EPIC® Immunization Update

For Healthcare Providers in Training

2023 Update School Health

Children, Adolescents, & Adults

September 26, 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

*Accreditation Council for Continuing Medical Education

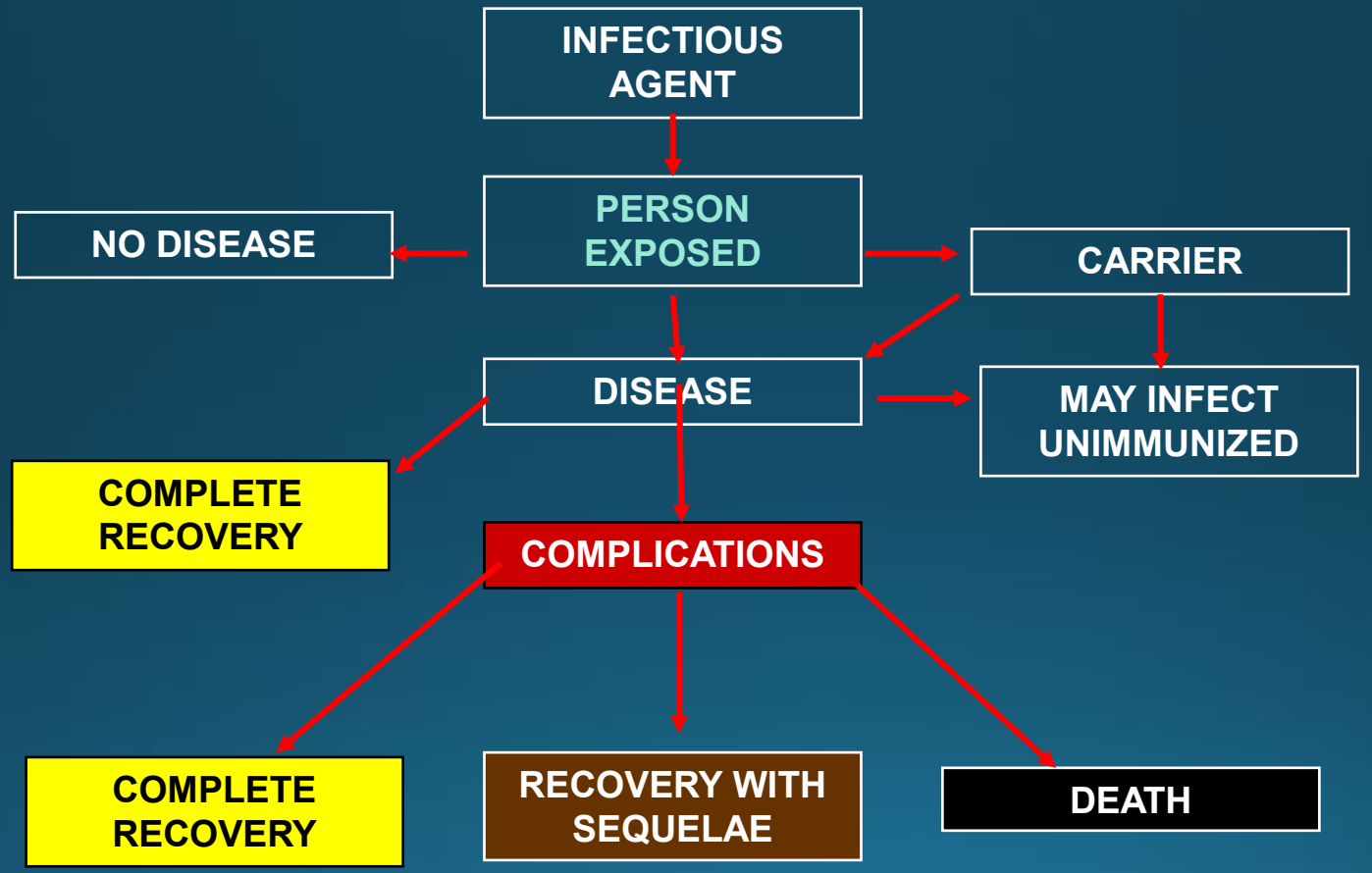
*American Nurses Credentialing Center Commission on Accreditation

Objectives

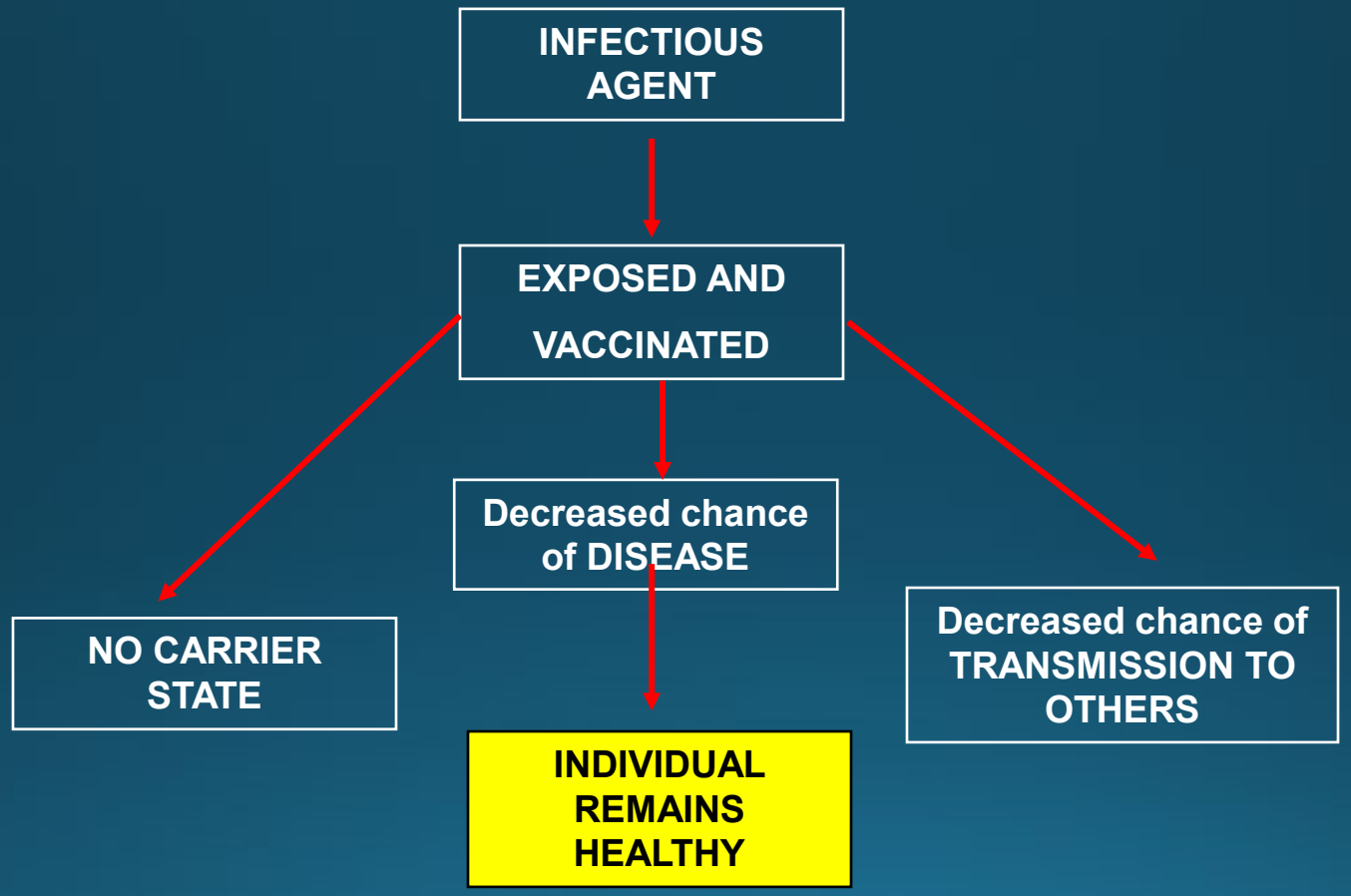
At the end of this presentation, you will be able to:

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

RESULTS OF EXPOSURE TO A VACCINE PREVENTABLE DISEASE

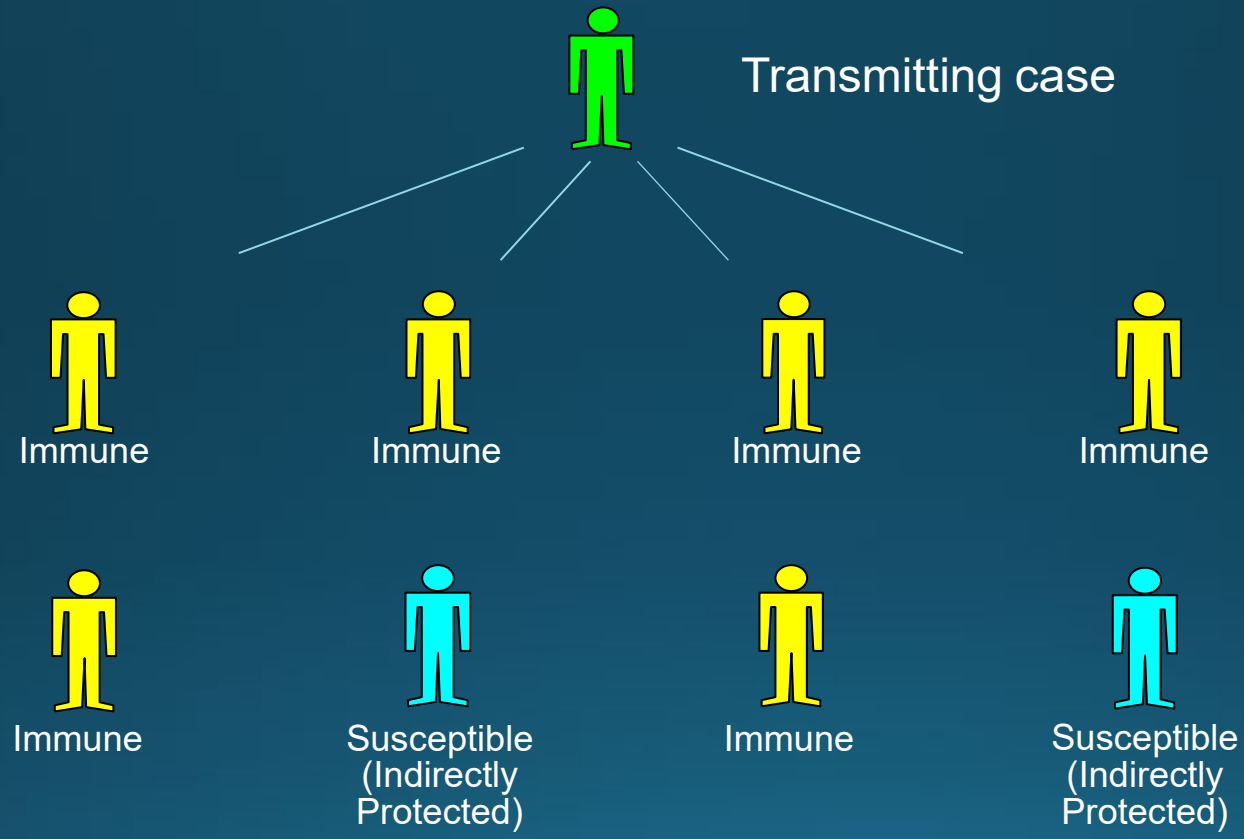


GOALS OF VACCINATING



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

Vaccination Terminology (1)

Active Immunity

- Protection produced by the person's own immune system
- In some cases permanent from disease
- May require multiple doses of a vaccine

Passive Immunity

- Protection transferred from another person or animal (example from mom to baby or Immunoglobulin treatments)
- Temporary protection that wanes with time

Epidemiology and Prevention of Vaccine-Preventable Diseases. 14th Edition, 2021, https://www.cdc.gov/vaccines/pubs/pinkbook/index.html

Vaccination Terminology (2)*

Antigen

- A live or inactivated substance (e.g., protein, polysaccharide) capable of producing an immune response

Antibody

- Protein molecules (immunoglobulin) produced by B lymphocytes to help eliminate an antigen

Epidemiology and Prevention of Vaccine-Preventable Diseases. 14th Edition, 2021, https://www.cdc.gov/vaccines/pubs/pinkbook/index.html

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%
H. influenzae serotype B (invasive, <5 years of age)	20,000	18[2]	>99%
Hepatitis A	117,333	(est) 37,700[3]	68%
Hepatitis B (acute)	66,232	(est) 20,700[3]	69%
Measles	530,217	1,275[2]	>99%
Meningococcal disease (all serotypes)	2,886[4]	371[2]	87%
Mumps	162,344	3,780[2]	98%
Pertussis	200,752	18,617[2]	91%
Pneumococcal disease (invasive, <5 years of age)	16,069	1,700[5]	89%
Polio (paralytic)	16,316	0[2]	100%
Rotavirus (hospitalizations, <3 years of age)	62,500[6]	30,625[7]	51%
Rubella	47,745	6[2]	>99%
Congenital Rubella Syndrome	152	1[2]	>99%
Smallpox	29,005	0[2]	100%
Tetanus	580	26[2]	96%
Varicella	4,085,120	8,297[8]	>99%

Immunize.org

FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org

www.immunize.org/catg.d/p4037.pdf • Item #P4037 (8/22)

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

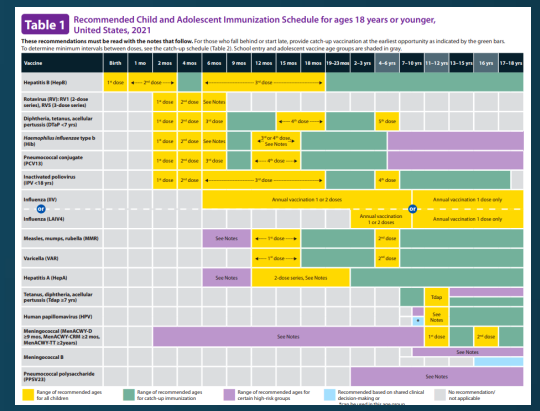
Advisory Committee on Immunization Practices (ACIP)

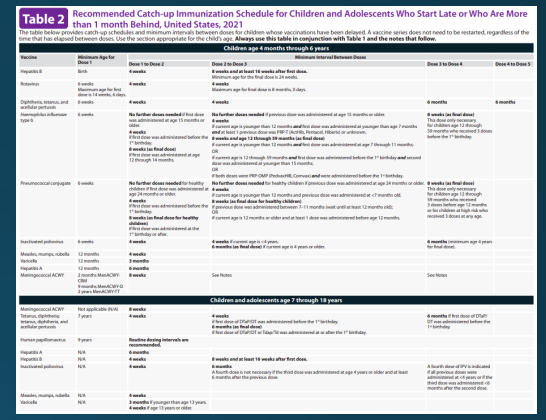
- 15 voting members with expertise in one or more of the following:
  - Vaccinology
  - Immunology
  - Infectious diseases
  - Pediatrics
  - Internal Medicine
  - Preventive medicine
  - Public health
  - Consumer perspectives and/or social and community aspects of immunization programs
- ACIP develops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

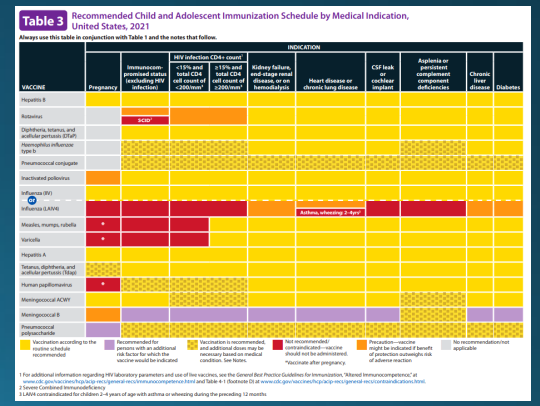
2023 Childhood and Adolescent Immunization Schedules

- 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
- Footnotes

READ THE FOOTNOTES TO ACCESS SPECIFIC VACCINE ADMINISTRATION DETAILS!







https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html

2023 Recommended Immunization Schedule for Adults Aged ≥19 Years*

- Recommended adult schedule by age group
- Recommended immunization schedule for adults aged 19 years or older by medical condition and other indications
- Contraindications and Precautions
- Footnotes

READ THE FOOTNOTES TO ACCESS SPECIFIC VACCINE ADMINISTRATION DETAILS!

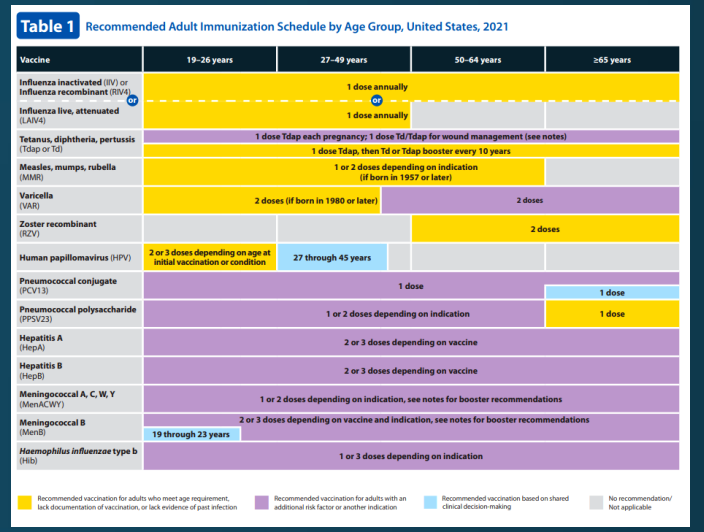


Table 1 Recommended Adult Immunization Schedule by Age Group, United States, 2021

Vaccine	19–26 years	27–49 years	50–64 years	≥65 years
Influenza inactivated (IIV) or Influenza recombinant (RIV4)	1 dose annually			
Influenza live, attenuated (LAIV4)	1 dose annually			
Tetanus, diphtheria, pertussis (Tdap or Td)	1 dose Tdap each pregnancy; 1 dose Td/Tdap for wound management (see notes)			
	1 dose Tdap, then Td or Tdap booster every 10 years			
Measles, mumps, rubella (MMR)	1 or 2 doses depending on indication (if born in 1957 or later)			
Varicella (VAR)	2 doses (if born in 1980 or later)		2 doses	
Zoster recombinant (RZV)			2 doses	
Human papillomavirus (HPV)	2 or 3 doses depending on age at initial vaccination or condition	27 through 45 years		
Pneumococcal conjugate (PCV13)	1 dose			1 dose
Pneumococcal polysaccharide (PPSV23)	1 or 2 doses depending on indication			1 dose
Hepatitis A (HepA)	2 or 3 doses depending on vaccine			
Hepatitis B (HepB)	2 or 3 doses depending on vaccine			
Meningococcal A, C, W, Y (MenACWY)	1 or 2 doses depending on indication, see notes for booster recommendations			
Meningococcal B (MenB)	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations			
	19 through 23 years			
Haemophilus influenzae type b (Hib)	1 or 3 doses depending on indication			

Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection; Recommended vaccination for adults with an additional risk factor or another indication; Recommended vaccination based on shared clinical decision-making; No recommendation/ Not applicable

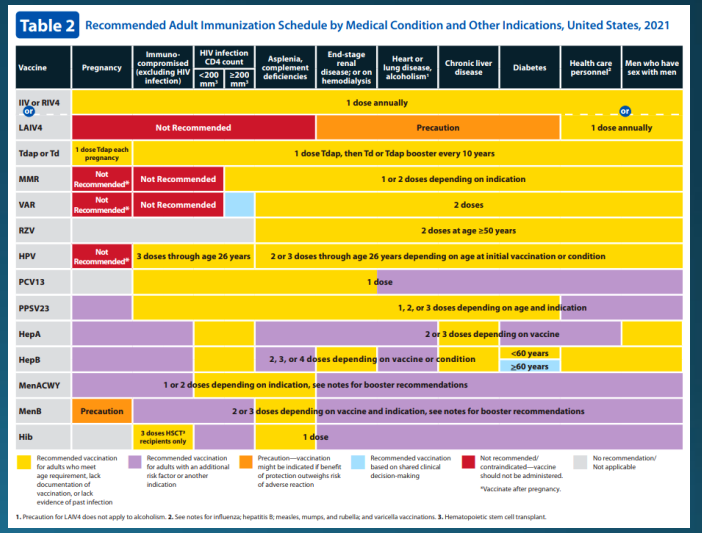


Table 2 Recommended Adult Immunization Schedule by Medical Condition and Other Indications, United States, 2021

Vaccine	Pregnancy	Immuno-compromised (excluding HIV infection)	HIV infection CD4 count <200 mm³	HIV infection CD4 count ≥200 mm³	Asplenia, complement deficiencies	End-stage renal disease; or on hemodialysis	Heart or lung disease, alcoholism[1]	Chronic liver disease	Diabetes	Health care personnel[2]	Men who have sex with men
IIV or RIV4	1 dose annually										
LAIV4	Not Recommended					Precaution				1 dose annually	
Tdap or Td	1 dose Tdap each pregnancy	1 dose Tdap, then Td or Tdap booster every 10 years									
MMR	Not Recommended*	Not Recommended	1 or 2 doses depending on indication								
VAR	Not Recommended*	Not Recommended			2 doses						
RZV	2 doses at age ≥50 years										
HPV	Not Recommended*	3 doses through age 26 years	2 or 3 doses through age 26 years depending on age at initial vaccination or condition								
PCV13	1 dose										
PPSV23	1, 2, or 3 doses depending on age and indication										
HepA	2 or 3 doses depending on vaccine										
HepB	2, 3, or 4 doses depending on vaccine or condition								<60 years		
									≥60 years		
MenACWY	1 or 2 doses depending on indication, see notes for booster recommendations										
MenB	Precaution	2 or 3 doses depending on vaccine and indication, see notes for booster recommendations									
Hib	3 doses HSCT[3] recipients only	1 dose									

Recommended vaccination for adults who meet age requirement, lack documentation of vaccination, or lack evidence of past infection; Recommended vaccination for adults with an additional risk factor or another indication; Precaution—vaccination might be indicated if benefit of protection outweighs risk of adverse reaction; Recommended vaccination based on shared clinical decision-making; Not recommended/ contraindicated—vaccine should not be administered. *Vaccinate after pregnancy.; No recommendation/ Not applicable

1. Precaution for LAIV4 does not apply to alcoholism. 2. See notes for influenza; hepatitis B; measles, mumps, and rubella; and varicella vaccinations. 3. Hematopoietic stem cell transplant.

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.

Indications
Recommendations
Requirements

Indication

- Information about the appropriate use of the vaccine

Recommendation

- ACIP statement that further delineates the Indication found in the package insert
- Basis for standards for best practice
- **All ACIP Recommendations can be found at: https://www.cdc.gov/vaccines/hcp/acip-recs/index.html**

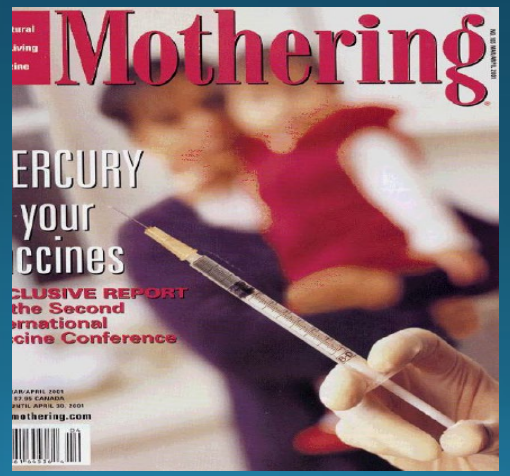
Requirement

- Mandate by a state that a particular vaccine must be administered and documented before entrance to childcare and/or school

MAKING HEADLINES

When a vaccine works, it prevents a disease.
Prevention does not make headlines.

The possibility that a vaccine has an adverse effect, true or false, DOES MAKE A GOOD STORY.



Vaccine Risk Perception

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

Myths and Concerns

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

https://www.cdc.gov/vaccines/parents/FAQs.html

Response to Vaccine Safety Concerns

- Vaccines are among the most thoroughly tested and safest things we put into our bodies
- Refusing a vaccine means taking the risks of the disease and spreading the disease to others
- “Natural immunity” (from disease) may come with complications, permanent damage, or death
- In Georgia, an unimmunized student may be prohibited from attending school during an epidemic*
- Consistent reproducible research has shown that autism is NOT caused by:
  - Thimerosal
  - Multiple vaccines at one time
  - MMR vaccine

*** State of Georgia -Rules of Department of Human Services: Public Health 290-5-4-.07**

Talking with Parents about Vaccines*

- Start conversations early (prenatal visits)
- Use language and examples parents can understand
- Give written information (VIS) prior to the immunization visit
- Provide your recommendations
- Draw upon your experiences as a health care provider
- Solicit and welcome questions
- Recognize that some parents may be more interested in discussing vaccines than others

*Adapted from Glen Nowak, PhD. CDC

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

Think Twice
Global Vaccine Institute

NATIONAL VACCINE INFORMATION CENTER

People Advocating
PAVE
Vaccine Education

Resources to encourage Childhood Vaccinations

Resources

Use these resources to promote routine childhood vaccinations in your practice.

The Catch-up Immunization Schedule

Children and teens can catch up on vaccinations even if they start late or are more than one month behind schedule. Check out this catch-up schedule and share with parents to help get their child caught up on routine vaccination.

View the Schedule

Resources to Encourage Childhood Vaccinations

VFC Flyer for Parents

Vaccines for Children (VFC) Program

Reminders & Recall Systems

https://www.cdc.gov/vaccines/partners/childhood/stayingontrack.html

Resources for Factual & Responsible Vaccine Information

Allied Vaccine Group
MEMBER

ACP-ASIM online
American College of Physicians
American Society of Internal Medicine

American Academy of Family Physicians

vaccine safety net

www.vaccinesafetynet.org

National Foundation for Infectious Diseases

WHO OMS

NNii

immunization action coalition
IAC
immunize.org

Georgia public health

Gavi
The Vaccine Alliance

CDC
SAFER • HEALTHIER • PEOPLE™

VACCINE PREVENTABLE DISEASES

Vaccines*

Vaccine - A product that interacts with the immune system to produce active immunity against a disease without the risk of the disease and its potential complications.

Live, Attenuated

- Measles, Mumps & Rubella (MMR)
- Varicella
- LAIV
- Rotavirus
- Yellow fever

Inactivated

- Toxoids (DTaP, Td, Tdap)
- Whole (Hepatitis A, IPV)
- Split (Influenza - IIV)
- Recombinant vaccines (Hepatitis B, 9vHPV, FluBlok, Shingrix, Men B)
- Polysaccharide vaccines -- (PPSV23)
- Conjugated vaccines (Hib, PCV13, MCV4)
- COVID-19
- RSV

Epidemiology and Prevention of Vaccine-Preventable Diseases. 14th Edition, 2021, https://www.cdc.gov/vaccines/pubs/pinkbook/index.html

Diphtheria

Tetanus

Pertussis

Vaccines Containing Diphtheria & Tetanus Toxoid plus Pertussis Antigens

ACIP recommends:

DTaP – 2 months through 6 years (Multiple doses)

Tdap

- Children and adolescents starting at 11 or 12 years of age
- Any adult who has not received a dose
- Either Tdap or Td can be used for routine booster every 10 yrs.
- Either vaccine can be used for tetanus prophylaxis for wound management

Tdap during Pregnancy

ACIP recommends:

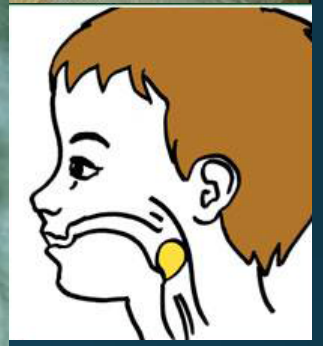
One dose of Tdap during each pregnancy, regardless of a prior history of receiving Tdap.

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.

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

Haemophilus influenzae type b (Hib)*



ACIP recommends Hib vaccine:
3 or 4 doses for children
2 through 15 months of age

- Populations at higher risk for disease: One dose of Hib for unimmunized persons 5 through 18 years who have asplenia, sickle cell disease, or HIV infection.
- One dose of Hib may be given to adults with immunocompromising conditions.

Polio

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

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

Source: World Health Organization

Polio Vaccination Adults (June 2023 ACIP)

•Adults who are known or suspected to be unvaccinated or incompletely vaccinated against polio should complete a primary vaccination series with inactivated polio vaccine (IPV).

•Adults who have received a primary series of trivalent oral polio vaccine (tOPV) or IPV in any combination and who are at increased risk of poliovirus exposure may receive another dose of IPV.

•Available data do not indicate the need for more than a single lifetime booster dose with IPV for adults.

In general, unless there are specific reasons to believe they were not vaccinated, most adults who were born and raised in the United States can assume they were vaccinated against polio as children.

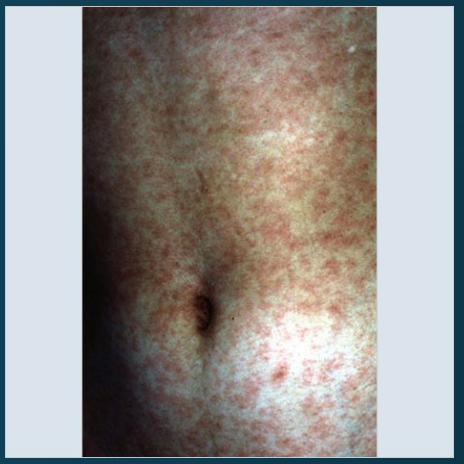
https://www.cdc.gov/vaccines/acip/index.html

Source: World Health Organization

MEASLES

Incubation period---11 to 12 days from exposure to onset of symptoms

Symptoms: fever, cough, coryza, conjunctivitis, maculopapular rash and Koplik spots



Source: Immunization Action Coalition

Complications: otitis media, pneumonia, croup, diarrhea, encephalitis and death

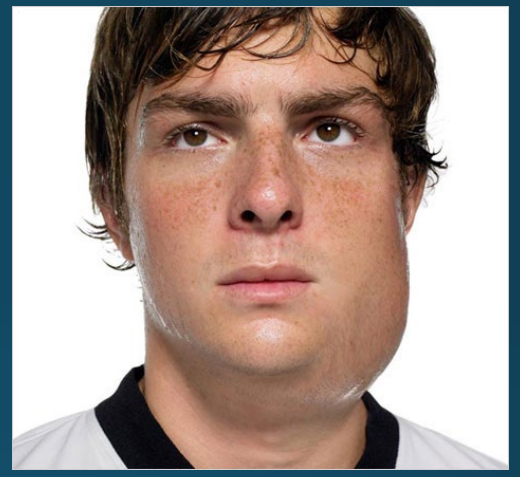
Subacute sclerosing panencephalitis (SSPE) is a progressive neurological disorder that is rare but always fatal.

Measles, Mumps, Rubella

Measles (M)

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

Mumps (M)



Source: Creative Commons

Rubella (R)

Congenital Rubella (R)

MMR Vaccine

ACIP recommendations:

Children: 2 doses of MMR:

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

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

Adults:

- At least 1 dose MMR for unvaccinated adults
- 2 doses MMR for students entering colleges, universities, technical and vocational schools, and other post-high-school educational institutions
- 2 doses MMR for measles and mumps and 1 dose MMR for rubella for healthcare personnel

Special Situations:

- Travelers to foreign countries should be appropriately immunized with MMR before leaving U.S.
- Infants 6-12 mos. of age traveling abroad should receive 1 dose of MMR. This dose must be repeated at age 12 -15 months of age and a second dose at least 4 weeks later.
- A 3rd MMR may be recommended in the instance of a public health-declared mumps outbreak.

MMR Vaccine

- Antibodies develop in approximately 95% of children vaccinated at age 12 months and over 99% of children who receive 2 doses
- Immunity long-term and probably lifelong in most persons

- Evidence of Immunity: Generally, persons can be considered immune to measles if they were:
  - born before 1957,
  - have serologic evidence of measles immunity (equivocal test results should be considered negative),
  - laboratory confirmation of disease,
  - have documentation of adequate vaccination for measles.

- Healthcare providers and health departments should not accept verbal reports of vaccination without written documentation as presumptive evidence of immunity.

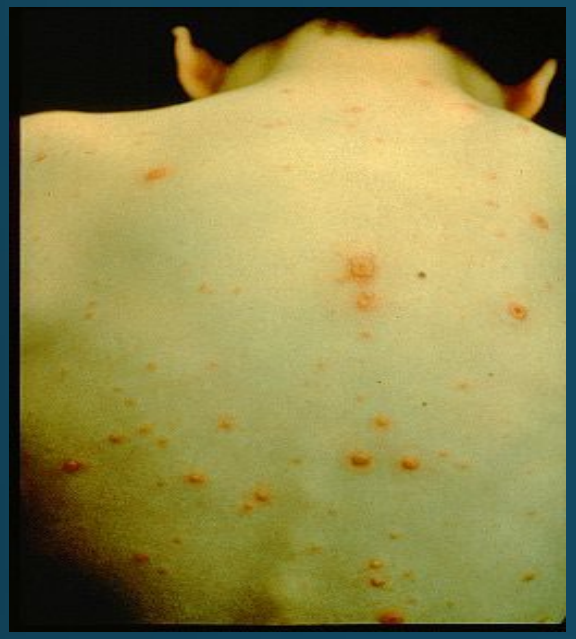
Measles Containing Vaccines

- MMR-II

- PRIORIX (GSK). ACIP Recommended June 2022
  - PRIORIX and M-M-R II are fully interchangeable.
  - ACIP General Best Practices states a preference that doses of vaccine in a series come from the same manufacturer; however, vaccination should not be deferred when the manufacturer of the previously administered vaccine is unknown or when the vaccine from the same manufacturer is unavailable
  - Studies have shown that PRIORIX is safe and immunogenic when administered as a second dose after M-M-R II

- MMRV

Varicella*
(Chickenpox)



ACIP recommends 2 doses of Varicella Vaccine

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

Acceptable Evidence of Varicella Immunity

- Written documentation of age-appropriate vaccination
- Laboratory evidence of immunity or laboratory confirmation of varicella disease
- U.S.-born before 1980
  - Does not apply to healthcare personnel or pregnant people
- Healthcare provider diagnosis or verification of varicella disease
- History of herpes zoster based on healthcare provider diagnosis

ACIP Recommendations for use of MMRV (ProQuad®)

Licensed for ages 12 months through 12 years

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

***MMWR, May 7, 2010, Vol 59, #RR03**
And https://www.cdc.gov/vaccines/pubs/pinkbook/varicella.html

Herpes Zoster

Herpes zoster (HZ), or shingles, occurs through reactivation of latent varicella-zoster virus

Typically characterized by prodromal pain and an acute vesicular eruption (rash) accompanied by moderate to severe pain

One in three persons will develop zoster during their lifetime

Post-herpetic neuralgia PHN is defined as nerve pain persisting longer than 3 mos. after disappearance of the rash.

Risk for zoster and PHN increases with age

Photo courtesy of www.webmd.com

Shingrix ®(RZV) from GSK*

- As of November 18, 2020, Zostavax (ZVL) is no longer available for use in the United States
- Shingrix (RZV) is the only currently licensed Zoster vaccine in the United States

<u>Efficacy (RZV)</u>

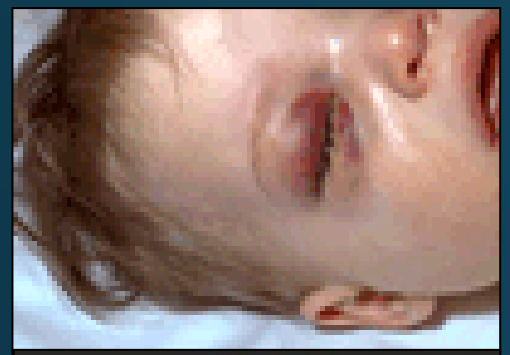
- > 91% in preventing zoster in all vaccinated persons in licensed age groups
- > 88% in preventing PHN
- At least 85% vaccine effectiveness >4 years post-vaccination in persons 70 years and older

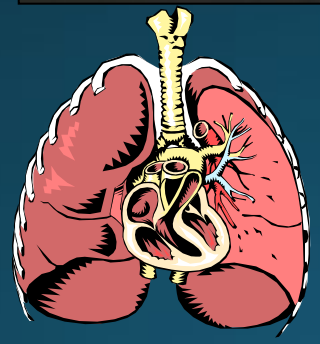
Shingrix® (RZV) from GSK*

- RZV is recommended for **immunocompetent** adults 50 years and older who previously received ZVL and **immunocompromised adults 19 years and older**.
- Two doses of RZV are recommended, regardless of prior history of herpes zoster disease or previous receipt of zoster vaccine live vaccine (ZVL).
- RZV may be given ≥2 months after prior receipt of ZVL. People who have received ZVL should be revaccinated with a 2-dose series of RZV vaccine.
- RZV may be administered to patients:
  - who previously received varicella vaccine.
  - while patients are taking antiviral medications.
  - at the same visit as other vaccines

July 2023

Pneumococcal Disease





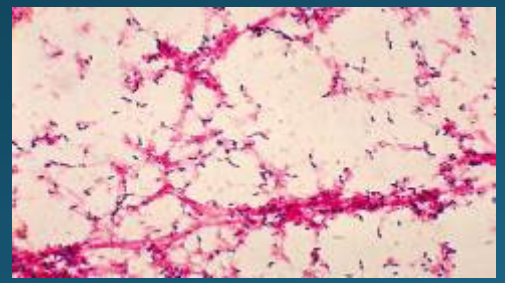


Photo courtesy AAP

- Infection with pneumococcal bacteria may cause pneumonia, bacteremia, meningitis, and otitis media resulting in thousands of hospitalizations and deaths each year in the United States
- Multi-drug resistant pneumococci are common

Pneumococcal Conjugate Vaccine (PCV13, PCV15, PCV20)
ACIP Recommendations- Children

Children

- All children PCV13 or PCV15: 4-dose series at 2, 4, 6 months and 12-15 months
- In June 2023, the ACIP recommended:Use of either pneumococcal conjugate vaccines (PCV) PCV15 or PCV20 is recommended for all children aged 2–23 months according to currently recommended PCV dosing and schedules.
- For older children and adolescents (2 years through 18 years) with underlying medical conditions, see detailed recommendations at https://www.cdc.gov/vaccines/schedules/hcp/imz/child-adolescent.html#note-pneumo

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

Pneumococcal Conjugate Vaccine (PCV15, PCV20) ACIP Recommendations - Adults

Adults

- Adults 65 years or older
  - (PCV15 or PCV20) for all adults 65 years or older who have never received any pneumococcal conjugate vaccine or whose previous vaccination history is unknown
  - For further details see: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/recommendations.html

- On October 20, 2021, the Advisory Committee on Immunization Practices recommended 15-valent PCV (PCV15) or 20-valent PCV (PCV20) for PCV–naïve adults who are either aged ≥65 years or aged 19–64 years with certain underlying conditions.

- Adults 19 through 64 years old who have certain chronic medical conditions or other risk factors are recommended to receive pneumococcal vaccination. For details see: https://www.cdc.gov/vaccines/vpd/pneumo/hcp/who-when-to-vaccinate.html

Pneumococcal Polysaccharide Vaccine (PPSV23)

ACIP Recommendations:

- For children and adolescents 2 years through 18 years and
- Adults 19 years and older
- REMEMBER PATIENTS WHO ARE AT HIGHER RISK FOR DISEASE E.G. Sickle Cell Disease, Immunodeficiency

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

PneumoRecs VaxAdvisor Mobile App for Vaccine Providers

Print

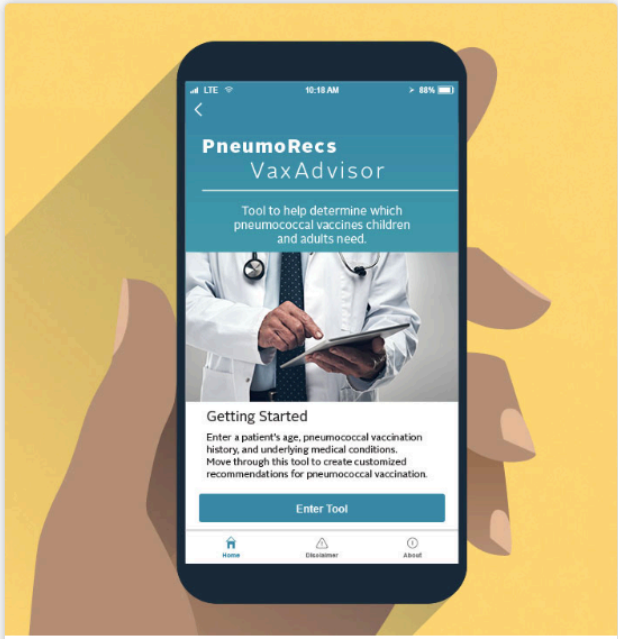
The PneumoRecs VaxAdvisor Mobile App was updated on February 9, 2023, to reflect CDC's new adult pneumococcal vaccination recommendations including for those who previously received PCV13.

The ***PneumoRecs VaxAdvisor*** mobile app helps vaccination providers quickly and easily determine which pneumococcal vaccines a patient needs and when. The app incorporates recommendations for all ages so internists, family physicians, pediatricians, and pharmacists alike will find the tool beneficial.

Users simply:

- Enter a patient's age.
- Note if the patient has specific underlying medical conditions.
- Answer questions about the patient's pneumococcal vaccination history.

Then the app provides patient-specific guidance consistent with the immunization schedule recommended by the U.S. Advisory Committee on Immunization Practices (ACIP).



PneumoRecs VaxAdvisor is available for download on iOS and Android mobile devices.

Download the mobile app or use the

https://www.cdc.gov/vaccines/vpd/pneumo/hcp/pneumoapp.html

Pneumococcal Vaccine Timing for Adults

Make sure your patients are up to date with pneumococcal vaccination.

Adults ≥65 years old
Complete pneumococcal vaccine schedules

Prior vaccines	Option A	Option B
None*	PCV20	PCV15 → ≥1 year† → PPSV23
PPSV23 only at any age	≥1 year → PCV20	≥1 year → PCV15
PCV13 only at any age	≥1 year → PCV20	≥1 year† → PPSV23
PCV13 at any age & **PPSV23** at <65 yrs	≥5 years → PCV20	≥5 years§ → PPSV23

* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines
† Consider minimum interval (8 weeks) for adults with an immunocompromising condition, cochlear implant, or cerebrospinal fluid leak (CSF) leak
§ For adults with an immunocompromising condition, cochlear implant, or CSF leak, the minimum interval for PPSV23 is ≥8 weeks since last PCV13 dose and ≥5 years since last PPS' dose; for others, the minimum interval for PPSV23 is ≥1 year since last PCV13 dose and ≥5 years since last PPSV23 dose

Shared clinical decision-making for those who already completed the series with PCV13 and PPSV

Prior vaccines	Shared clinical decision-making option
Complete series: PCV13 at any age & **PPSV23** at ≥65 yrs	≥5 years → PCV20 Together, with the patient, vaccine providers **may choose** to administer PCV20 to adults ≥65 years old who ha already received PCV13 (but not PCV15 or PCV20) at any age and PPSV23 at or after the age of 65 years old.

www.cdc.gov/pneumococcal/vaccination.html

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

Adults 19–64 years old with specified immunocompromising conditions
Complete pneumococcal vaccine schedules

Prior vaccines	Option A	Option B
None*	PCV20	PCV15 → ≥8 weeks → PPSV23
PPSV23 only	≥1 year → PCV20	≥1 year → PCV15
PCV13 only	≥1 year → PCV20	≥8 weeks → PPSV23 → ≥5 years → PPSV23 Review pneumococcal vaccine recommendations again when your patient turns 65 years old.
PCV13 and **1 dose of PPSV23**	≥5 years → PCV20	≥5 years† → PPSV23 Review pneumococcal vaccine recommendations again when your patient turns 65 years old.
PCV13 and **2 doses of PPSV23**	≥5 years → PCV20	**No vaccines** recommended at this time. Review pneumococcal vaccine recommendations again when your patient turns 65 years old.
Immunocompromising conditions	• Chronic renal failure • Congenital or acquired asplenia • Congenital or acquired immunodeficiency§ • Generalized malignancy • HIV infection • Hodgkin disease • Iatrogenic immunosuppression¶ • Leukemia • Lymphoma • Multiple myeloma • Nephrotic syndrome • Sickle cell disease/other hemoglobinopathies • Solid organ transplant	

* Also applies to people who received PCV7 at any age and no other pneumococcal vaccines
† The minimum interval for PPSV23 is ≥8 weeks since last PCV13 dose and ≥5 years since last PPSV23 dose
§ Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease)
¶ Includes diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy

https://www.cdc.gov/vaccines/vpd/pneumo/downloads/pneumo-vaccine-timing.pdf

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

• Egg-based influenza vaccines	Cell culture–based inactivated (ccIIV4) and recombinant (RIV4) influenza vaccines
• influenza A/Victoria/4897/2022 (H1N1)pdm09-like virus • an influenza A/Darwin/9/2021 (H3N2)-like virus • an influenza B/Austria/1359417/2021 (Victoria lineage)-like virus • an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus	• influenza A/Wisconsin/67/2022 (H1N1)pdm09-like virus • an influenza A/Darwin/6/2021 (H3N2)-like virus • an influenza B/Austria/1359417/2021 (Victoria lineage)-like virus • an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus

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

https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

Influenza Vaccine Products for the 2023–2024 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
GSK	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.

Immunize.org

FOR PROFESSIONALS www.immunize.org / FOR THE PUBLIC www.vaccineinformation.org

www.immunize.org/catg.d/p4072.pdf
Item #P4072 (8/5/2023)

Scan for PDF

Live, Attenuated Influenza Vaccine (LAIV4)*

FluMist® MedImmune (Nasal Spray)

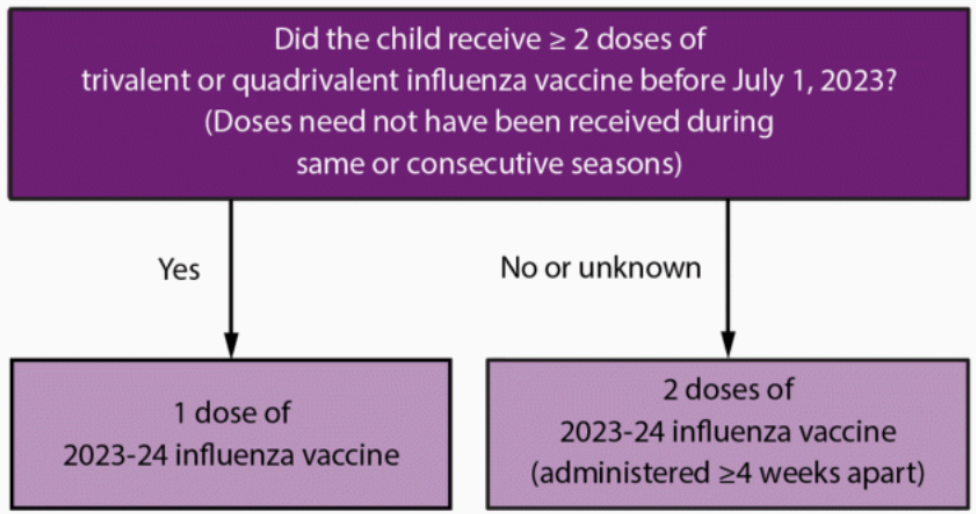
- **Licensed for healthy persons 2 through 49 years of age**

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

https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

FIGURE. Influenza vaccine dosing algorithm for children aged 6 months through 8 years* — Advisory Committee on Immunization Practices, United States, 2023–24 influenza season



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

https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

History of egg allergy and egg-based Influenza vaccines (update 2023-24 season)

- ACIP recommends that all persons aged ≥6 months with egg allergy should receive influenza vaccine.

- Any influenza vaccine (egg based or nonegg based) that is otherwise appropriate for the recipient's age and health status can be used.

- It is no longer recommended that persons who have had an allergic reaction to egg involving symptoms other than urticaria should be vaccinated in an inpatient or outpatient medical setting supervised by a health care provider who is able to recognize and manage severe allergic reactions if an egg-based vaccine is used.

https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

History of egg allergy and egg-based Influenza vaccines (2)

- Egg allergy alone necessitates no additional safety measures for influenza vaccination beyond those recommended for any recipient of any vaccine, regardless of severity of previous reaction to egg.

- All vaccines should be administered in settings in which personnel and equipment needed for rapid recognition and treatment of acute hypersensitivity reactions are available.

https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

Influenza Vaccines Preference 2023-24 for Older Adults

- ACIP recommends that adults aged ≥65 years preferentially receive any one of the following higher dose or adjuvanted influenza vaccines:
  - quadrivalent high-dose inactivated influenza vaccine (HD-IIV4),
  - quadrivalent recombinant influenza vaccine (RIV4), or
  - quadrivalent adjuvanted inactivated influenza vaccine (aIIV4).
- If none of these three vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be used.
- *No preference is expressed for any one of these three vaccines.*

https://www.cdc.gov/mmwr/volumes/72/rr/rr7202a1.htm

Timing of Influenza Vaccination

- Influenza vaccines might be available as early as July or August; however, vaccination during these months is not recommended for most groups because of the possible waning of immunity over the course of the influenza season
- For most persons who need only 1 dose of influenza vaccine for the season, vaccination should ideally be offered during September or October.
- However, vaccination should continue after October and throughout the influenza season as long as influenza viruses are circulating and unexpired vaccine is available.

Hepatitis A

Photo Courtesy Immunization Action Coalition

- Fecal-Oral transmission
- Food borne outbreaks
- Adults average 27 lost work days per illness
- Risk factors include child or employee in child care facility and travel
- Children often asymptomatic – but can infect others

Hepatitis A Vaccine for Children and Adolescents

ACIP recommends 2 doses of hepatitis A vaccine for:

- All children 12 through 23 months of age (Separate the 2 doses by a minimum of 6 months)

Hepatitis A Vaccine for Children and Adolescents

- Additional recommendations:
  - All persons >1 year of age at increased risk for HAV infection or at increased risk for severe disease from HAV infection including persons experiencing homelessness, persons with chronic liver disease, persons living with HIV
  - 1 dose of Hep A Vaccine for Infants 6-11 mos. traveling outside the U.S. when protection against HAV is recommended.
    - Revaccinate with 2 doses, separated by at least 6 months, between age 12-23 months.

Hepatitis A Vaccine Recommendations for Adults

- Adults age 19 years or older with risk factors should receive the adult formulation of HepA vaccine.
- Persons at increased risk for HAV infection, or who are at increased risk for severe disease from HAV infection, should be routinely vaccinated.
- Some risk factors include:
  - Persons with HIV
  - Those traveling or working in countries with high or intermediate endemicity of infection
  - Persons experiencing homelessness
  - Persons with chronic liver disease or on dialysis
  - U. S. Adopters of adoptees from countries with high rates of hepatitis should receive the first dose of the 2-dose series as soon as adoption is planned.

Hepatitis B

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

Transmission:

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

ACIP vaccine recommendations: children and adolescents

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

Hepatitis B Vaccine Recommendations for adults

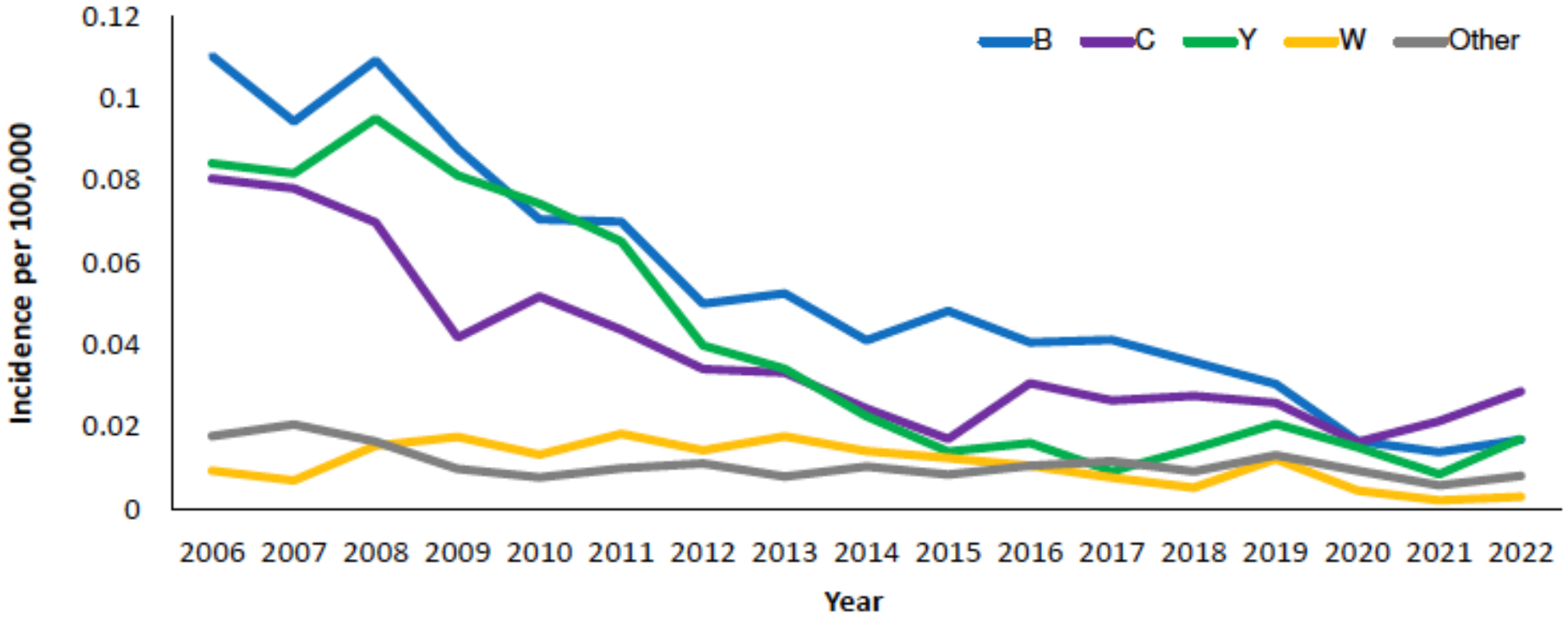
- All adults aged 19-59 years should receive Hep B vaccine
- Hepatitis B vaccine is recommended for adults **age 60 years or older with** risk factors for hepatitis B virus infection
- **People age 60 years or older without** known risk factors for hepatitis B virus infection **may** also complete a HepB vaccine series.
- Risk factors for hepatitis B virus infection include:
    - **Chronic liver disease**
    - **Patients on dialysis**
    - **HIV infection**
    - **Sexual exposure risk**
    - **Current or recent injection drug use**
    - **Percutaneous or mucosal risk for exposure to blood**
    - **Incarceration**
    - **Travel in countries with high or intermediate endemic hepatitis B**

- Persons who have completed a HepB vaccination series at any point or who have a history of HBV infection should not receive additional HepB vaccination, although there is no evidence that receiving additional vaccine doses is harmful

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

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

8

Signs and Symptoms of Meningococcal Disease

- Symptoms of meningitis
  - Sudden onset of fever
  - Headache
  - Stiff neck
  - Photophobia
  - Nausea and vomiting

- Symptoms of meningococcemia
  - All of the above are possible
  - Cold hands 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

https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm; MMWR, Sept 2020, Vol 69, RR 9

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**

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 **2 months through 55 years****:

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

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

*https://www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm

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

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

Rotavirus Vaccines

RotaTeq® (Merck) and Rotarix® (GSK)*

RV 5, RotaTeq®: 3 doses; ages 2, 4, 6 months

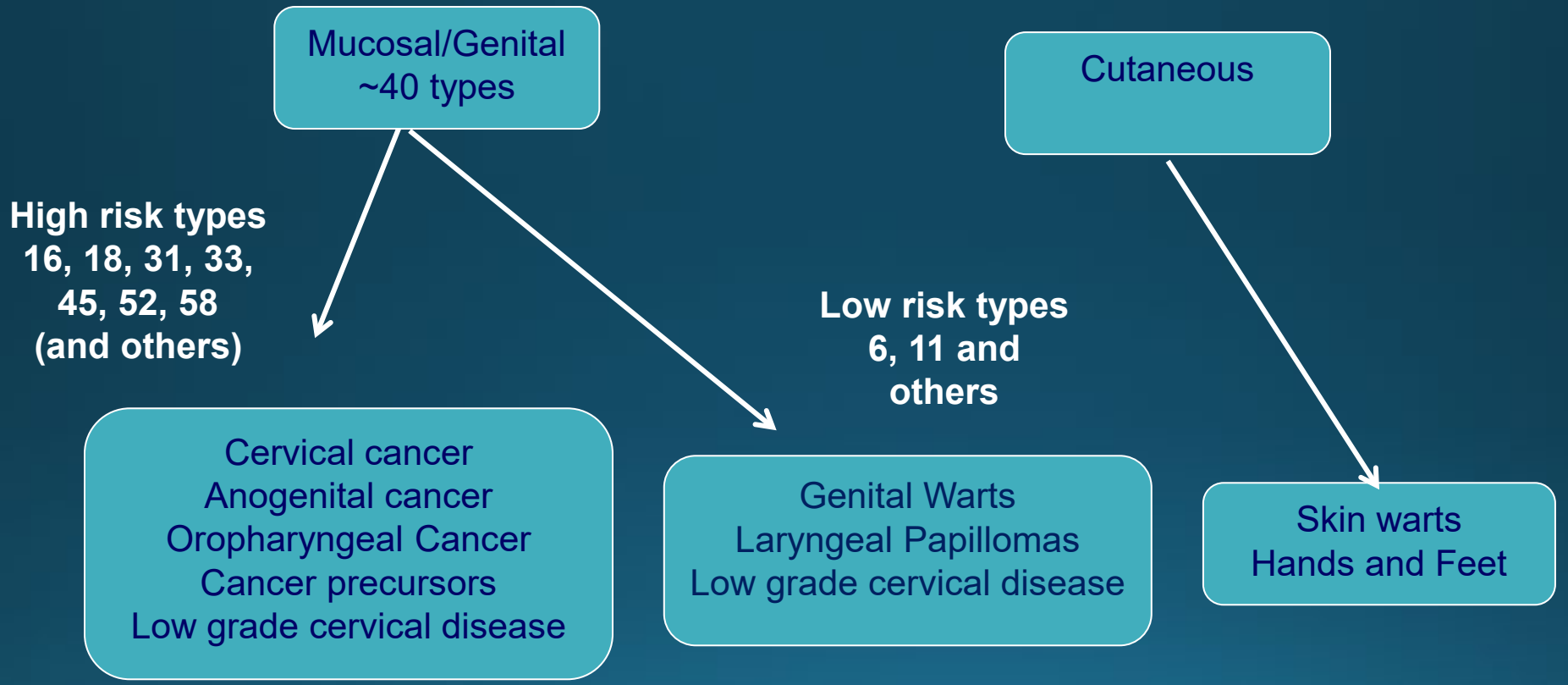
RV 1,Rotarix®: 2 doses; ages 2 and 4 months

ACIP recommendation:

2-3 doses depending on brand

Types of Human Papilloma Virus (HPV)*

(More Than 200 Types Identified)



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 or those with certain immunocompromising conditions
- Based on shared clinical decision making, the series may be given to persons ages 27-45.

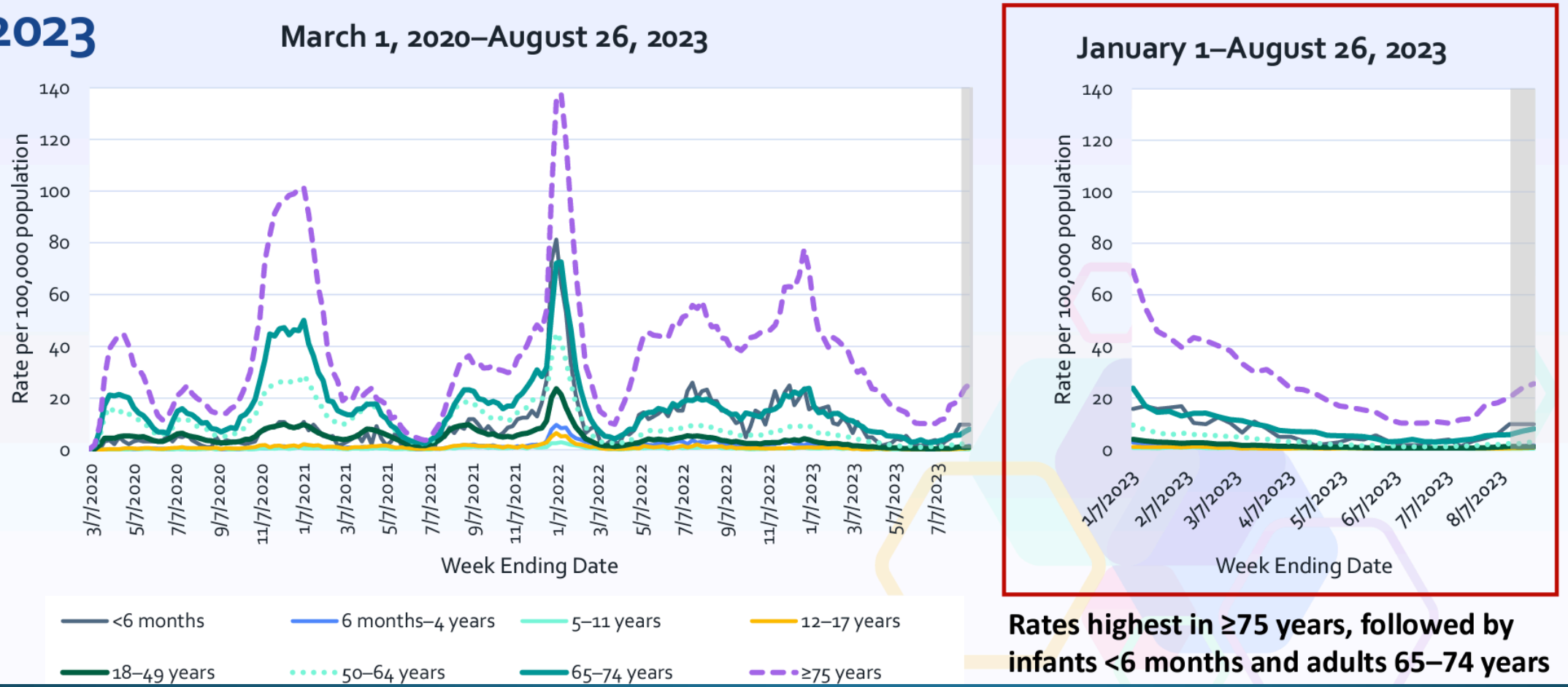
Reasons to Immunize Against HPV at age 11-12 Years

- 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.**

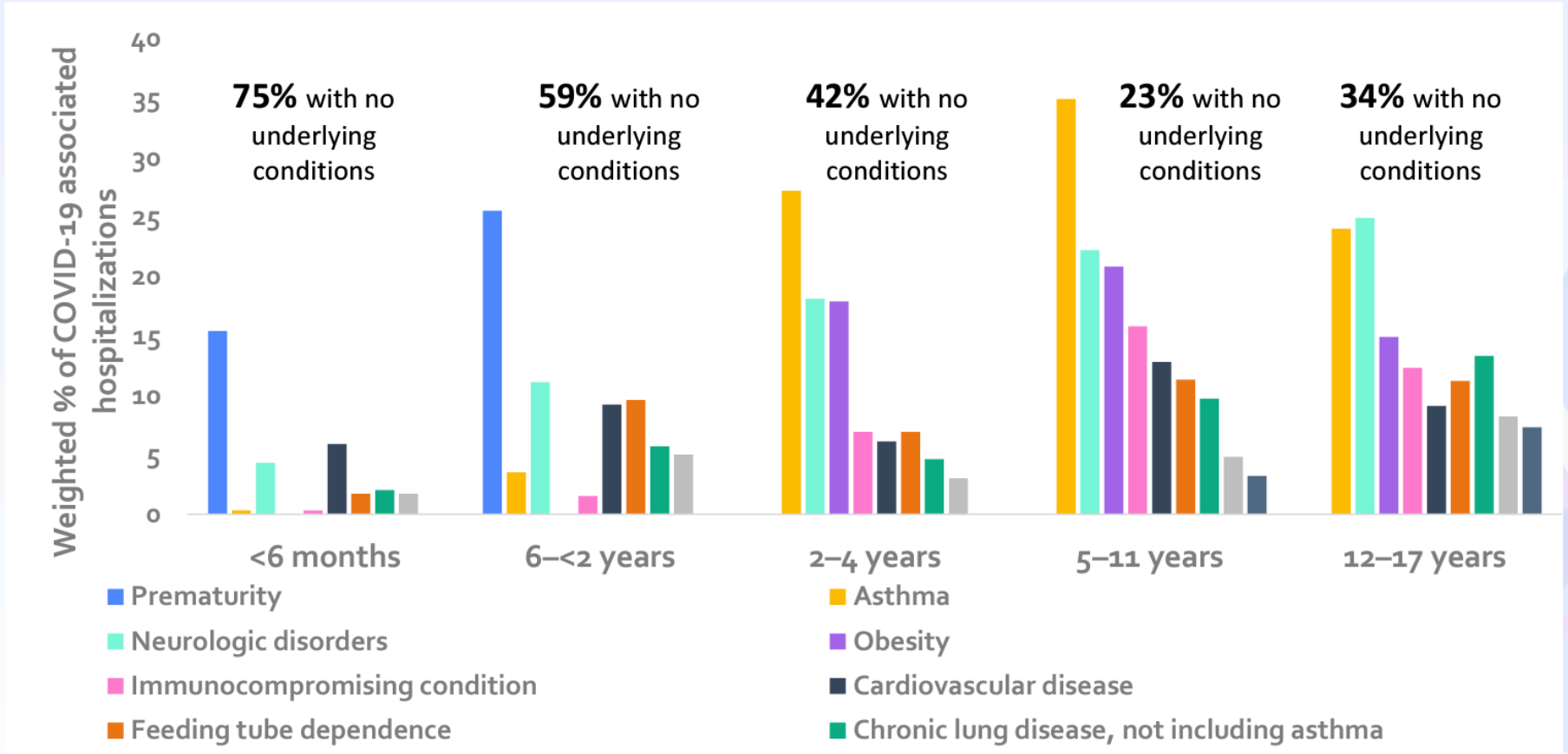
Weekly Population-Based Rates of COVID-19-Associated Hospitalizations — COVID-NET, March 2020–August 26, 2023



Rates highest in ≥75 years, followed by infants <6 months and adults 65–74 years

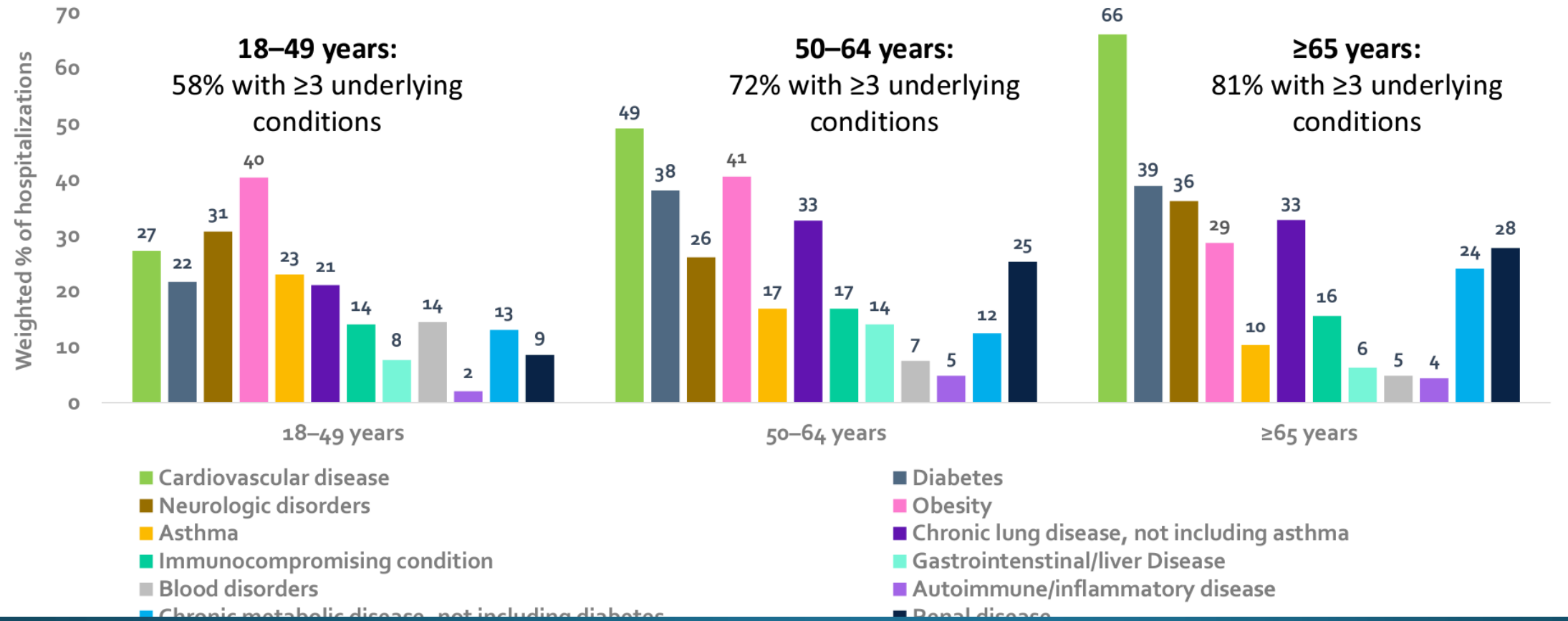
www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-09-12/03-COVID-Havers-508.pdf

Percent of COVID-19-Associated Hospitalizations with Underlying Medical Conditions among Children and Adolescents Ages 5–17 Years by Age Group — COVID-NET, January–June 2023



- **54%** of hospitalized infants, children, and adolescents ages ≤17 years have **no underlying medical conditions**.
- Hospitalizations children and adolescents **ages ≥5 years** are **more likely to have underlying medical conditions** relative to children and infants ages ≤4 years.

Underlying Medical Conditions among Adults Ages ≥18 Years Hospitalized for COVID-19, by Age Group — COVID-NET, January–June 2023



www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-09-12/03-COVID-Havers-508.pdf

ACIP COVID-19 Vaccine Recommendations September 2023

ACIP recommends 2023–2024 (monovalent, XBB.1.5 containing) COVID-19 vaccines (mRNA, Pfizer and Moderna) in persons ≥6 months of age.

The updated vaccine dose should be given at least two months after any previous COVID-19 vaccine dose.

What's different about the updated COVID-19 Vaccine 2023-24?

This is an updated COVID-19 vaccine

- **Monovalent*** – provides protection against one strain– XBB.1.5 (Omicron Variant).
- It is made the same way as previous versions of the COVID-19 vaccine, using mRNA technology.
- It is called the COVID-19 2023-24 Vaccine
- Provides protection against other currently circulating COVID-19 variants

The older version (one in use until September 11, 2023): was bivalent* – protected against two strains (the original strain and the Omicron strains (BA.4 and BA.5). These bivalent vaccines are no longer authorized for use in the United States, effective September 11, 2023.

"Mono" – one "Bi" - two

COVID-19 Vaccine Dosing for Children

- Everyone ages 5 years and older is recommended to receive 1 dose of updated (2023–2024 Formula) mRNA COVID-19 vaccine
- Children ages 6 months–4 years
  - Initial vaccination: should receive either 2 doses of updated (2023–2024 Formula) Moderna or 3 doses of updated (2023–2024 Formula) Pfizer-BioNTech COVID-19 vaccine
  - Received previous mRNA doses: need 1 or 2 doses of updated (2023–2024 Formula) Moderna or updated (2023–2024 Formula) Pfizer-BioNTech COVID-19 vaccine, depending on the number of prior doses

COVID-19 Dosing for people who are moderately or severely immunocompromised

- Initial vaccination: should receive a 3-dose series of updated (2023–2024 Formula) Moderna or updated (2023–2024 Formula) Pfizer-BioNTech COVID-19 vaccine
- Received previous mRNA doses: need 1 or 2 doses of updated (2023–2024 Formula) Moderna or updated (2023–-2024 Formula) Pfizer-BioNTech COVID-19 vaccine, depending on the number of prior doses
- May receive 1 or more additional updated (2023–2024 Formula) mRNA COVID-19 vaccine doses

RSV Vaccines for Older Adults (1)

- First two (2) vaccines approved by the FDA in May 2023 for prevention of RSV lower respiratory tract disease (LRTD) for use in adults aged ≥60 years.
  - RSVPreF3 (Arexvy, GSK) is a 1-dose (0.5 mL) adjuvanted ($AS01_E$) recombinant stabilized prefusion F protein (preF) vaccine
  - RSVpreF (Abrysvo, Pfizer) is a 1-dose (0.5 mL) recombinant stabilized preF vaccine

ACIP Recommendations: RSV Vaccines for Older Adults

Both vaccines recommended by ACIP in June 2023: adults aged ≥60 years may receive a single dose of an RSV vaccine, using shared clinical decision-making.

Optimally, vaccination should occur before the onset of the RSV season; however, typical RSV seasonality was disrupted by the COVID-19 pandemic and has not returned to prepandemic patterns.

https://www.cdc.gov/mmwr/volumes/72/wr/mm7229a4.htm

New RSV Prophylaxis for Infants and Young Children

- Nirsevimab (Beyfortus) is a long-term monoclonal antibody product designed to protect infants and high-risk young children from severe RSV disease. **(It is not a vaccine)**
- May be coadministered with other recommended age-appropriate vaccines. Coadministration of nirsevimab with routine vaccines resulted in a similar rate of adverse events compared with administration of vaccines alone
- Nirsevimab is not expected to interfere with the immune response to other routine childhood immunizations

https://www.cdc.gov/mmwr/volumes/72/wr/mm7234a4.htm

Nirsevimab use in Young Children

Optimal timing for nirsevimab administration is shortly before the RSV season begins; however, nirsevimab may be administered to age-eligible infants and children who have not yet received a dose at any time during the season.

Dosing: Only a single dose of nirsevimab is recommended for an RSV season. Infants with prolonged birth hospitalizations related to prematurity or other causes should receive nirsevimab shortly before or promptly after hospital discharge

https://www.cdc.gov/mmwr/volumes/72/wr/mm7234a4.htm

RSV Vaccine Pregnant People

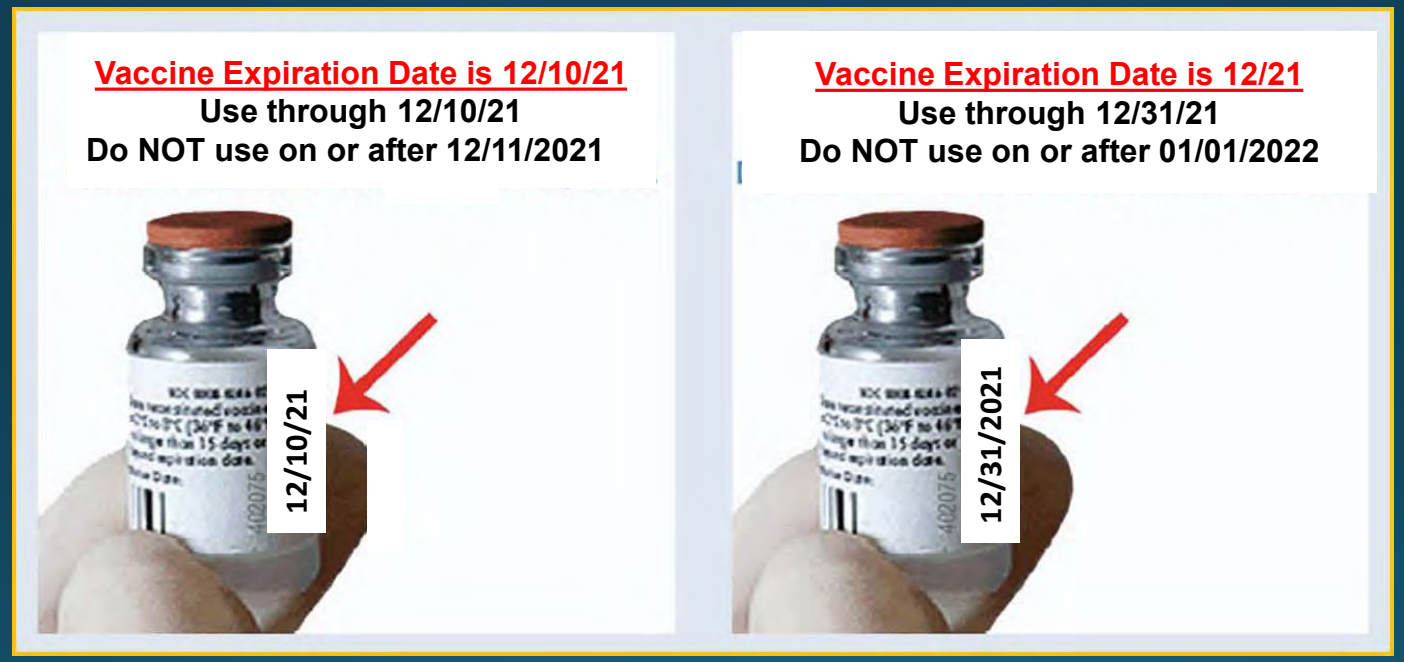
- On August 21, 2023, FDA approved the first vaccine for use in pregnant individuals to prevent lower respiratory tract disease (LRTD) and severe LRTD caused by respiratory syncytial virus (RSV) in infants from birth through 6 months of age.
- Abrysvo (Pfizer) is approved for use at 32 through 36 weeks gestational age of pregnancy.
- Abrysvo (Pfizer) is administered as a single dose injection into the muscle.
- ACIP met to review the efficacy and safety and made formal recommendations for use of the vaccine on September 22, 2023.
- Refer to: https://www.cdc.gov/rsv/clinical/index.html for recommendations

Critical Elements for Immunization Services

Appropriate Vaccine Storage & Handling is Very Important

- Store all vaccines as recommended by manufacturer
- Monitor and record temperatures of refrigerator and freezer twice daily
- Take immediate action for all out-of-range temps
- Implement a vaccine emergency system
- Maintain temperature log records for 3 years
- DO NOT STORE *ANYTHING* ELSE in the refrigerator!

Check Expiration Date of Vaccines and Diluents



Note: Some multidose vials have a beyond use date (BUD) that becomes effective once the vial is entered with a needle. This date may vary from the expiration date printed on the vial. Consult package insert, but be sure to indicate this BUD date change on the vial.

The 7 Rights of Vaccine Administration

- ✓Right ***Patient***
- ✓Right ***Vaccine or Diluent***
- ✓Right ***Time****
- ✓Right ***Dosage***
- ✓Right ***Route, Needle Length, Technique***
- ✓Right ***Site*** for route indicated
- ✓Right ***Documentation***

** Correct age, appropriate interval, and administer before vaccine or diluent expires*

Ref: Epidemiology and Prevention of Vaccine-Preventable Diseases. 13th Edition, 2015.

Sites for Vaccine Administration

Intramuscular (IM)

DTaP, Tdap, Hib, Td, Hep A, Hep B, PCV13, IIV, MCV4, HPV , Herpes Zoster, COVID-19

Subcutaneous (SQ, SC, or sub-Q)

MMR (GSK – Priorix) MPSV4,
Herpes Zoster (1 dose vaccine)

Either intramuscular or subcutaneous

IPV, PPSV23, MMR, MMRV, Vericella

Intranasal

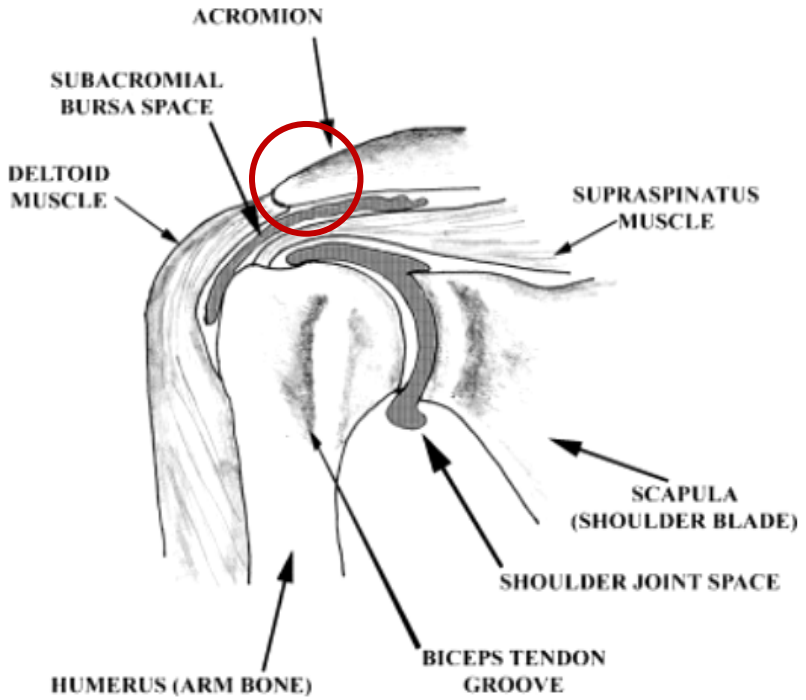
LAIV

Orally (PO)

Rotavirus

SIRVA

Shoulder anatomy



HRSA Healthcare Systems

4

SIRVA = Shoulder Injury Related to Vaccine Administration

TIPS TO AVOID THIS INJURY

- **Landmark the site---don't "eyeball" it**
- **If possible, be seated to vaccinate a seated pt.**
- **Expose the shoulder completely**
- **Roll the sleeve up---don't pull the shirt over the neck**
- **REMEMBER!**
  2-3 FINGERS DOWN FROM THE ACROMION

https://www.hhs.gov/sites/default/files/Nair_Special%20Highlight_SIRVA%20remediated.pdf

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

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

Vaccine	Dose	Route
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
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) *Persons 11–15 yrs may be given Recombivax HB (Merck) 1.0 mL adult formulation on a 2-dose schedule.*	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)	Intranasal 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
Measles, Mumps, Rubella (MMR)	0.5 mL	Subcut
Meningococcal serogroups A, C, W, Y (MenACWY)	0.5 mL	IM
Meningococcal serogroup B (MenB)	0.5 mL	IM
Pneumococcal conjugate (PCV)	0.5 mL	IM
Pneumococcal polysaccharide (PPSV)	0.5 mL	IM or Subcut
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

* 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

Injection Site and Needle Size

Subcutaneous (Subcut) injection
Use a 23–25 gauge needle. Choose the injection site that is appropriate to the person's age and body mass.

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

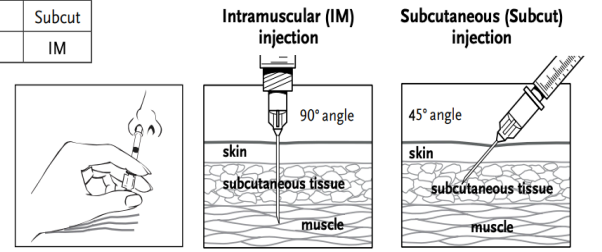
Intramuscular (IM) injection
Use a 22–25 gauge needle. Choose the injection site and needle length that is appropriate to the person's age and body mass.

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"[1]	Deltoid muscle of arm
Children (3–10 years)	5/8–1"[1]	Deltoid muscle of arm[2]
	1–1¼"	Anterolateral thigh muscle
Adolescents and teens (11–18 years)	5/8–1"[1]	Deltoid muscle of arm[2]
	1–1½"	Anterolateral thigh muscle
Adults 19 years or older		
Female or male <130 lbs	5/8–1"[1]	Deltoid muscle of arm
Female or male 130–152 lbs	1"	Deltoid muscle of arm
Female 153–200 lbs Male 153–260 lbs	1–1½"	Deltoid muscle of arm
Female 200+ lbs Male 260+ lbs	1½"	Deltoid muscle of arm
Female or male, any weight	1½"	Anterolateral thigh muscle

[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.



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

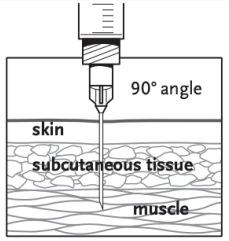
- Diphtheria-tetanus-pertussis (DTaP, Tdap)
- Diphtheria-tetanus (DT, Td)
- *Haemophilus influenzae* type b (Hib)
- Hepatitis A (HepA)
- Hepatitis B (HepB)
- Human papillomavirus (HPV)
- Inactivated influenza (IIV)
- Meningococcal serogroups A,C,W, Y (MenACWY)
- Meningococcal serogroup B (MenB)
- Pneumococcal 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 1–1½" 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.

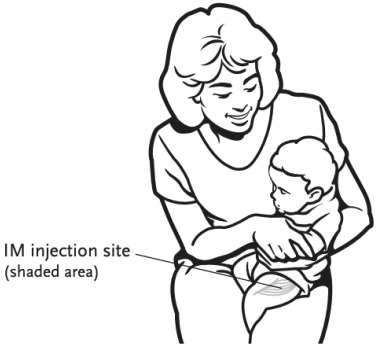
Insert needle at a 90° angle to the skin with a quick thrust.

(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.

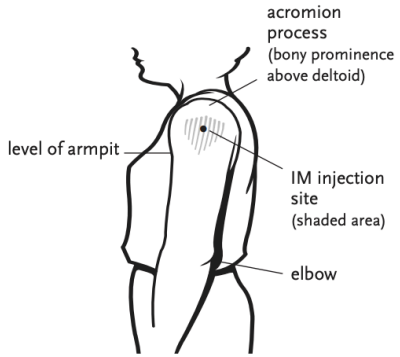
¶ CDC. "General Best Practices Guidelines for Immunization: Best Practices Guidance of the ACIP" at https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf

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.

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www.immunize.org/catg.d/p2020.pdf • Item #P2020 (1/18)

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

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=WsZ6NEijlfI 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.

		Self-Assessment		Supervisor Review		
COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	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 ▶

		Self-Assessment		
COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	NEEDS TO IMPROVE	MEETS OR EXCEEDS	NEEDS T IMPROV
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 ▶

		Self-Assessment		Supervisor Review		
COMPETENCY	CLINICAL SKILLS, TECHNIQUES, AND PROCEDURES	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.					
	13. Properly disposes of vaccine vials.					
E Records Procedures	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.

a. Watch video on immunization techniques and review CDC's Vaccine Administration eLearn, available at www.cdc.gov/vaccines/hcp/admin/resource-library.html.
b. Review office protocols.
c. Review manuals, textbooks, wall charts, or other guides (e.g., Key Vaccination Resources for Healthcare Professionals at www.immunize.org/catg.d/p2005.pdf)
d. Review package inserts.
e. Review vaccine storage and handling guidelines or video.
f. Observe other staff with patients.
g. Practice injections.
h. Read Vaccine Information Statements.
i. Be mentored by someone who has demonstrated appropriate immunization skills.
j. Role play (with other staff) interactions with parents and patients, including age appropriate comfort measures.
k. Attend a skills training or other appropriate courses/training.
l. Attend healthcare customer satisfaction or cultural competency training.
m. 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 _____

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

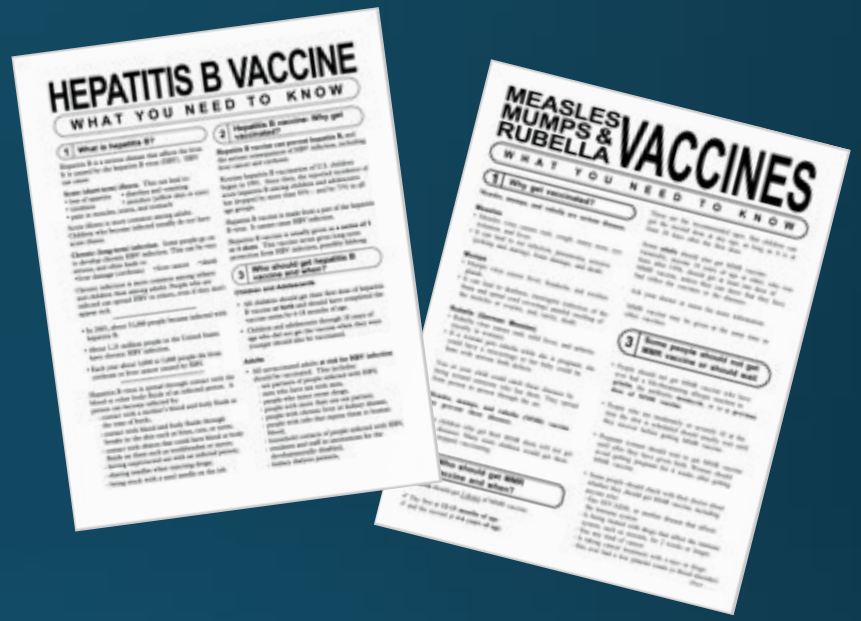
General Best Practice Guidelines for Immunization*

(formerly General Recommendations on Immunization)

- Timing and Spacing
- Contraindications and Precautions
- Prevention and Management of Adverse Reactions
- Vaccine Administration
- Storage and Handling of Immunobiologics
- Altered Immunocompetence
- Special Situations
- Vaccination Records
- Vaccination Programs
- Vaccine Information Sources
- Errata available at https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/general-recs-errata.html

*Kroger AT, Duchin J, Vázquez M. General Best Practice Guidelines for Immunization. Best Practices Guidance of the Advisory Committee on Immunization Practices (ACIP). [www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf].

Vaccine Information Statements



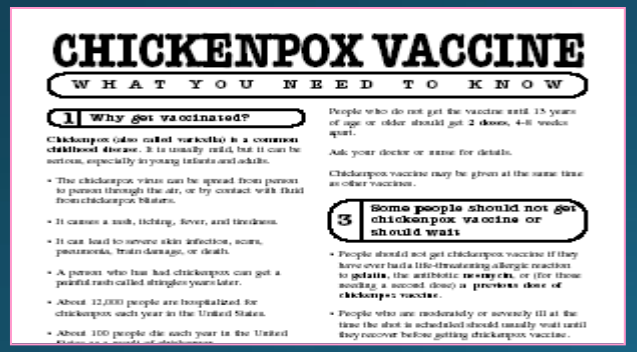
- Information sheets produced by the CDC
- Explanation of risks and benefits of a vaccine
- Federal law requires that a VIS be handed to patient/parent before each dose of vaccine is given
- Must be provided for any vaccine that is covered by the Vaccine Injury Compensation Program
- Available through Immunization Action Coalition (IAC) at www.immunize.org

Always Document…

Accept only written documentation of prior immunizations

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”



CHICKENPOX VACCINE

WHAT YOU NEED TO KNOW

1 Why get vaccinated?

Chickenpox (also called varicella) is a common childhood disease. It is usually mild, but it can be serious, especially in young infants and adults.

- The chickenpox virus can be spread from person to person through the air, or by contact with fluid from chickenpox blisters.
- It causes a rash, itching, fever, and tiredness.
- It can lead to severe skin infection, scars, pneumonia, brain damage, or death.
- A person who has had chickenpox can get a painful rash called shingles years later.
- About 12,000 people are hospitalized for chickenpox each year in the United States.
- About 100 people die each year in the United

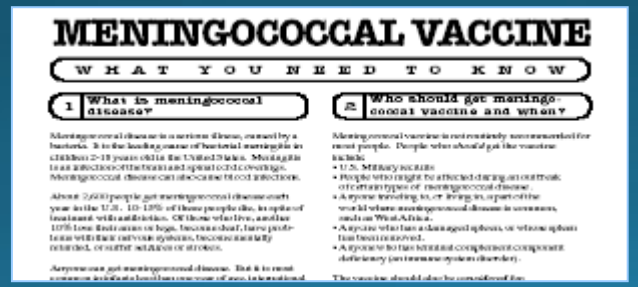
People who do not get the vaccine until 13 years of age or older should get 2 doses, 4–8 weeks apart.

Ask your doctor or nurse for details.

Chickenpox vaccine may be given at the same time as other vaccines.

3 Some people should not get chickenpox vaccine or should wait

- People should not get chickenpox vaccine if they have ever had a life-threatening allergic reaction to gelatin, the antibiotic neomycin, or (for those needing a second dose) a previous dose of chickenpox vaccine.
- People who are moderately or severely ill at the time the shot is scheduled should usually wait until they recover before getting chickenpox vaccine.



MENINGOCOCCAL VACCINE

WHAT YOU NEED TO KNOW

1 What is meningococcal disease?

Meningococcal disease is a serious illness, caused by a bacteria. It is the leading cause of bacterial meningitis in children 2–10 years old in the United States. Meningitis is an infection of the brain and spinal cord coverings. Meningococcal disease can also cause blood infections.

About 2,600 people get meningococcal disease each year in the U.S. 10–15% of those people die, in spite of treatment with antibiotics. Of those who live, another 10% lose their arms or legs, become deaf, have problems with their nervous system, become mentally disabled, or suffer seizures or strokes.

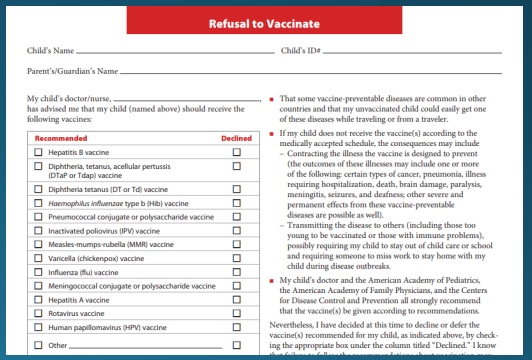
Anyone can get meningococcal disease. But it is most common in infants less than one year of age, in teenagers

2 Who should get meningococcal vaccine and when?

Meningococcal vaccine is not routinely recommended for most people. People who should get the vaccine include:

- U.S. Military recruits
- People who might be affected during an outbreak of certain types of meningococcal disease.
- Anyone traveling to, or living in, a part of the world where meningococcal disease is common, such as West Africa.
- Anyone who has a damaged spleen, or whose spleen has been removed.
- Anyone who has terminal complement component deficiency (an immune system disorder).

The vaccine should also be considered for



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:

Recommended	Declined
☐ Hepatitis B vaccine	☐
☐ Diphtheria, tetanus, acellular pertussis (DTaP or Tdap) vaccine	☐
☐ Diphtheria tetanus (DT or Td) vaccine	☐
☐ *Haemophilus influenzae* type b (Hib) vaccine	☐
☐ Pneumococcal conjugate or polysaccharide vaccine	☐
☐ Inactivated poliovirus (IPV) vaccine	☐
☐ Measles-mumps-rubella (MMR) vaccine	☐
☐ Varicella (chickenpox) vaccine	☐
☐ Influenza (flu) vaccine	☐
☐ Meningococcal conjugate or polysaccharide vaccine	☐
☐ Hepatitis A vaccine	☐
☐ Rotavirus vaccine	☐
☐ Human papillomavirus (HPV) vaccine	☐
☐ Other _____	☐

- That some vaccine-preventable diseases are common in other countries and that my unvaccinated child could easily get one of these diseases while traveling or from a traveler.
- If my child does not receive the vaccine(s) according to the medically accepted schedule, the consequences may include
  - Contracting the illness the vaccine is designed to prevent (the outcomes of these illnesses may include one or more of the following: certain types of cancer, pneumonia, illness requiring hospitalization, death, brain damage, paralysis, meningitis, seizures, and deafness; other severe and permanent effects from these vaccine-preventable diseases are possible as well).
  - Transmitting the disease to others (including those too young to be vaccinated or those with immune problems), possibly requiring my child to stay out of child care or school and requiring someone to miss work to stay home with my child during disease outbreaks.
- My child's doctor and the American Academy of Pediatrics, the American Academy of Family Physicians, and the Centers for Disease Control and Prevention all strongly recommend that the vaccine(s) be given according to recommendations.

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

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.

Georgia does NOT have a philosophical exemption.

A ‘Birth to Death’ Immunization Registry

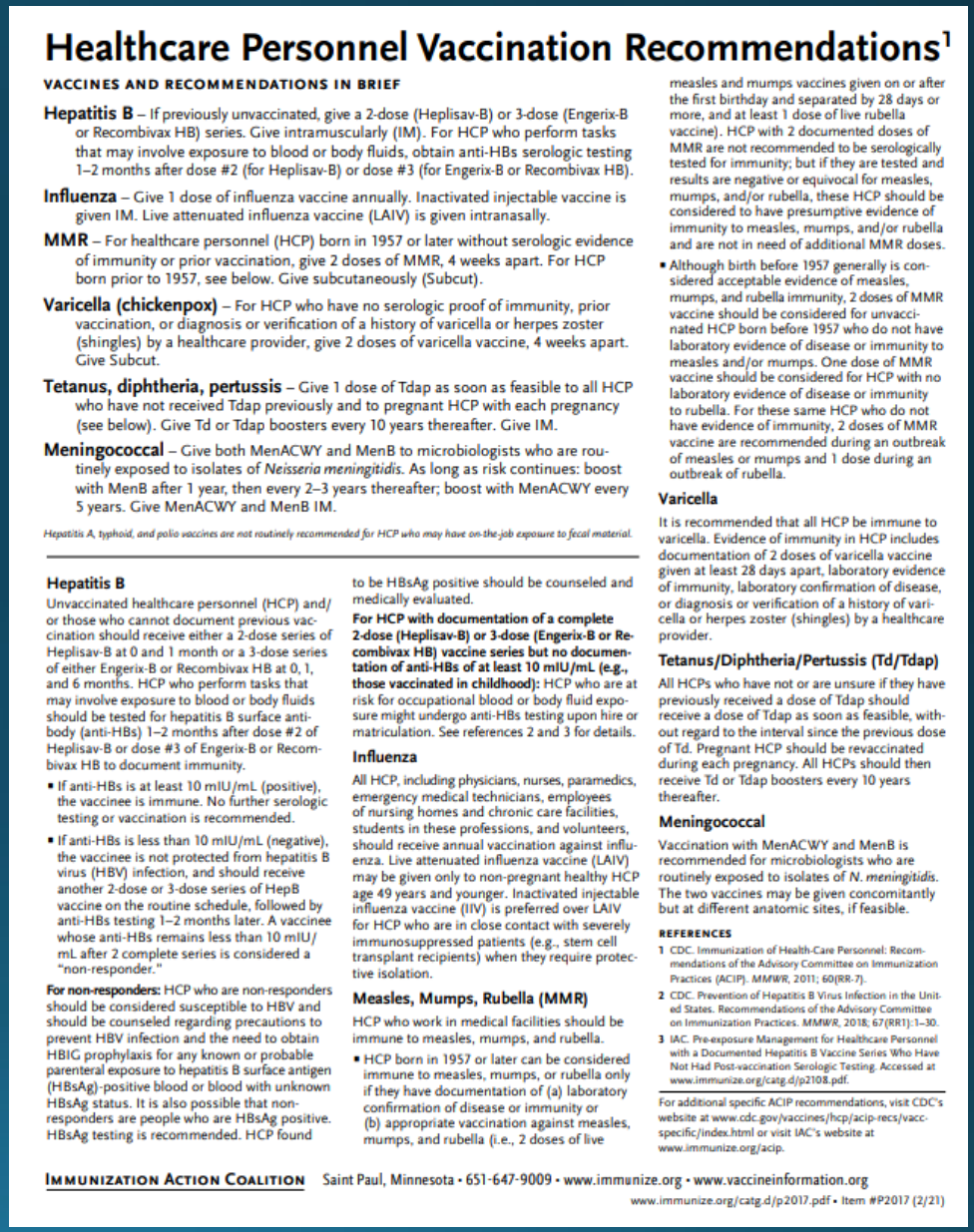
- Providers administering vaccines in Georgia must provide appropriate information to GRITS.
- GRITS personnel can work with your EHR/EMR vendor to create an interface between your system and GRITS.
- Use GRITS to generate reminders on medical records and/or notify patients when vaccines are needed.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

Call the GRITS Training Coordinator (404) 463-0807 or e-mail : https://dph.georgia.gov/georgia-immunization-registry-grits

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 <u>YOU</u> up to date?



Healthcare Personnel Vaccination Recommendations[1]

VACCINES AND RECOMMENDATIONS IN BRIEF

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

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

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

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

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

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

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

Hepatitis B

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

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

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

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

Influenza

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

Measles, Mumps, Rubella (MMR)

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

- HCP born in 1957 or later can be considered immune to measles, mumps, or rubella only if they have documentation of (a) laboratory confirmation of disease or immunity or (b) appropriate vaccination against measles, mumps, and rubella (i.e., 2 doses of live measles and mumps vaccines given on or after the first birthday and separated by 28 days or more, and at least 1 dose of live rubella vaccine). HCP with 2 documented doses of MMR are not recommended to be serologically tested for immunity; but if they are tested and results are negative or equivocal for measles, mumps, and/or rubella, these HCP should be considered to have presumptive evidence of immunity to measles, mumps, and/or rubella and are not in need of additional MMR doses.
- Although birth before 1957 generally is considered acceptable evidence of measles, mumps, and rubella immunity, 2 doses of MMR vaccine should be considered for unvaccinated HCP born before 1957 who do not have laboratory evidence of disease or immunity to measles and/or mumps. One dose of MMR vaccine should be considered for HCP with no laboratory evidence of disease or immunity to rubella. For these same HCP who do not have evidence of immunity, 2 doses of MMR vaccine are recommended during an outbreak of measles or mumps and 1 dose during an outbreak of rubella.

Varicella

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

Tetanus/Diphtheria/Pertussis (Td/Tdap)

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

Meningococcal

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

REFERENCES

1 CDC. Immunization of Health-Care Personnel: Recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR*, 2011; 60(RR-7).

2 CDC. Prevention of Hepatitis B Virus Infection in the United States. Recommendations of the Advisory Committee on Immunization Practices. *MMWR*, 2018; 67(RR1):1–30.

3 IAC. Pre-exposure Management for Healthcare Personnel with a Documented Hepatitis B Vaccine Series Who Have Not Had Post-vaccination Serologic Testing. Accessed at www.immunize.org/catg.d/p2108.pdf.

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

EVERYONE IS A PART OF THE TEAM THAT CAN

MAKE SURE PATIENTS RECEIVE THE

IMMUNIZATIONS THEY NEED!

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**