiac sequelae.
- Counseling should include the need to seek care if symptoms of myocarditis or pericarditis, *such as chest pain, shortness of breath, or tachycardia develop after vaccination, particularly in the week after vaccination*. In younger children, symptoms of myocarditis may also include non-specific symptoms such as irritability, vomiting, poor feeding, tachypnea, or lethargy.

Considerations for extending intervals for mRNA COVID-19 vaccine primary series (Pfizer and Moderna)

- An 8-week interval between the first and second primary series doses of Moderna, Novavax, and Pfizer-BioNTech COVID-19 vaccines may be optimal for some people as it may reduce the small risk of myocarditis and pericarditis associated with these COVID-19 vaccines.
- People who have a history of myocarditis or pericarditis unrelated to COVID-19 vaccination (e.g., due to SARS-CoV-2 or other viruses) may receive any currently FDA-approved or FDA-authorized COVID-19 vaccine after the episode of myocarditis or pericarditis has completely resolved (i.e., resolution of symptoms, no evidence of ongoing heart inflammation or sequelae as determined by the person's clinical team).
- People who have a history of other heart disease, including congenital heart disease and Kawasaki disease, may receive any currently FDA-approved or FDA-authorized COVID-19 vaccine.

Test Your Knowledge!

Emily is 12 years old and comes to your office for a physical exam. Her immunizations were up-to-date when she started kindergarten.

What vaccines do you recommend for her?

Test Your Knowledge!

Emily is 12 years old and comes to your office for a physical exam. Her immunizations were up-to-date when she started kindergarten.

What vaccines do you recommend for her?

Tdap, Meningococcal Conjugate, HPV

Influenza vaccine (in the fall), COVID-19 vaccine

*Current Child and Adolescent Immunization Schedule

Critical Elements for Immunization Services



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.

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.immunize.org/askexperts/administering-vaccines.asp>

**Vaccine Storage and Handling Toolkit, January, 2020

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
COVID-19 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	Subcutaneous (Subcut) injection Use a 23–25 gauge needle. Choose the injection site that is appropriate to the person's age and body mass.
Diphtheria, Tetanus, Pertussis (DTaP, DT, Tdap, Td)	0.5 mL	IM	
Haemophilus influenzae type b (Hib)	0.5 mL	IM	
Hepatitis A (HepA)	≤18 yrs: 0.5 mL ≥19 yrs: 1.0 mL	IM	
Hepatitis 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	
Human papillomavirus (HPV)	0.5 mL	IM	
Influenza, live attenuated (LAIV)	0.2 mL (0.1 mL in each nostril)	Intra-nasal spray	
Influenza, inactivated (IIV); for ages 6–35 months	Afluria: 0.25 mL Fluzone: 0.25 or 0.5 mL Fluarix, Flucelvax, FluLaval: 0.5 mL	IM	
Influenza, inactivated (IIV), ≥3 yrs; recombinant (RIV), ≥18 yrs; high-dose (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
Intramuscular (IM) injection 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" ¹	Anterolateral thigh muscle
Infants (1–12 mos)	1"	Anterolateral thigh muscle
Toddlers (1–2 years)	1–1¼"	Anterolateral thigh muscle ²
	5/8–1"	Deltoid muscle of arm
Children (3–10 years)	5/8–1"	Deltoid muscle of arm ²
	1–1¼"	Anterolateral thigh muscle
Adolescents and teens (11–18 years)	5/8–1"	Deltoid muscle of arm ²
	1–1½"	Anterolateral thigh muscle
Adults 19 years or older		

Measles, Mumps, Rubella (MMR)	0.5 mL	Subcut	Female or male <130 lbs	5/8–1" ¹	Deltoid muscle of arm
Meningococcal serogroups A, C, W, Y (MenACWY)	0.5 mL	IM	Female or male 130–152 lbs	1"	Deltoid muscle of arm
Meningococcal serogroup B (MenB)	0.5 mL	IM	Female 153–200 lbs Male 153–260 lbs	1–1½"	Deltoid muscle of arm
Pneumococcal conjugate (PCV)	0.5 mL	IM	Female 200+ lbs Male 260+ lbs	1½"	Deltoid muscle of arm
Pneumococcal polysaccharide (PPSV)	0.5 mL	IM or Subcut	Female or male, any weight	1½"	Anterolateral thigh muscle
Polio, inactivated (IPV)	0.5 mL	IM or Subcut			
Rotavirus (RV)	Rotarix: 1.0 mL Rotateq: 2.0 mL	Oral			
Varicella (VAR)	0.5 mL	Subcut			
Zoster (Zos)	Shingrix: 0.5 [†] mL	IM			
Combination Vaccines					
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			

¹ 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.

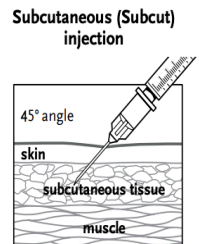
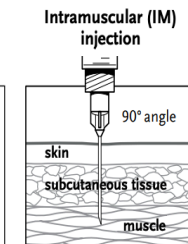
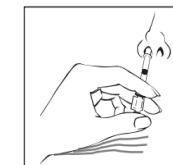
² Preferred site

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.

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

[†] 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



IMMUNIZATION ACTION COALITION Saint Paul, Minnesota · 651-647-9009 · www.immunize.org · www.vaccineinformation.org
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)

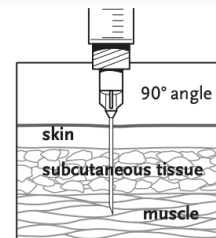
Administer inactivated polio (IPV) and pneumococcal polysaccharide (PPSV23) vaccines either IM or subcutaneously (Subcut).

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.

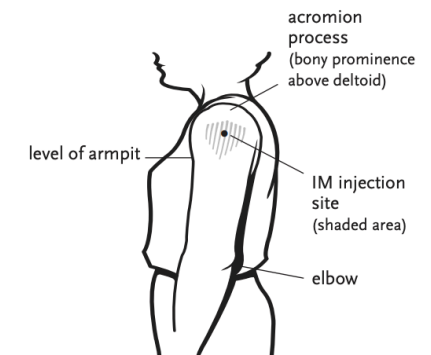
† CDC. "General Best Practices Guidelines for Immunization: Best Practices Guidance of the ACIP" at <https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf>

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.

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).

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=W6Z6NEjffI0 or order online at 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.

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
A 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 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).					

CONTINUED ON THE NEXT PAGE ►

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

Skills Checklist for Vaccine Administration (continued)

COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	Self-Assessment		
		NEEDS TO IMPROVE	MEETS OR EXCEEDS	NEEDS TO IMPROVE
C 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.			
D 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.			

CONTINUED ON THE NEXT PAGE ►

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org | www.immunize.org/catg.d/p7010.pdf • Item #P7010 (2/21)

Skills Checklist for Vaccine Administration (continued)

page 3 of 3

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
D 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.					
E 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.
- 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)
- 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

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org | www.immunize.org/catg.d/p7010.pdf • Item #P7010 (2/21)

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

Preparing for the potential management of anaphylaxis at vaccine sites

Should be available at all locations	If feasible, include at locations (not required)
Epinephrine (e.g., prefilled syringe, autoinjector)*	Pulse oximeter
H1 antihistamine (e.g., diphenhydramine, cetirizine)†	Oxygen
Blood pressure monitor‡	Bronchodilator (e.g., albuterol)
Timing device to assess pulse	H2 antihistamine (e.g., famotidine, cimetidine)
	Intravenous fluids
	Intubation kit
	Pocket mask with one-way valve (also known as cardiopulmonary resuscitation [CPR] mask) sized for adults and children

Adolescent Vaccine Safety

Fainting—or syncope—can occur after any medical procedure, including vaccination

- Adolescents should be seated or lying down during vaccination
- Providers should consider observing patients in seated or lying positions for 15 minutes after vaccination
- Concern: risk for serious secondary injuries

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!**

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 on schedule at the earliest opportunity as indicated by the green bars, the recommended catch-up schedule and minimum interval between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. Always use this table in conjunction with Table 2 and the notes that follow.

Vaccine	Birth	1 mo	2 mo	4 mo	6 mo	9 mo	12 mo	15 mo	18 mo	2-3 yrs	4-6 yrs	7-10 yrs	11-12 yrs	13-15 yrs	16 yrs	17-18 yrs
Hepatitis B (HepB) (3-dose series)	1st dose	2nd dose	3rd dose													
Rotavirus (RV) (2-dose series)																
Diphtheria, tetanus, acellular pertussis (DTaP) (5-dose series)																
Poliovirus (IPV) (4-dose series)																
Measles, mumps, rubella (MMR)																
Varicella (VAR)																
Hepatitis A (HepA)																
Tetanus, diphtheria, acellular pertussis (Tdap) (3-dose series)																
Human papillomavirus (HPV)																
Neisseria meningitidis (MenACWY)																
Neisseria meningitidis (MenB)																
MMR-2 (MMR2)																
MMR-1 (MMR1)																
MMR-3 (MMR3)																
MMR-4 (MMR4)																
MMR-5 (MMR5)																
MMR-6 (MMR6)																
MMR-7 (MMR7)																
MMR-8 (MMR8)																
MMR-9 (MMR9)																
MMR-10 (MMR10)																
MMR-11 (MMR11)																
MMR-12 (MMR12)																
MMR-13 (MMR13)																
MMR-14 (MMR14)																
MMR-15 (MMR15)																
MMR-16 (MMR16)																
MMR-17 (MMR17)																
MMR-18 (MMR18)																
MMR-19 (MMR19)																
MMR-20 (MMR20)																
MMR-21 (MMR21)																
MMR-22 (MMR22)																
MMR-23 (MMR23)																
MMR-24 (MMR24)																
MMR-25 (MMR25)																
MMR-26 (MMR26)																
MMR-27 (MMR27)																
MMR-28 (MMR28)																
MMR-29 (MMR29)																
MMR-30 (MMR30)																
MMR-31 (MMR31)																
MMR-32 (MMR32)																
MMR-33 (MMR33)																
MMR-34 (MMR34)																
MMR-35 (MMR35)																
MMR-36 (MMR36)																
MMR-37 (MMR37)																
MMR-38 (MMR38)																
MMR-39 (MMR39)																
MMR-40 (MMR40)																
MMR-41 (MMR41)																
MMR-42 (MMR42)																
MMR-43 (MMR43)																
MMR-44 (MMR44)																
MMR-45 (MMR45)																
MMR-46 (MMR46)																
MMR-47 (MMR47)																
MMR-48 (MMR48)																
MMR-49 (MMR49)																
MMR-50 (MMR50)																
MMR-51 (MMR51)																
MMR-52 (MMR52)																
MMR-53 (MMR53)																
MMR-54 (MMR54)																
MMR-55 (MMR55)																
MMR-56 (MMR56)																
MMR-57 (MMR57)																
MMR-58 (MMR58)																
MMR-59 (MMR59)																
MMR-60 (MMR60)																
MMR-61 (MMR61)																
MMR-62 (MMR62)																
MMR-63 (MMR63)																
MMR-64 (MMR64)																
MMR-65 (MMR65)																
MMR-66 (MMR66)																
MMR-67 (MMR67)																
MMR-68 (MMR68)																
MMR-69 (MMR69)																
MMR-70 (MMR70)																
MMR-71 (MMR71)																
MMR-72 (MMR72)																
MMR-73 (MMR73)																
MMR-74 (MMR74)																
MMR-75 (MMR75)																
MMR-76 (MMR76)																
MMR-77 (MMR77)																
MMR-78 (MMR78)																
MMR-79 (MMR79)																
MMR-80 (MMR80)																
MMR-81 (MMR81)																
MMR-82 (MMR82)																
MMR-83 (MMR83)																
MMR-84 (MMR84)																
MMR-85 (MMR85)																
MMR-86 (MMR86)																
MMR-87 (MMR87)																
MMR-88 (MMR88)																
MMR-89 (MMR89)																
MMR-90 (MMR90)																
MMR-91 (MMR91)																
MMR-92 (MMR92)																
MMR-93 (MMR93)																
MMR-94 (MMR94)																
MMR-95 (MMR95)																
MMR-96 (MMR96)																
MMR-97 (MMR97)																
MMR-98 (MMR98)																
MMR-99 (MMR99)																
MMR-100 (MMR100)																

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 and minimum interval between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age. Always use this table in conjunction with Table 1 and the notes that follow.					
Catch-up and minimum interval between doses					
Vaccine	Minimum Age for First Dose	Days to Start 2	Minimum Interval Between Doses	Days to Start 3	Days to Start 4
Hepatitis B (HepB)	Birth	2 months	4 months	6 months	6 months
Polio (IPV)	2 months	4 months	4 months	6 months	6 months
Diphtheria, tetanus, and acellular pertussis (DTaP)	2 months	4 months	4 months	6 months	6 months
Measles, mumps, and rubella (MMR)	12 months	15 months	4 months	6 months	6 months
Haemophilus influenzae type b (Hib)	2 months	4 months	4 months	6 months	6 months
Rotavirus (RV)	2 months	4 months	4 months	6 months	6 months
Varicella (V)	12 months	15 months	4 months	6 months	6 months
MMR2 (MMR + Hib)	15 months	18 months	4 months	6 months	6 months
MMR3 (MMR + Hib)	18 months	21 months	4 months	6 months	6 months
MMR4 (MMR + Hib)	24 months	27 months	4 months	6 months	6 months
MMR5 (MMR + Hib)	30 months	33 months	4 months	6 months	6 months
MMR6 (MMR + Hib)	36 months	39 months	4 months	6 months	6 months
MMR7 (MMR + Hib)	42 months	45 months	4 months	6 months	6 months
MMR8 (MMR + Hib)	48 months	51 months	4 months	6 months	6 months
MMR9 (MMR + Hib)	54 months	57 months	4 months	6 months	6 months
MMR10 (MMR + Hib)	60 months	63 months	4 months	6 months	6 months
MMR11 (MMR + Hib)	66 months	69 months	4 months	6 months	6 months
MMR12 (MMR + Hib)	72 months	75 months	4 months	6 months	6 months
MMR13 (MMR + Hib)	78 months	81 months	4 months	6 months	6 months
MMR14 (MMR + Hib)	84 months	87 months	4 months	6 months	6 months
MMR15 (MMR + Hib)	90 months	93 months	4 months	6 months	6 months
MMR16 (MMR + Hib)	96 months	99 months	4 months	6 months	6 months
MMR17 (MMR + Hib)	102 months	105 months	4 months	6 months	6 months
MMR18 (MMR + Hib)	108 months	111 months	4 months	6 months	6 months
MMR19 (MMR + Hib)	114 months	117 months	4 months	6 months	6 months
MMR20 (MMR + Hib)	120 months	123 months	4 months	6 months	6 months
MMR21 (MMR + Hib)	126 months	129 months	4 months	6 months	6 months
MMR22 (MMR + Hib)	132 months	135 months	4 months	6 months	6 months
MMR23 (MMR + Hib)	138 months	141 months	4 months	6 months	6 months
MMR24 (MMR + Hib)	144 months	147 months	4 months	6 months	6 months
MMR25 (MMR + Hib)	150 months	153 months	4 months	6 months	6 months
MMR26 (MMR + Hib)	156 months	159 months	4 months	6 months	6 months
MMR27 (MMR + Hib)	162 months	165 months	4 months	6 months	6 months
MMR28 (MMR + Hib)	168 months	171 months	4 months	6 months	6 months
MMR29 (MMR + Hib)	174 months	177 months	4 months	6 months	6 months
MMR30 (MMR + Hib)	180 months	183 months	4 months	6 months	6 months
MMR31 (MMR + Hib)	186 months	189 months	4 months	6 months	6 months
MMR32 (MMR + Hib)	192 months	195 months	4 months	6 months	6 months
MMR33 (MMR + Hib)	198 months	201 months	4 months	6 months	6 months
MMR34 (MMR + Hib)	204 months	207 months	4 months	6 months	6 months
MMR35 (MMR + Hib)	210 months	213 months	4 months	6 months	6 months
MMR36 (MMR + Hib)	216 months	219 months	4 months	6 months	6 months
MMR37 (MMR + Hib)	222 months	225 months	4 months	6 months	6 months
MMR38 (MMR + Hib)	228 months	231 months	4 months	6 months	6 months
MMR39 (MMR + Hib)	234 months	237 months	4 months	6 months	6 months
MMR40 (MMR + Hib)	240 months	243 months	4 months	6 months	6 months
MMR41 (MMR + Hib)	246 months	249 months	4 months	6 months	6 months
MMR42 (MMR + Hib)	252 months	255 months	4 months	6 months	6 months
MMR43 (MMR + Hib)	258 months	261 months	4 months	6 months	6 months
MMR44 (MMR + Hib)	264 months	267 months	4 months	6 months	6 months
MMR45 (MMR + Hib)	270 months	273 months	4 months	6 months	6 months
MMR46 (MMR + Hib)	276 months	279 months	4 months	6 months	6 months
MMR47 (MMR + Hib)	282 months	285 months	4 months	6 months	6 months
MMR48 (MMR + Hib)	288 months	291 months	4 months	6 months	6 months
MMR49 (MMR + Hib)	294 months	297 months	4 months	6 months	6 months
MMR50 (MMR + Hib)	300 months	303 months	4 months	6 months	6 months
MMR51 (MMR + Hib)	306 months	309 months	4 months	6 months	6 months
MMR52 (MMR + Hib)	312 months	315 months	4 months	6 months	6 months
MMR53 (MMR + Hib)	318 months	321 months	4 months	6 months	6 months
MMR54 (MMR + Hib)	324 months	327 months	4 months	6 months	6 months
MMR55 (MMR + Hib)	330 months	333 months	4 months	6 months	6 months
MMR56 (MMR + Hib)	336 months	339 months	4 months	6 months	6 months
MMR57 (MMR + Hib)	342 months	345 months	4 months	6 months	6 months
MMR58 (MMR + Hib)	348 months	351 months	4 months	6 months	6 months
MMR59 (MMR + Hib)	354 months	357 months	4 months	6 months	6 months
MMR60 (MMR + Hib)	360 months	363 months	4 months	6 months	6 months
MMR61 (MMR + Hib)	366 months	369 months	4 months	6 months	6 months
MMR62 (MMR + Hib)	372 months	375 months	4 months	6 months	6 months
MMR63 (MMR + Hib)	378 months	381 months	4 months	6 months	6 months
MMR64 (MMR + Hib)	384 months	387 months	4 months	6 months	6 months
MMR65 (MMR + Hib)	390 months	393 months	4 months	6 months	6 months
MMR66 (MMR + Hib)	396 months	399 months	4 months	6 months	6 months
MMR67 (MMR + Hib)	402 months	405 months	4 months	6 months	6 months
MMR68 (MMR + Hib)	408 months	411 months	4 months	6 months	6 months
MMR69 (MMR + Hib)	414 months	417 months	4 months	6 months	6 months
MMR70 (MMR + Hib)	420 months	423 months	4 months	6 months	6 months
MMR71 (MMR + Hib)	426 months	429 months	4 months	6 months	6 months
MMR72 (MMR + Hib)	432 months	435 months	4 months	6 months	6 months
MMR73 (MMR + Hib)	438 months	441 months	4 months	6 months	6 months
MMR74 (MMR + Hib)	444 months	447 months	4 months	6 months	6 months
MMR75 (MMR + Hib)	450 months	453 months	4 months	6 months	6 months
MMR76 (MMR + Hib)	456 months	459 months	4 months	6 months	6 months
MMR77 (MMR + Hib)	462 months	465 months	4 months	6 months	6 months
MMR78 (MMR + Hib)	468 months	471 months	4 months	6 months	6 months
MMR79 (MMR + Hib)	474 months	477 months	4 months	6 months	6 months
MMR80 (MMR + Hib)	480 months	483 months	4 months	6 months	6 months
MMR81 (MMR + Hib)	486 months	489 months	4 months	6 months	6 months
MMR82 (MMR + Hib)	492 months	495 months	4 months	6 months	6 months
MMR83 (MMR + Hib)	498 months	501 months	4 months	6 months	6 months
MMR84 (MMR + Hib)	504 months	507 months	4 months	6 months	6 months
MMR85 (MMR + Hib)	510 months	513 months	4 months	6 months	6 months
MMR86 (MMR + Hib)	516 months	519 months	4 months	6 months	6 months
MMR87 (MMR + Hib)	522 months	525 months	4 months	6 months	6 months
MMR88 (MMR + Hib)	528 months	531 months	4 months	6 months	6 months
MMR89 (MMR + Hib)	534 months	537 months	4 months	6 months	6 months
MMR90 (MMR + Hib)	540 months	543 months	4 months	6 months	6 months
MMR91 (MMR + Hib)	546 months	549 months	4 months	6 months	6 months
MMR92 (MMR + Hib)	552 months	555 months	4 months	6 months	6 months
MMR93 (MMR + Hib)	558 months	561 months	4 months	6 months	6 months
MMR94 (MMR + Hib)	564 months	567 months	4 months	6 months	6 months
MMR95 (MMR + Hib)	570 months	573 months	4 months	6 months	6 months
MMR96 (MMR + Hib)	576 months	579 months	4 months	6 months	6 months
MMR97 (MMR + Hib)	582 months	585 months	4 months	6 months	6 months
MMR98 (MMR + Hib)	588 months	591 months	4 months	6 months	6 months
MMR99 (MMR + Hib)	594 months	597 months	4 months	6 months	6 months
MMR100 (MMR + Hib)	600 months	603 months	4 months	6 months	6 months
MMR101 (MMR + Hib)	606 months	609 months	4 months	6 months	6 months
MMR102 (MMR + Hib)	612 months	615 months	4 months	6 months	6 months
MMR103 (MMR + Hib)	618 months	621 months	4 months	6 months	6 months
MMR104 (MMR + Hib)	624 months	627 months	4 months	6 months	6 months
MMR105 (MMR + Hib)	630 months	633 months	4 months	6 months	6 months
MMR106 (MMR + Hib)	636 months	639 months	4 months	6 months	6 months
MMR107 (MMR + Hib)	642 months	645 months	4 months	6 months	6 months
MMR108 (MMR + Hib)	648 months	651 months	4 months	6 months	6 months
MMR109 (MMR + Hib)	654 months	657 months	4 months	6 months	6 months
MMR110 (MMR + Hib)	660 months	663 months	4 months	6 months	6 months
MMR111 (MMR + Hib)	666 months	669 months	4 months	6 months	6 months
MMR112 (MMR + Hib)	672 months	675 months	4 months	6 months	6 months
MMR113 (MMR + Hib)	678 months	681 months	4 months	6 months	6 months
MMR114 (MMR + Hib)	684 months	687 months	4 months	6 months	6 months
MMR115 (MMR + Hib)	690 months	693 months	4 months	6 months	6 months
MMR116 (MMR + Hib)	696 months	699 months	4 months	6 months	6 months
MMR117 (MMR + Hib)	702 months	705 months	4 months	6 months	6 months
MMR118 (MMR + Hib)	708 months	711 months	4 months	6 months	6 months
MMR119 (MMR + Hib)	714 months	717 months	4 months	6 months	6 months
MMR120 (MMR + Hib)	720 months	723 months	4 months	6 months	6 months
MMR121 (MMR + Hib)	726 months	729 months	4 months	6 months	6 months
MMR122 (MMR + Hib)	732 months	735 months	4 months	6 months	6 months
MMR123 (MMR + Hib)	738 months	741 months	4 months	6 months	6 months
MMR124 (MMR + Hib)	744 months	747 months	4 months	6 months	6 months
MMR125 (MMR + Hib)	750 months	753 months	4 months	6 months	6 months
MMR126 (MMR + Hib)	756 months	759 months	4 months	6 months	6 months
MMR127 (MMR + Hib)	762 months	765 months	4 months	6 months	6 months
MMR128 (MMR + Hib)	768 months	771 months	4 months	6 months	6 months
MMR129 (MMR + Hib)	774 months	777 months	4 months	6 months	6 months
MMR130 (MMR + Hib)	780 months	783 months	4 months	6 months	6 months
MMR131 (MMR + Hib)	786 months	789 months	4 months	6 months	6 months
MMR132 (MMR + Hib)	792 months	795 months	4 months	6 months	6 months
MMR133 (MMR + Hib)	798 months	801 months	4 months	6 months	6 months
MMR134 (MMR + Hib)	804 months	807 months	4 months	6 months	6 months
MMR135 (MMR + Hib)	810 months	813 months	4 months	6 months	6 months
MMR136 (MMR + Hib)	816 months	819 months	4 months	6 months	6 months
MMR137 (MMR + Hib)	822 months	825 months	4 months	6 months	6 months
MMR138 (MMR + Hib)	828 months	831 months	4 months	6 months	6 months
MMR139 (MMR + Hib)	834 months	837 months	4 months	6 months	6 months
MMR140 (MMR + Hib)	840 months	843 months	4 months	6 months	6 months
MMR141 (MMR + Hib)	846 months	849 months	4 months	6 months	6 months
MMR142 (MMR + Hib)	852 months	855 months	4 months	6 months	6 months
MMR143 (MMR + Hib)	858 months	861 months	4 months	6 months	6 months
MMR144 (MMR + Hib)	864 months	867 months	4 months	6 months	6 months
MMR145 (MMR + Hib)	870 months	873 months	4 months	6 months	6 months
MMR146 (MMR + Hib)	876 months	879 months	4 months	6 months	6 months
MMR147 (MMR + Hib)	882 months	885 months	4 months	6 months	6 months
MMR148 (MMR + Hib)	888 months	891 months	4 months	6 months	6 months
MMR149 (MMR + Hib)	894 months	897 months	4 months	6 months	6 months
MMR150 (MMR + Hib)	900 months	903 months	4 months	6 months	6 months
MMR151 (MMR + Hib)	906 months	909 months	4 months	6 months	6 months
MMR152 (MMR + Hib)	912 months	915 months	4 months	6 months	6 months
MMR153 (MMR + Hib)	918 months	921 months	4 months	6 months	6 months
MMR154 (MMR + Hib)	924 months	927 months	4 months	6 months	6 months
MMR155 (MMR + Hib)	930 months	933 months	4 months	6 months	6 months
MMR156 (MMR + Hib)	936 months	939 months	4 months	6 months	6 months
MMR157 (MMR + Hib)	942 months	945 months	4 months	6 months	6 months
MMR158 (MMR + Hib)	948 months	951 months	4 months	6 months	6 months
MMR159 (MMR + Hib)	954 months	957 months	4 months	6 months	6 months
MMR160 (MMR + Hib)	960 months	963 months	4 months	6 months	6 months
MMR161 (MMR + Hib)	966 months	969 months	4 months	6 months	6 months
MMR162 (MMR + Hib)	972 months	975 months	4 months	6 months	6 months
MMR163 (MMR + Hib)	978 months	981 months	4 months	6 months	6 months
MMR164 (MMR + Hib)	984 months	987 months	4 months	6 months	6 months
MMR165 (MMR + Hib)	990 months	993 months	4 months	6 months	6 months
MMR166 (MMR + Hib)	996 months	999 months	4 months	6 months	6 months
MMR167 (MMR + Hib)	1002 months	1005 months	4 months	6 months	6 months
MMR168 (MMR + Hib)	1008 months	1011 months	4 months	6 months	6 months
MMR169 (MMR + Hib)	1014 months	1017 months	4 months	6 months	6 months
MMR170 (MMR + Hib)	1020 months	1023 months	4 months	6 months	6 months
MMR171 (MMR + Hib)	1026 months	1029 months	4 months	6 months	6 months
MMR172 (MMR + Hib)	1032 months	1035 months	4 months	6 months	6 months
MMR173 (MMR + Hib)	1038 months	1041 months	4 months	6 months	6 months
MMR174 (MMR + Hib)	1044 months	1047 months	4 months	6 months	6 months
MMR175 (MMR + Hib)	1050 months	1053 months	4 months	6 months	6 months
MMR176 (MMR + Hib)	1056 months	1059 months	4 months	6 months	6 months
MMR177 (MMR + Hib)	1062 months	1065 months	4 months	6 months	6 months
MMR178 (MMR + Hib)	1068 months	1071 months	4 months	6 months	6 months
MMR179 (MMR + Hib)	1074 months	1077 months	4 months	6 months	6 months
MMR180 (MMR + Hib)	1080 months	1083 months	4 months	6 months	6 months
MMR181 (MMR + Hib)	1086 months	1089 months	4 months	6 months	6 months
MMR182 (MMR + Hib)	1092 months	1095 months	4 months	6 months	6 months
MMR183 (MMR + Hib)	1098 months	1101 months	4 months	6 months	6 months
MMR184 (MMR + Hib)	1104 months	1107 months	4 months	6 months	6 months
MMR185 (MMR + Hib)	1110 months	1113 months	4 months	6 months	6 months
MMR186 (MMR + Hib)	1116 months	1119 months	4 months	6 months	6 months
MMR187 (MMR + Hib)	1122 months	1125 months	4 months	6 months	6 months
MMR188 (MMR + Hib)	1128 months	1131 months	4 months	6 months	6 months
MMR189 (MMR + Hib)	1134 months	1137 months	4 months	6 months	6 months
MMR190 (MMR + Hib)	1140 months	1143 months	4 months	6 months	6 months
MMR191 (MMR + Hib)	1146 months	1149 months	4 months	6 months	6 months
MMR192 (MMR + Hib)	1152 months	1155 months	4 months	6 months	6 months
MMR193 (MMR + Hib)	1158 months	1161 months	4 months	6 months	6 months
MMR194 (MMR + Hib)	1164 months	1167 months	4 months	6 months	6 months
MMR195 (MMR + Hib)	1170 months	1173 months	4 months	6 months	6 months
MMR196 (MMR + Hib)	1176 months	1179 months	4 months	6 months	6 months
MMR197 (MMR + Hib)	1182 months	1185 months	4 months	6 months	6 months
MMR198 (MMR + Hib)	1188 months	1191 months	4 months	6 months	6 months
MMR199 (MMR + Hib)	1194 months	1197 months	4 months	6 months	6 months
MMR200 (MMR + Hib)	1200 months	1203 months	4 months	6 months	6 months
MMR201 (MMR + Hib)	1206 months	1209 months	4 months	6 months	6 months
MMR202 (MMR + Hib)	1212 months	1215 months	4 months	6 months	6 months
MMR203 (MMR + Hib)	1218 months	1221 months	4 months	6 months	6 months
MMR204 (MMR + Hib)	1224 months	1227 months	4 months	6 months	6 months
MMR205 (MMR + Hib)	1230 months	1233 months	4 months	6 months	6 months
MMR206 (MMR + Hib)	1236 months				

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

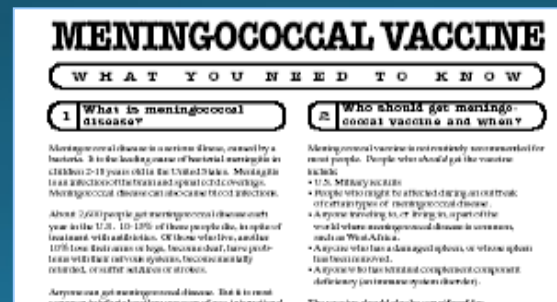
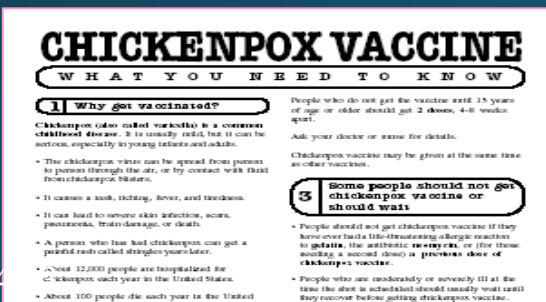
Concerns re: alternate schedules

- 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.

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 ID# _____																														
Parent's/Guardian's Name _____																															
My child's doctor/nurse, _____, has advised me that my child (named above) should receive the following vaccines.																															
<table border="1"><thead><tr><th>Recommended</th><th>Declined</th></tr></thead><tbody><tr><td><input type="checkbox"/> Hepatitis B vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Diphtheria, tetanus, acellular pertussis (DTaP or Tdap) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Diphtheria tetanus (DT or Td) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Meningitis (influenza type B) (Hib) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Pneumococcal conjugate or polysaccharide vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Inactivated poliovirus (IPV) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Measles-mumps-rubella (MMR) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Varicella (chickenpox) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Influenza (flu) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Meningococcal conjugate or polysaccharide vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Hepatitis A vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Rotavirus vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Human papillomavirus (HPV) vaccine</td><td><input type="checkbox"/></td></tr><tr><td><input type="checkbox"/> Other _____</td><td><input type="checkbox"/></td></tr></tbody></table>	Recommended	Declined	<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"/> Meningitis (influenza type B) (Hib) 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"/>	<p>• 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 transfer.</p> <p>• If my child does not receive the vaccine(s) according to the medically accepted schedule, the consequences may include:</p> <ul style="list-style-type: none">- 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. <p>• 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.</p> <p>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 the risks of not vaccinating my child.</p>
Recommended	Declined																														
<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"/> Meningitis (influenza type B) (Hib) 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"/>																														



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.

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 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

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.

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

*General Recommendations on Immunization - MMWR January 28, 2011, Vol 60 # RR02)

Strategies to Avoid Missed Opportunities

- Provider Prompts
 - Automatic pop-up alerts through your EHR system
 - These can sometimes be pre-installed and then customized in your office
- Family-friendly office hours
 - Occasional evening or Saturday hours
 - “No-appointment-required” if needing immunizations only
- Immunization Champion in your practice
 - Manage vaccine supply and schedule periodic updates
 - Any member of the staff could fill this role
- Include all recommended vaccines at each visit
- Schedule periodic team meetings with all personnel to:
 - Improve patient flow
 - Improve quality of care
 - Discuss problems within the framework of the practice

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 Risk Perception

Many parents 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 (i.e. chicken pox)
- Vaccines cause autism

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



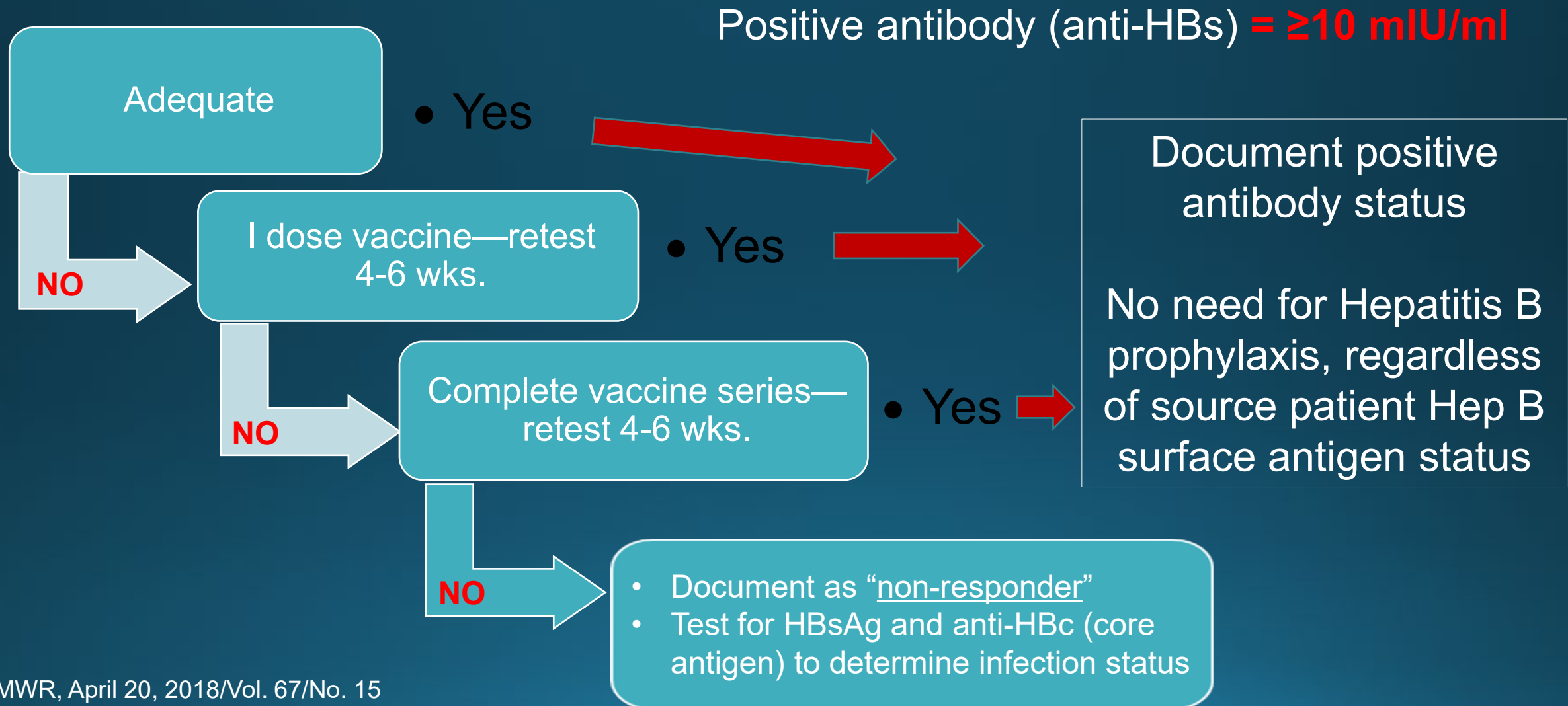
Resources for Factual & Responsible Vaccine Information



www.vaccinesafetynet.org



Hepatitis B Immunization Status for Previously Vaccinated HCP with No Post-vaccination Testing*



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?

8/14/23

Healthcare Personnel Vaccination Recommendations¹

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, with 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/icag.d/p2108.pdf.

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

IMMUNIZATION ACTION COALITION Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

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

Available at www.immunize.org, P#2017

Stay Current!



- Sign up for listserv sites which provide timely information pertinent to your practice
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!**

Test Your Knowledge!

Your office has a large supply of vaccine and space in the refrigerator is always an issue. Since the vaccines can not be stored in the vegetable drawers, the “vaccine manager” removed the bins and is storing some of the vaccines in the space occupied by the drawers.

Is this storage space appropriate?

Test Your Knowledge!

Your office has a large supply of vaccine and space in the refrigerator is always an issue. Since the vaccines can not be stored in the vegetable drawers, the “vaccine manager” removed the bins and is storing some of the vaccines in the space occupied by the drawers.

Is this storage space appropriate?

No! The area is commonly closer to the motor of the refrigerator and temperature may be less stable.

Online Resources*

Current Childhood and Adult Immunization Schedules –
www.cdc.gov/vaccines/schedules/index.html

Parent's Guide to Childhood Immunizations –
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

Vaccine Labels to Organize a Storage Unit –
www.cdc.gov/vaccines/hcp/admin/storage/guide/vaccine-storage-labels.pdf

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

Refusal to Vaccinate Form –
https://www.aap.org/en-us/documents/immunization_refusaltovaccinate.pdf

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

Ask the Experts – 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

Hotline 800.CDC.INFO

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

Georgia Immunization Program

E-mail DPH-Immunization@dph.ga.gov

Hotline 404-657-3158

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

Immunization Action Coalition

E-mail admin@immunize.org

Phone 651.647.9009

Website www.immunize.org