EPIC® Immunization 2023 Update Children, Adolescents, & Adults

July 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
- Primary Sources of Information for this Presentation:
  - ACIP Vaccine Recommendations: https://www.cdc.gov/vaccines/hcp/acip-recs/
  - The 'Pink Book: https://www.cdc.gov/vaccines/pubs/pinkbook/index.html
  - CDC Immunization Schedules: https://www.cdc.gov/vaccines/schedules/

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%

1. CDC. *JAMA* November 14, 2007; 298(18): 2155–63.
2. CDC. National Notifiable Infectious Diseases and Conditions, United States: Annual Tables 2019. Accessed August 2, 2022.
3. CDC. Viral Hepatitis Surveillance – United States, 2019. Published May 2021. Estimated total cases account for under-reporting.
4. CDC. *MMWR* October 6, 1995; 43(53):1–98.
5. CDC. Active Bacterial Core Surveillance (ABCs) Report; Emerging Infections Program Network *Streptococcus pneumoniae*, 2019.
6. CDC. *MMWR*, February 6, 2009; 58(RR-2): 1–25.
7. CDC. New Vaccine Surveillance Network, 2017 data (unpublished); U.S. rotavirus disease now has a biennial pattern.
8. CDC. Varicella Program, 2017 data (unpublished)

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

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

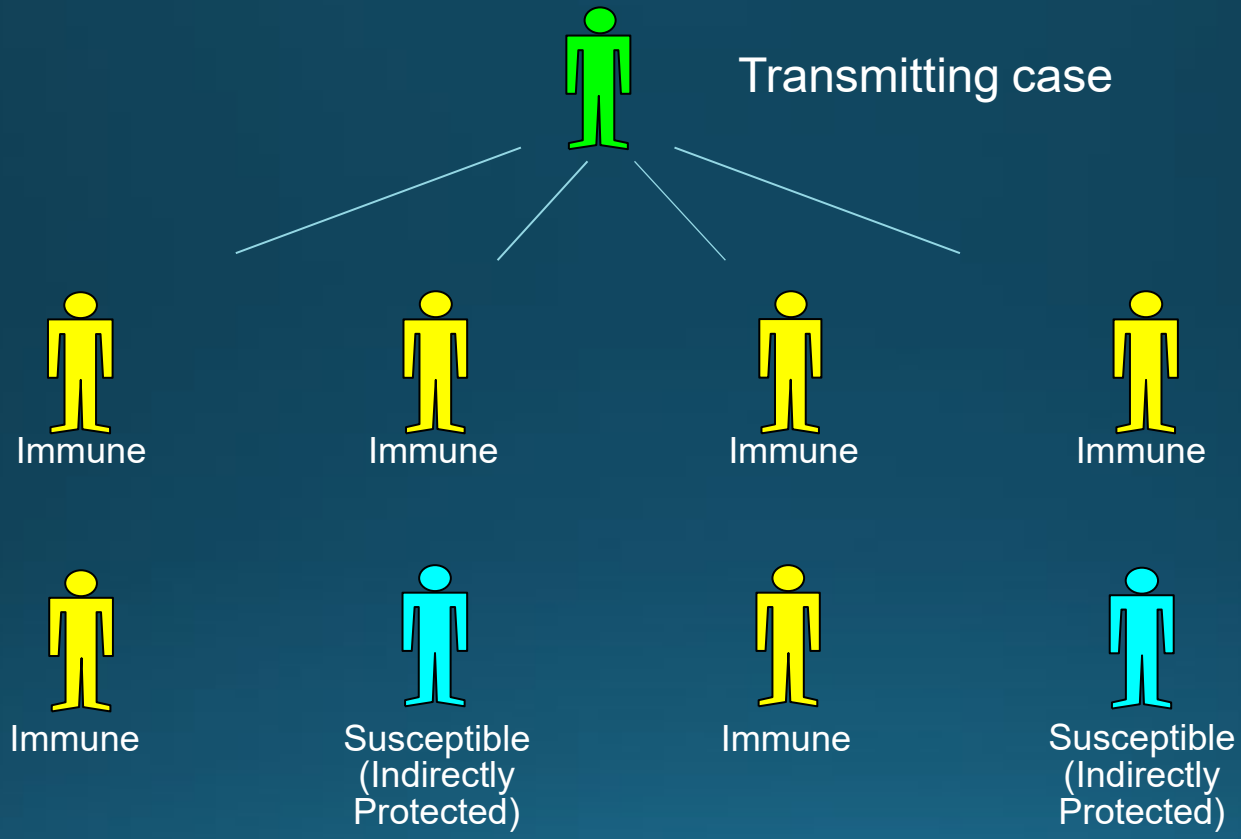
https://www.immunize.org/catg.d/p4037.pdf

Advisory Committee on Immunization Practices (ACIP)

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

Community Immunity

Formerly known as “Herd Immunity”*



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

Diphtheria

Tetanus

Pertussis

Diphtheria, Tetanus and Pertussis Vaccines for Children

ACIP Recommendations

DTaP vaccine

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

July 2023

ADMINISTER THE RIGHT VACCINE!

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

Improving DTaP 4th Dose Coverage

Prior research has identified the 4th dose of DTaP as one of the main contributors to non-completion of the primary series by age 2.

In the years 2015-2016, Dose #3 coverage = 93.8%, but Dose #4 = 80.3%.
Similarly in 2018-2019, Dose #3 coverage = 94.2% but Dose $ 4 = 81.9%

GRITS can be a valuable tool to help address these challenges.

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

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Improving DTaP 4th Dose Coverage (2)

Common Provider Challenges

- Provider confusion about when to administer the 4th dose
- Not scheduling an 18-month well-child visit
- When children are delayed in getting the 1st 3 doses, they may not be eligible to receive the 4th dose at the usual time (12-15 mos.)
- Failure of providers to administer all recommended doses at a visit
- Failure of providers to utilize reminder/recall functions of GRITS or their EMR

GRITS can be a valuable tool to help address these challenges.

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

ACIP Recommendations

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

- Children and adolescents starting at 11 or 12 years of age
- Any adult who has not received a Tdap dose – regardless of time since the last Td dose
- Routine decennial booster
- Tetanus prophylaxis for wound management
- No minimum interval between doses of Td and Tdap

Tdap for Adults

Boostrix™ licensed for persons 10 yrs. and older

Adacel™ licensed for persons 10 through 64 years of age

- For adults 19 through 64 years, either brand of Tdap may be used.
- For adults 65 years and older Boostrix should be used, when feasible.

  If only Adacel is available, the ACIP recommends giving it to adults aged ≥ 65 years.
- Either Tdap or Td can be used for routine decennial booster.
- Either can be used for tetanus prophylaxis for wound management.

  There is no minimum interval between doses of Td and Tdap.

Tdap during Pregnancy

ACIP recommends:

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

Optimal timing:

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

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

Test Your Knowledge!

Four month old Lucas was given Tdap instead of DTaP.

What should be done?

Test Your Knowledge!

Four month old Lucas was given Tdap instead of DTaP.
What should be done?

If Tdap was inadvertently given to a child under age 7 years:

- It should not be counted as either the first, second, or third dose of DTaP.
- The dose should be repeated with DTaP. Continue vaccinating on schedule.
- If the dose of Tdap was administered for the fourth or fifth DTaP dose, the Tdap dose can be counted as valid.

Please remind your staff to always check the vaccine vial at least 3 times before administering any vaccine.

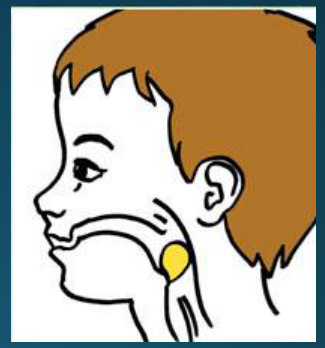
Haemophilus influenzae type b (Hib)

ACIP recommends:

3-4 doses of Hib (depending on brand)

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

Adults: One dose of Hib may be given to adults with immunocompromising conditions.



Polio

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

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

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.

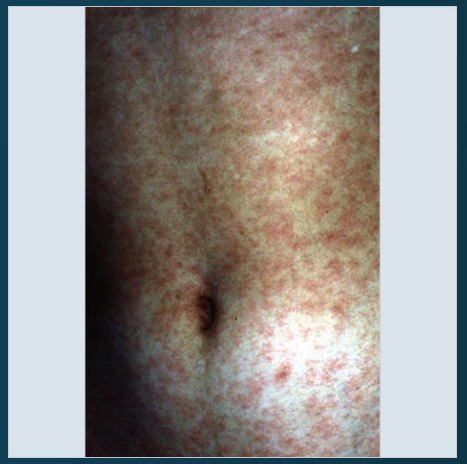
https://www.cdc.gov/vaccines/acip/index.html

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

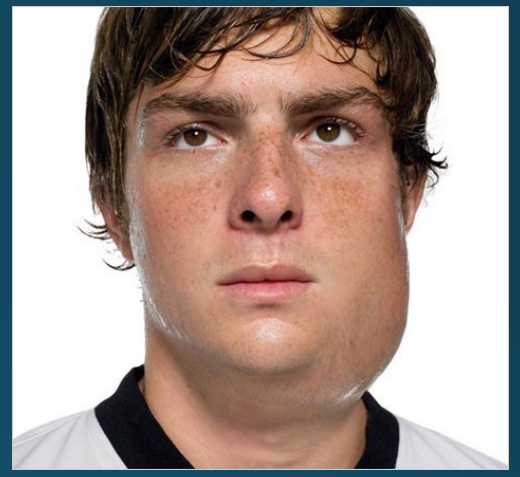
Subacute sclerosing panencephalitis (SSPE) is a progressive neurological disorder that is rare but always fatal.

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 Recommendations

ACIP recommendations:

Children: 2 doses of MMR:

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

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

Adults:

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

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

MMR Vaccine and Immunity

- 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

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Shingrix ®(RZV) from GSK

Store at appropriate **refrigerator** temperatures

2 doses given IM, 2-6 months apart

Shorter intervals may be used in some persons (including immunodeficient/immunosuppressed)

After reconstitution/mixing, Give only 0.5 ml, not full contents of the vial.

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

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

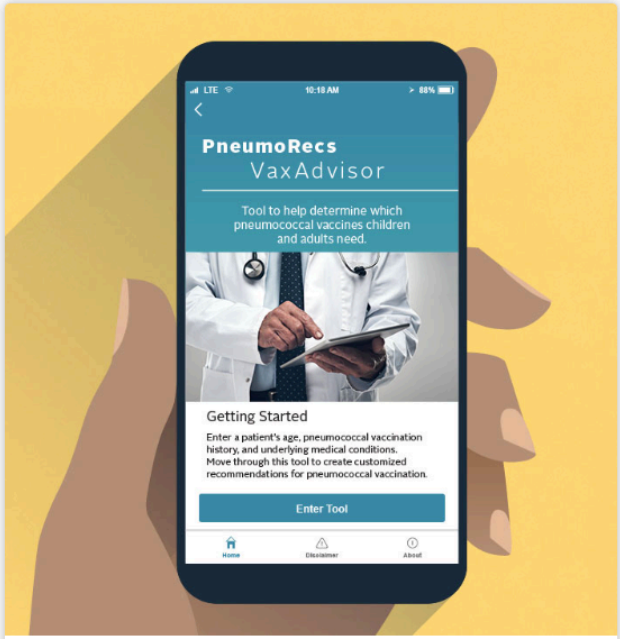
The PneumoRecs VaxAdvisor Mobile App was updated on February 9, 2023, to reflect CDC's new adult pneumococcal vaccination recommendations including for those who previously received PCV13.

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

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 2022-2023 Season in the U.S. UPDATE When 2023-24 Recommendations become available

• Egg-based influenza vaccines	Cell culture–based inactivated (ccIIV4) and recombinant (RIV4) influenza vaccines
• an influenza A/Victoria/2570/2019 (H1N1)pdm09-like virus • an influenza A/Darwin/9/2021 (H3N2)-like virus • an influenza B/Austria/1359417/2021 (Victoria lineage)- like virus, and • an influenza B/Phuket/3073/2013 (Yamagata lineage)-like virus	• an influenza A/Wisconsin/588/2019 (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.

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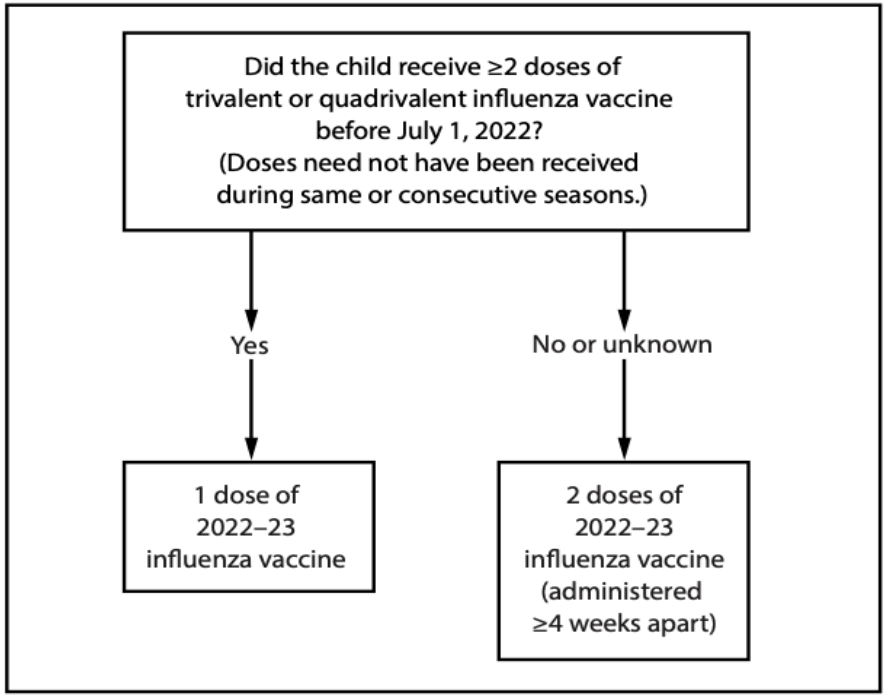
SOURCE: MMWR CDC

Dosing for children 6 months through 8 years of age

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



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

SOURCE: MMWR CDC

UPDATE for 2023-24 when available Influenza Vaccines for 2022-2023 Season

TABLE 1. Influenza vaccines — United States, 2022–23 influenza season*

Trade name (manufacturer)	Presentations	Age indication	μg HA (IIV4s and RIV4) or virus count (LAIV4) for each vaccine virus (per dose)	Route	Mercury (from thimerosal, if present), μg/0.5 mL
IIV4 (standard-dose, egg-based vaccines†)					
Afluria Quadrivalent	0.5-mL PFS§	≥3 yrs§	15 μg/0.5 mL	IM¶	—**
(Seqirus)	5.0-mL MDV§	≥6 mos§	7.5 μg/0.25 mL	IM¶	24.5
		(needle and syringe) 18 through 64 yrs (jet injector)	15 μg/0.5 mL		
Fluarix Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 mos	15 μg/0.5 mL	IM¶	—
FluLaval Quadrivalent (GlaxoSmithKline)	0.5-mL PFS	≥6 mos	15 μg/0.5 mL	IM¶	—
Fluzone Quadrivalent	0.5-mL PFS††	≥6 mos††	15 μg/0.5 mL	IM¶	—
(Sanofi Pasteur)	0.5-mL SDV††	≥6 mos††	15 μg/0.5 mL	IM¶	—
	5.0-mL MDV††	≥6 mos††	7.5 μg/0.25 mL	IM¶	25
			15 μg/0.5 mL		
ccIIV4 (standard-dose, cell culture–based vaccine)					
Flucelvax Quadrivalent	0.5-mL PFS	≥6 mos	15 μg/0.5 mL	IM¶	—
(Seqirus)	5.0-mL MDV	≥6 mos	15 μg/0.5 mL	IM¶	25
HD-IIV4 (high-dose, egg-based vaccine†)					
Fluzone High-Dose Quadrivalent (Sanofi Pasteur)	0.7-mL PFS	≥65 yrs	60 μg/0.7 mL	IM¶	—
aIIV4 (standard-dose, egg-based vaccine† with MF59 adjuvant)					
Fluad Quadrivalent (Seqirus)	0.5-mL PFS	≥65 yrs	15 μg/0.5 mL	IM¶	—
RIV4 (recombinant HA vaccine)					
Flublok Quadrivalent (Sanofi Pasteur)	0.5-mL PFS	≥18 yrs	45 μg/0.5 mL	IM¶	—
LAIV4 (egg-based vaccine†)					
FluMist Quadrivalent (AstraZeneca)	0.2-mL prefilled single-use intranasal sprayer	2 through 49 yrs	$10^{6.5–7.5}$ fluorescent focus units/0.2 mL	NAS	—

Abbreviations: ACIP = Advisory Committee on Immunization Practices; FDA = Food and Drug Administration; HA = hemagglutinin; IIV4 = inactivated influenza vaccine, quadrivalent; IM = intramuscular; LAIV4 = live attenuated influenza vaccine, quadrivalent; MDV = multidose vial; NAS = intranasal; PFS = prefilled syringe; RIV4 = recombinant influenza vaccine, quadrivalent; SDV = single-dose vial.

SOURCE: Available Influenza Vaccines 2022-23, CDC

UPDATEwhen 2023-24 available

Influenza Vaccine Products for the 2022–2023 Influenza Season

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

NOTES

1. IIV4 = egg-based quadrivalent inactivated influenza vaccine (injectable); where necessary to refer to cell culture-based vaccine, the prefix "cc" is used (e.g., ccIIV4); RIV4 = quadrivalent recombinant hemagglutinin influenza vaccine (injectable); aIIV4 = adjuvanted quadrivalent inactivated influenza vaccine.
2. An administration code should always be reported in addition to the vaccine product code. Note: Third party payers may have specific policies and guidelines that might require providing additional information on their claim forms.
3. Dosing for infants and children age 6 through 35 months:
   - Afluria 0.25 mL
   - Fluarix 0.5 mL
   - Flucelvax 0.5 mL
   - FluLaval 0.5 mL
   - Fluzone 0.25 mL or 0.5 mL
4. Afluria is approved by the Food and Drug Administration for intramuscular administration with the PharmaJet Stratis Needle-Free Injection System for persons age 18 through 64 years.

Immunize.org

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

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

Scan for PDF

Live, Attenuated Influenza Vaccine (LAIV4)*

FluMist® MedImmune (Nasal Spray)

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

Contraindications to LAIV include:

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

SOURCE: MMWR CDC

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

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

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

Co-administration

- Inactivated influenza vaccines(IIV4s) and RIV4 may be administered simultaneously or sequentially with other inactivated vaccines (including COVID-19 vaccines) or live vaccines.

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

- Providers should be aware of the potential for increased reactogenicity with coadministration of COVID-19 vaccines and the adjuvanted or high dose IIV4s which are recommended in persons 65 years and older.

SOURCE: MMWR CDC

Influenza Vaccines Preference 2022-23 for Older Adults and other changes for 2022-23 influenza vaccination recommendations

- 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).**

  No preference is expressed for any one of these three vaccines.

- If none of these three vaccines is available at an opportunity for vaccine administration, then any other age-appropriate influenza vaccine should be used.

Timing of Influenza Vaccination (Updated June 2023)

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

https://www.cdc.gov/flu/spotlights/2022-2023/flu-vaccination-recommendations-adopted.htm

Timing of Influenza Vaccination (Updated June 2023) - 2

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

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-Exposed Infants and Children

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

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

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

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

For further details on dosing, please visit: https://www.cdc.gov/vaccines/pubs/pinkbook/hepb.html, Epidemiology and Prevention of Vaccine-Preventable Diseases, Hepatitis B chapter

Post-vaccination serologic testing (PVST)

ACIP Recommendations re: PVST

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

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

Hepatitis B Vaccine Recommendations for adults

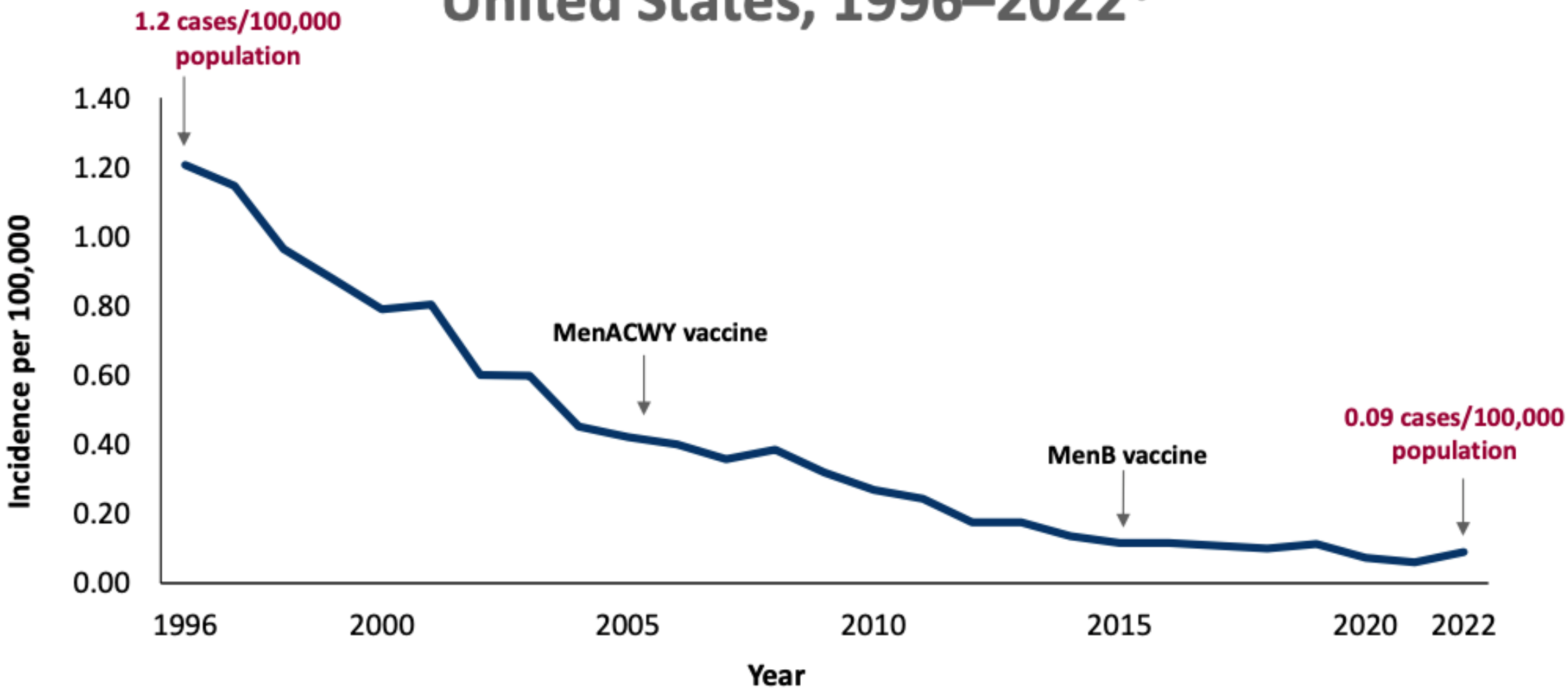
- All adults aged 19-59 years should receive Hep B vaccine
- Hepatitis B vaccine is recommended for adults **age 60 years or older with** risk factors for hepatitis B virus infection
- **People age 60 years or older without** known risk factors for hepatitis B virus infection **may** also complete a 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

Meningococcal Disease Incidence – United States, 1996–2022*



Abbreviations: MenACWY vaccine = quadrivalent conjugate meningococcal vaccine against serogroups A, C, W, Y; MenB vaccine = serogroup B meningococcal vaccine

Source: 1996–2022 NNDSS Data. *2021–2022 NNDSS data are preliminary.

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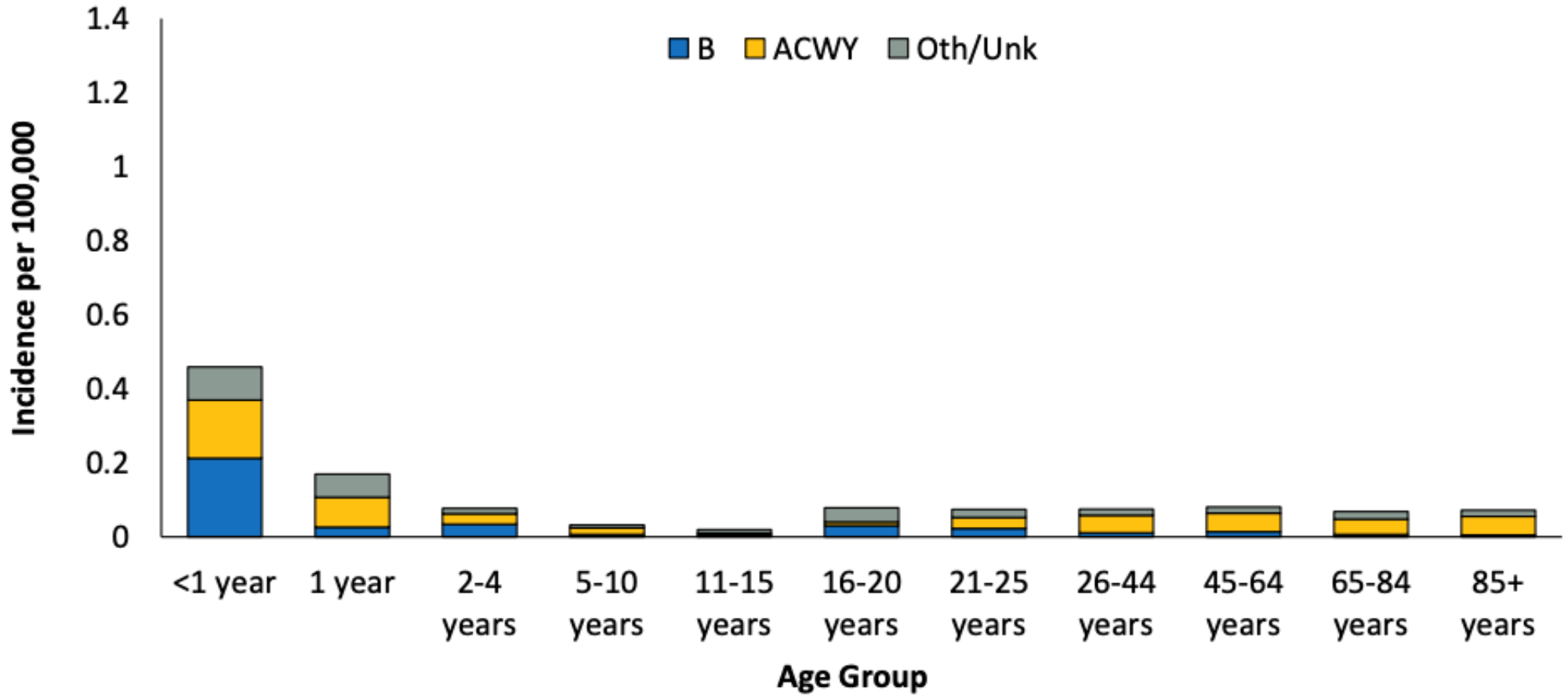
https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-06-21-23/03-Mening-Crowe-508.pdf

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



Source: NNDSS data with additional serogroup data from ABCs and state health departments
*2021 and 2022 data are preliminary

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Signs and Symptoms of Meningococcal Disease

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

- Symptoms of meningococcemia
  - All of the above are possible
  - Cold hand and feet
  - Pruritic rash

- Risk factors
  - Persistent complement component deficiencies
  - Asplenia,
  - HIV infection
  - Exposure during an outbreak; Travel/residence in a country where disease is endemic/epidemic
  - Household crowding, smoking,
  - Unvaccinated college freshmen in dorms (particularly serogroup B)
  - Military recruits

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; Healthy adolescents who are not at increased risk for meningococcal disease
- 3 dose schedule – administered at 0, 1-2, 6 months; 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

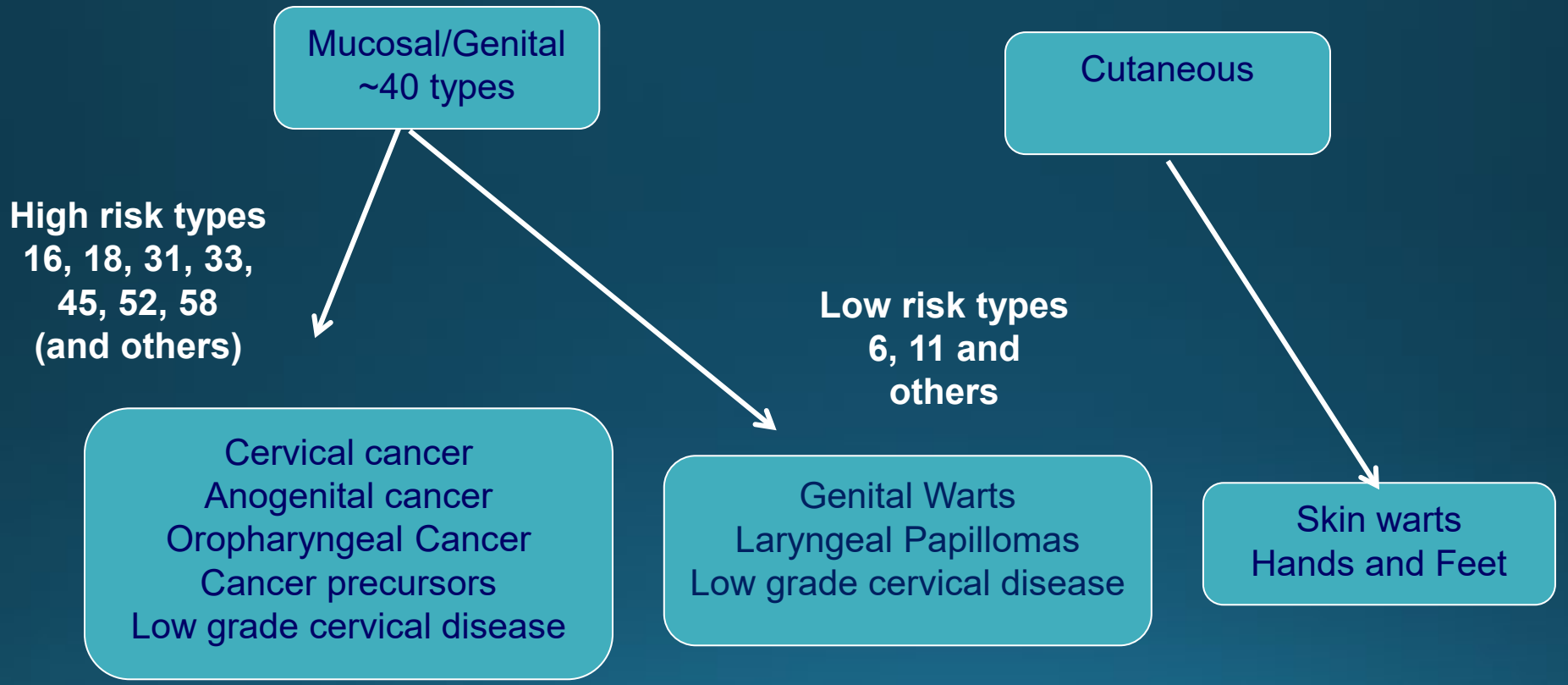
Rotavirus Vaccines (2)
RotaTeq® (Merck) and Rotarix® (GSK)*

- Administer either vaccine as directed below:
  - Minimum age for first dose: 6 weeks
  - Maximum age for first dose: 14 weeks 6 days. Do not start the series on or after age 15 weeks, 0 days
  - Minimum interval between doses: 4 weeks
  - Maximum age for any dose: 8 months 0 days

- If any dose is Rotateq®, 3 doses are required
- Use RotaTeq® if allergy to latex

Types of Human Papilloma Virus (HPV)

(More Than 200 Types Identified)



***Epidemiology and Prevention of Vaccine Preventable Diseases 13th Edition, 2015**
***Red Book – AAP 2018 Report of the Committee on Infectious Diseases**
*** MMWR, August 29, 2014, RR Vol. 63, No. 5**

HPV Vaccine

Gardasil 9® (9vHPV) HPV types 6, 11, 16, 18, 31, 33, 45, 52, 58

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

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

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

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

July 2023

ACIP Recommendations and Schedule

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

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

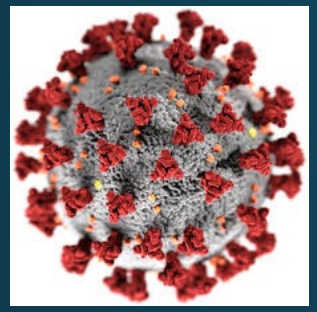
***MMWR, December 16, 2016, Vol 65, No. 49**

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.**



SARS-CoV-2 virus (COVID-19 disease) in children and adolescents

National data

Children can be infected with the virus that causes COVID-19, can get sick from COVID-19, and can spread the virus that causes COVID-19 to others. Children, like adults, who have COVID-19 but have no symptoms (“asymptomatic”) can still spread the virus to others.

(5/23) Over 15 million children have tested positive for COVID-19 since the onset of the pandemic.

A significant increase seen during the Omicron wave.

Children represented nearly 18% of total cumulated cases since the pandemic began.

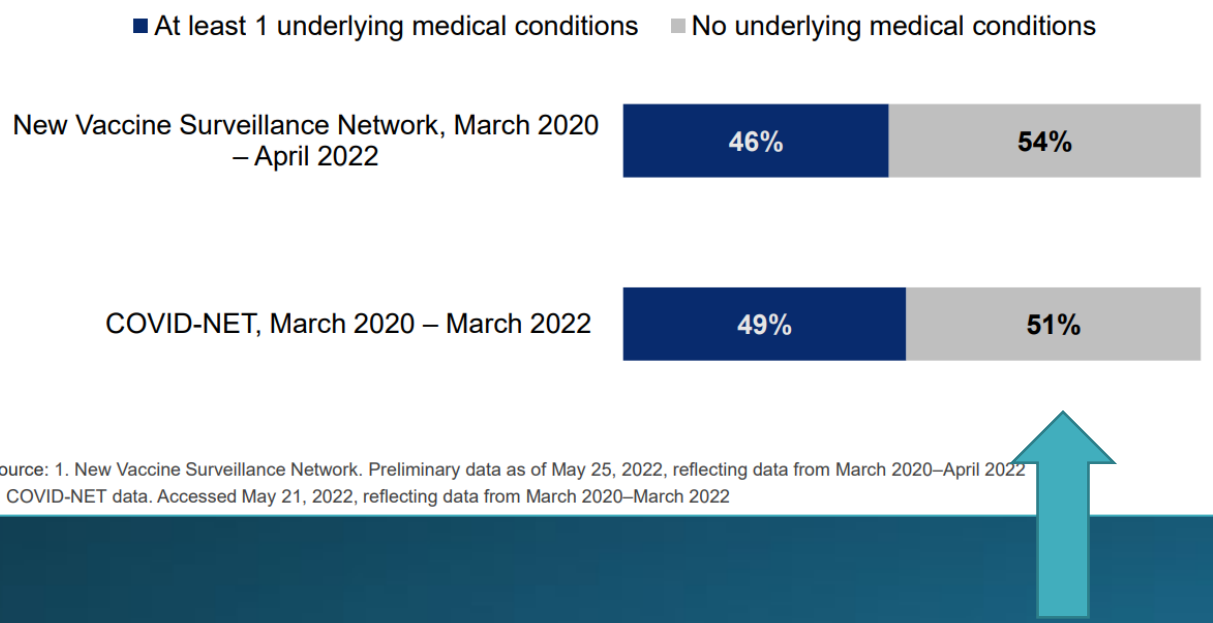
Data may vary. Access current pediatric data on COVID-19 cases, hospitalizations and deaths at AAP’s site.

For data on cases in Georgia, visit Georgia data and Georgia data (2)

July 2023

Hospitalizations and Deaths among Children

Percent of children ages 6 months–4 years with COVID-19 associated hospitalization with underlying health conditions



Source: 1. New Vaccine Surveillance Network. Preliminary data as of May 25, 2022, reflecting data from March 2020–April 2022
2. COVID-NET data. Accessed May 21, 2022, reflecting data from March 2020–March 2022

COVID-19 is a leading cause of death among children ages 0–19 years

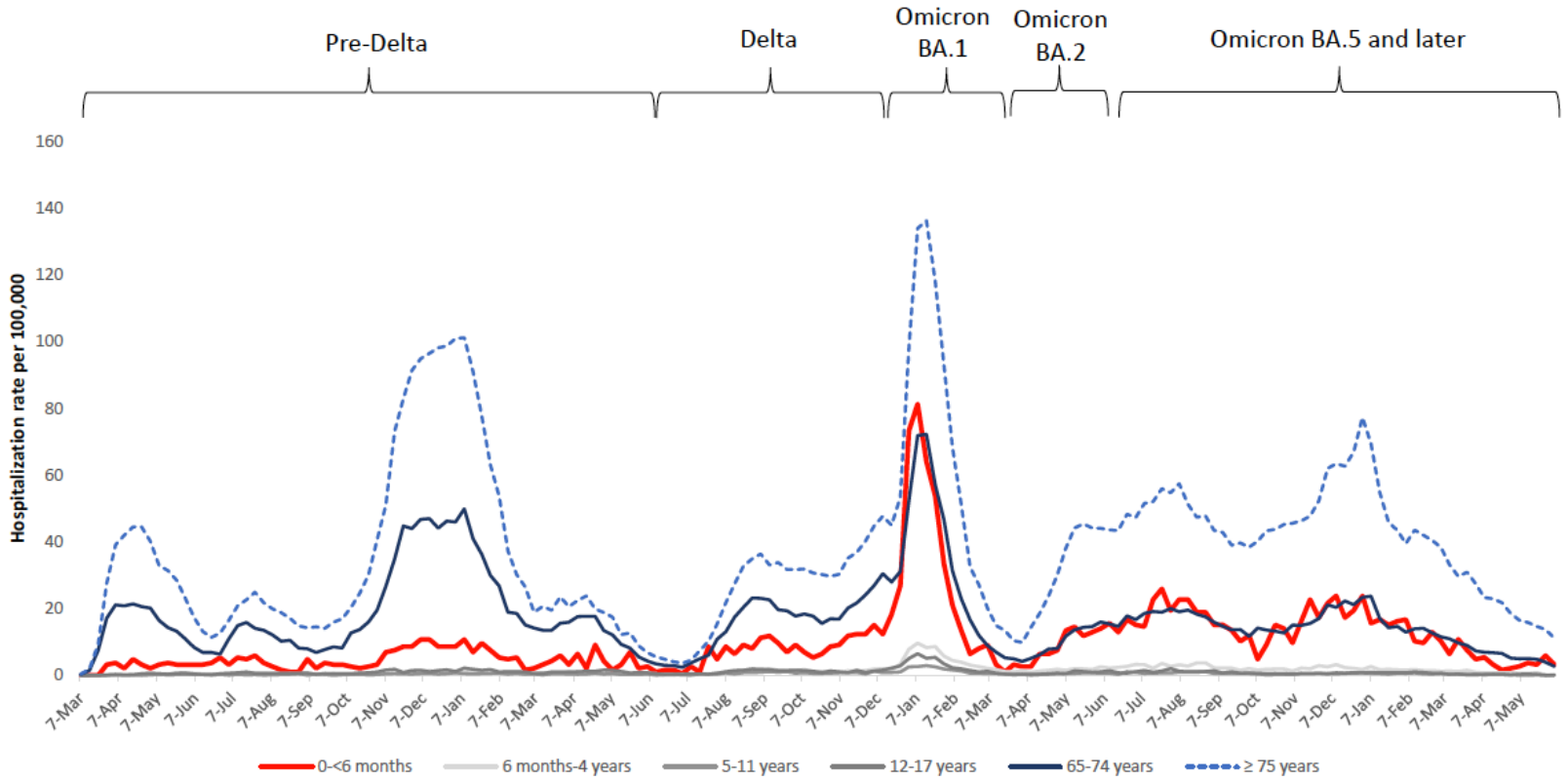
March 1, 2020–April 30, 2022

Age group	Rank of COVID-19 among causes of death
<1 year	4
1–4 years	5
5–9 years	5
10–14 years	4
15–19 years	4

Based on death certificate data from the National Center for Health Statistics. COVID-19 based on cumulative total incidence of COVID-19 deaths from March 1, 2020-April 30, 2022.
Source: Flaxman S, Whittaker C, Semenova E et al. Covid-19 is a leading cause of death in children and young people ages 0-19 years in the United States. medRxiv 2022.05.23.22275458; doi: https://doi.org/10.1101/2022.05.23.22275458

https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2022-06-17-18/03-COVID-Oliver-508.pdf

Infants <6 months old had similar COVID-19–associated hospitalization rates to adults aged 65–74 years old



Source: COVID-NET: https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covid-net/purpose-methods.html. Data March 1, 2020 through March 31, 2023. Pre-Delta: March 1, 2020 – June 19, 2021; Delta: June 20–December 18, 2021; Omicron BA.1: December 19, 2021–March 19, 2022; Omicron BA.2: March 20–June 18, 2022; Omicron BA.5 (June 19, 2022–June 3, 2023)

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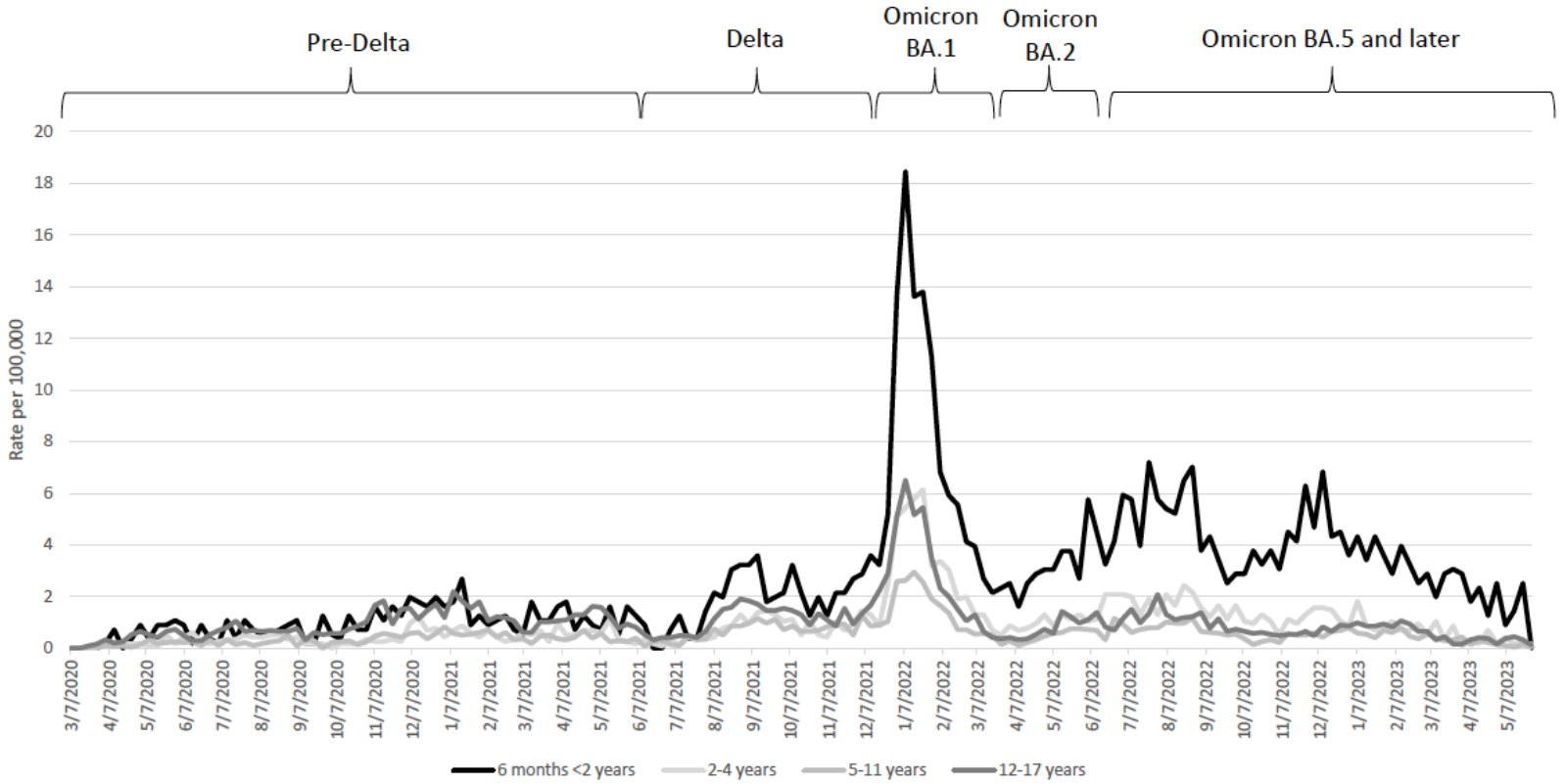
https://www.cdc.gov/vaccines/acip/meetings/downloads/slides-2023-06-21-23/02-COVID-Havers-Galang-Link-Gelles-508.pdf

Hospitalization rates in infants, children and adolescents aged 6 months through <18 years



Source: COVID-NET: https://www.cdc.gov/coronavirus/2019-ncov/covid-data/covid-net/purpose-methods.html. Data March 1, 2020 through March 31, 2023. Pre-Delta: March 1, 2020 – June 19, 2021; Delta: June 20–December 18, 2021; Omicron BA.1: December 19, 2021–March 19, 2022; Omicron BA.2: March 20–June 18, 2022; Omicron BA.5 (June 19, 2022–May 27, 2023)

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Common symptoms of Long COVID in Adults

- Dyspnea or increased respiratory effort
- Fatigue
- Post-exertional malaise* and/or poor endurance
- Cognitive impairment or "brain fog"
- Cough
- Chest pain
- Headache
- Palpitations and tachycardia
- Arthralgia
- Myalgia
- Paresthesia
- Abdominal pain
- Diarrhea
- Insomnia and other sleep difficulties
- Fever
- Lightheadedness
- Impaired daily function and mobility
- Pain
- Rash (e.g., urticaria)
- Mood changes
- Anosmia or dysgeusia
- Menstrual cycle irregularities
- Erectile dysfunction

* Post-exertional malaise (PEM) is the worsening of symptoms following even minor physical or mental exertion, with symptoms typically worsening 12 to 48 hours after activity and lasting for days or even weeks.

COVID-19 vaccination schedules for most people and for people who are immunocompromised

COVID-19 Vaccine

Interim COVID-19 Immunization Schedule
for Persons 6 Months of Age and Older

The following tables provide COVID-19 vaccination schedules based on age, health status, and product. For detailed guidance see Interim Clinical Considerations for Use of COVID-19 Vaccines | CDC.

Table 1a. **For Most People (those who are NOT moderately to severely immunocompromised)**

Bivalent Moderna COVID-19 Vaccine:* Monovalent Moderna vaccine is no longer recommended and should not be used.
Vaccine type: mRNA

Age	Vaccination History	Bivalent Vaccine Schedule†	Administer
6 months through 5 years‡§	Unvaccinated: 0 doses	2 doses. Administer: • Dose 1 now • Dose 2 at least 4–8 weeks¶ after Dose 1	0.25 mL/25 μg from the vial with a blue cap and gray label border
	1 dose of bivalent vaccine	1 dose. Administer: • Dose 2 at least 4–8 weeks¶ after Dose 1	
	At least 2 doses of bivalent vaccine	No dose	No dose
	Previously vaccinated with monovalent mRNA COVID-19 vaccine		
	1 dose of monovalent vaccine	1 dose. Administer: • Dose 2 at least 4–8 weeks¶ after Dose 1	0.25 mL/25 μg from the vial with a blue cap and gray label border.
	2 doses of monovalent vaccine	1 dose. Administer: • Dose 3 at least 8 weeks (2 months) after Dose 2	0.2 mL/10 μg from the vial with a **dark pink cap and yellow label border**
	At least 1 dose of monovalent vaccine and 1 dose of bivalent vaccine	No dose	No dose
6 years and older	Unvaccinated: 0 doses	1 dose now**	**6 through 11 years:** 0.25 mL/25 μg from the vial with a blue cap and gray label border **12 years and older:** 0.50 mL/50 μg from the vial with a blue cap and gray label border
	1 or more doses of monovalent vaccine	1 dose. Administer: • Vaccine at least 8 weeks (2 months) after the previous dose**	
	At least 1 dose of bivalent vaccine	No dose**	No dose**

* Refer to CDC's Interim Clinical Considerations for specific guidance on children who turn from 5 to 6 years of age before completing the vaccination series with Moderna COVID-19 Vaccine and interchangeability of vaccine products for all ages.
† Persons with a recent SARS-CoV-2 infection may consider delaying vaccination by 3 months from symptom onset or positive test (if infection was asymptomatic).
‡ CDC recommends bivalent vaccine doses from the same manufacturer for children 6 months through 5 years of age who are unvaccinated (no previous doses of COVID-19 vaccine) if more than 1 dose is recommended. In the following exceptional situations, a different age-appropriate COVID-19 vaccine may be administered when FDA authorization requires that a vaccine from the same manufacturer be used and a VAERS report is not required:
• Same vaccine not available
• Previous dose unknown
• Person would otherwise not complete the vaccination series
• Person starts but unable to complete a vaccination series with the same COVID-19 vaccine due to a contraindication
§ Children ages 6 months through 4 years who received bivalent vaccines from different manufacturers for the first 2 doses of an mRNA COVID-19 vaccine series should follow a 3-dose schedule. A third dose of either mRNA vaccine (Moderna or Pfizer-BioNTech) should be administered at least 8 weeks after the second dose.
¶ An 8-week interval between the first and second doses of COVID-19 vaccines might be optimal for some people ages 6 months–64 years, especially for males ages 12–39 years, as it may reduce the small risk of myocarditis and pericarditis associated with these vaccines.
** Adults 65 years of age and older: May receive 1 additional bivalent mRNA vaccine dose at least 4 months after the first dose of a bivalent mRNA vaccine.

05/31/2023 CS321629-AV

COVID-19 Vaccine

Interim COVID-19 Immunization Schedule
for Persons 6 Months of Age and Older

Table 1b. **For Most People (those who are NOT moderately to severely immunocompromised)**

Bivalent Pfizer-BioNTech COVID-19 Vaccine:* Monovalent Pfizer-BioNTech vaccine is no longer recommended and should not be used.
Vaccine type: mRNA

Age	Vaccination History	Bivalent Vaccine Schedule†	Administer
6 months through 4 years‡§	Unvaccinated: 0 doses	3 doses. Administer: • Dose 1 now • Dose 2 at least 3–8 weeks¶ after Dose 1 • Dose 3 at least 8 weeks (2 months) after Dose 2	0.2 mL/3 μg from the vial with a maroon cap
	1 dose of bivalent vaccine	2 doses. Administer: • Dose 2 at least 3–8 weeks¶ after Dose 1 • Dose 3 at least 8 weeks (2 months) after Dose 2	
	2 doses of bivalent vaccine	1 dose. Administer: • Dose 3 at least 8 weeks (2 months) after Dose 2	
	At least 3 doses of bivalent vaccine	No dose	No dose
	Previously vaccinated with monovalent mRNA COVID-19 vaccine		
	1 dose of monovalent vaccine	2 doses. Administer: • Dose 2 at least 3–8 weeks¶ after Dose 1 • Dose 3 at least 8 weeks (2 months) after Dose 2	0.2 mL/3 μg from the vial with a maroon cap
	2 doses of monovalent vaccine	1 dose. Administer: • Dose 3 at least 8 weeks (2 months) after Dose 2	
	3 doses of monovalent vaccine	1 dose. Administer: • Dose 4 at least 8 weeks (2 months) after Dose 3.	
	At least 2 doses of monovalent vaccine and 1 dose of bivalent vaccine	No dose	No dose.
5 years and older‡	Unvaccinated: 0 doses	1 dose now**	**5 through 11 years:** 0.2 mL/10 μg from the vial with an orange cap **12 years and older:** 0.3 mL/30 μg from the vial with a gray cap
	1 dose or more doses of monovalent vaccine§	1 dose. Administer: • Vaccine at least 8 weeks (2 months) after the previous dose**	
	At least 1 dose of bivalent vaccine	No dose**	No dose**

* Refer to CDC's Interim Clinical Considerations for specific guidance on children who turn from 4 to 5 years of age before completing the vaccination series with Pfizer-BioNTech COVID-19 Vaccine and interchangeability of vaccine products for all ages.
† Persons with a recent SARS-CoV-2 infection may consider delaying vaccination by 3 months from symptom onset or positive test (if infection was asymptomatic).
‡ CDC recommends bivalent vaccine doses from the same manufacturer for children 6 months through 5 years of age who are unvaccinated (no previous doses of COVID-19 vaccine) if more than 1 dose is recommended. In the following exceptional situations, a different age-appropriate COVID-19 vaccine may be administered when FDA authorization requires that a vaccine from the same manufacturer be used and a VAERS report is not required: Same vaccine not available; or previous dose unknown; or person would otherwise not complete the vaccination series; or person starts but unable to complete a vaccination series with the same COVID-19 vaccine due to a contraindication
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** Adults 65 years of age and older: May receive 1 additional bivalent mRNA vaccine dose at least 4 months after the first dose of a bivalent mRNA vaccine.

05/31/2023 CS321629-AV 2

https://www.cdc.gov/vaccines/covid-19/clinical-considerations/covid-19-vaccines-us.html

Stay Up to Date with COVID-19 Vaccines

- Everyone aged 6 years and older should get **1 updated Pfizer-BioNTech or Moderna COVID-19 vaccine** to be up to date.
- People aged 65 years and older may get a 2nd dose of updated Pfizer-BioNTech or Moderna COVID-19 vaccine.
- People who are moderately or severely immunocompromised may get additional doses of updated Pfizer-BioNTech or Moderna COVID-19 vaccine.
- Children aged 6 months–5 years may need multiple doses of COVID-19 vaccine to be up to date, including at least 1 dose of updated Pfizer-BioNTech or Moderna COVID-19 vaccine, depending on the number of doses they've previously received and their age.
- COVID-19 vaccine recommendations will be updated as needed.

https://www.cdc.gov/coronavirus/2019-ncov/vaccines/stay-up-to-date.html

Strategies to Avoid Missed Opportunities to Vaccinate

- Provider Prompts
  - Automatic pop-up alerts through your EHR system
  - These can sometimes be pre-installed and then customized in your office
- Family-friendly office hours
  - Occasional evening or Saturday hours
  - “No-appointment-required” if needing immunizations only

*https://www.aap.org/en-us/advocacy-and-policy/aap--health-initiatives/immunizations/Practice- Management/Pages/office- strategies.aspx

Strategies to Avoid Missed Opportunities to Vaccinate (2)

- Immunization Champion in your practice
  - Manage vaccine supply and schedule periodic updates
  - Any member of the staff could fill this role

- Include all recommended vaccines at each visit

- Schedule periodic team meetings with all personnel to:
  - Improve patient flow
  - Improve quality of care
  - Discuss problems within the framework of the practice

*https://www.aap.org/en-us/advocacy-and-policy/aap--health-initiatives/immunizations/Practice- Management/Pages/office- strategies.aspx

Other vaccine news ACIP Meetings February 2023 and June 2023

Monkeypox – ACIP approved the following recommendation, February 22-24, 2023, meeting:

- ACIP recommends the 2-dose JYNNEOS vaccine series for persons aged 18 years and older at risk of mpox during an mpox outbreak. https://www.cdc.gov/vaccines/acip/index.html

RSV Vaccines Older Adults (June 2023)

- Adults 60 years of age and older may receive a single dose of Respiratory Syncytial Virus (RSV) vaccine, using shared clinical decision-making.
- https://www.cdc.gov/vaccines/acip/recommendations.html. Await full ACIP Recommendations.

FDA Approves **New Drug (monoclonal antibody) to Prevent RSV in Babies and Toddlers (June 2023)**

- https://www.fda.gov/news-events/press-announcements/fda-approves-new-drug-prevent-rsv-babies-and-toddlers. No formal ACIP vote/recommendations as yet.

Test Your Knowledge!

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

What vaccines do you recommend for her?

Test Your Knowledge!

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

What vaccines do you recommend for her?

Tdap, Meningococcal Conjugate, HPV

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

***Current Child and Adolescent Immunization Schedule**
July 2023

Test Your Knowledge!

Paige is 24 years old. She has well controlled diabetes. She will be getting married in 3 months. Paige has received 2 doses of MMR and her last Td was 4 years ago. She denies ever having chicken pox but her 2 younger siblings had chicken pox.

What vaccines are recommended now?

Test Your Knowledge!

Paige is 24 years old. She has well controlled diabetes. She will be getting married in 3 months. Paige has received 2 doses of MMR and her last Td was 4 years ago. She denies ever having chicken pox but her 2 younger siblings had chicken pox.

What vaccines are recommended now?

Tdap, PPSV23/PCV20/PCV15, hepatitis B, HPV, varicella

Influenza vaccine (in fall), COVID-19 vaccine

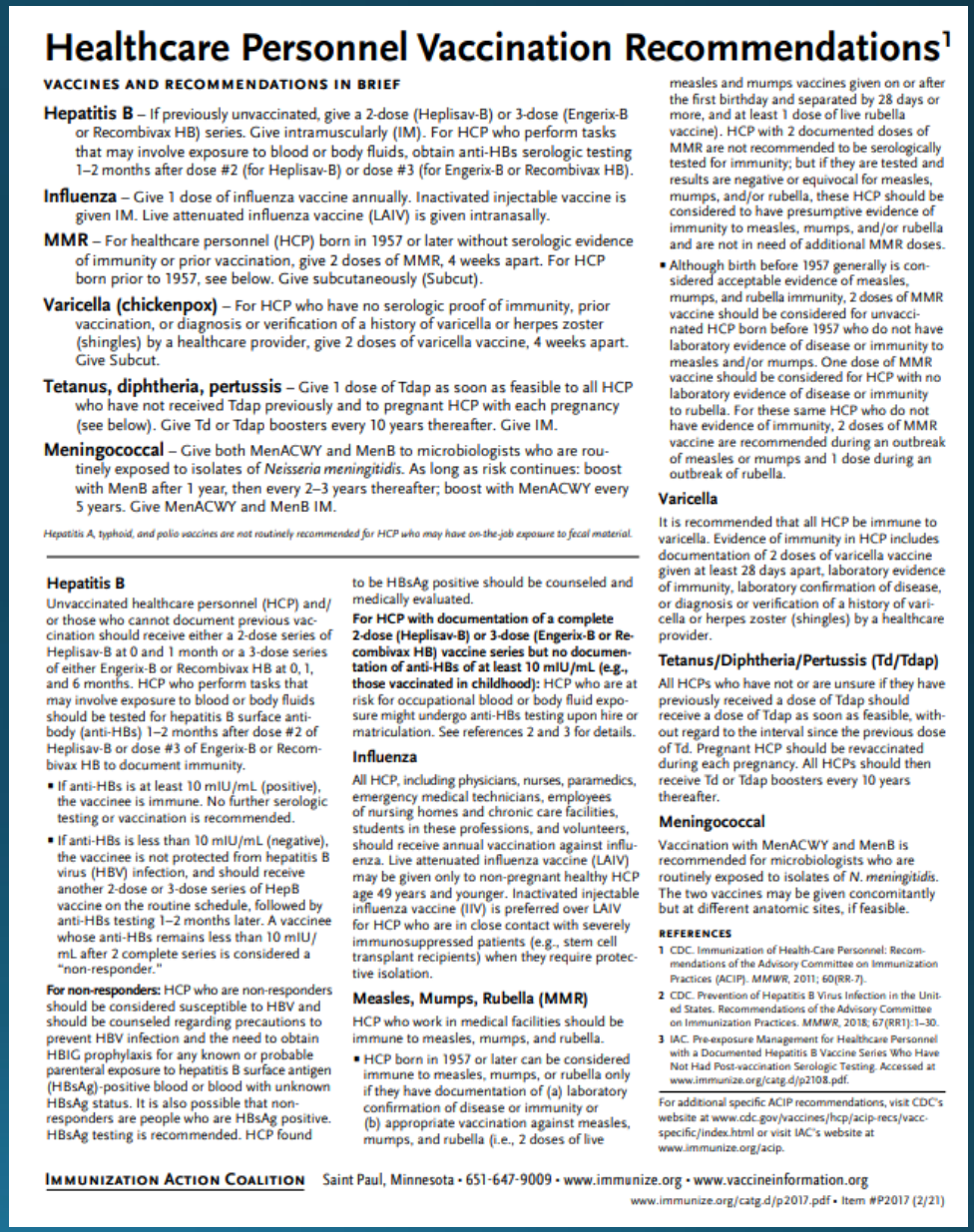
***Current Adult Immunization Schedule**

Critical Elements for Immunization Services

Recommended Healthcare Personnel Vaccinations

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

Are YOU up to date? July 2023



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.

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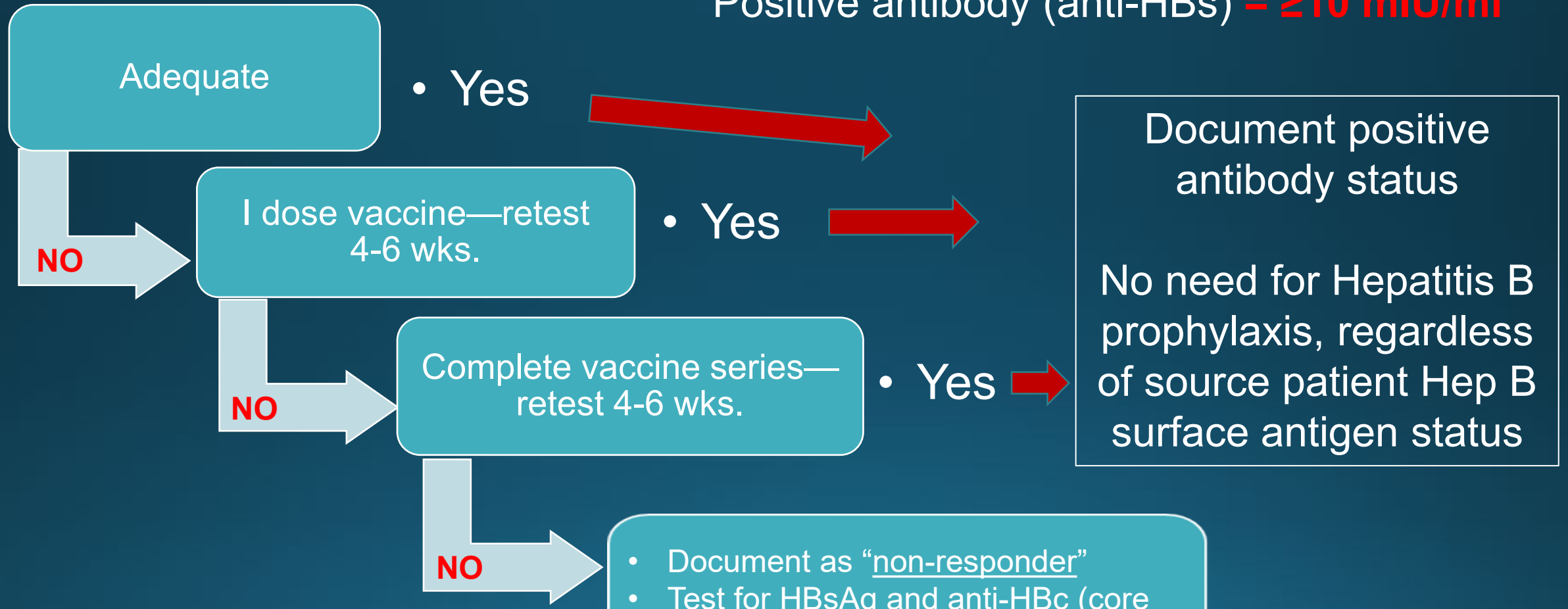
www.immunize.org/catg.d/p2017.pdf • Item #P2017 (2/21)

Available at www.immunize.org, P#2017

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

Positive antibody (anti-HBs) **= ≥10 mIU/ml**



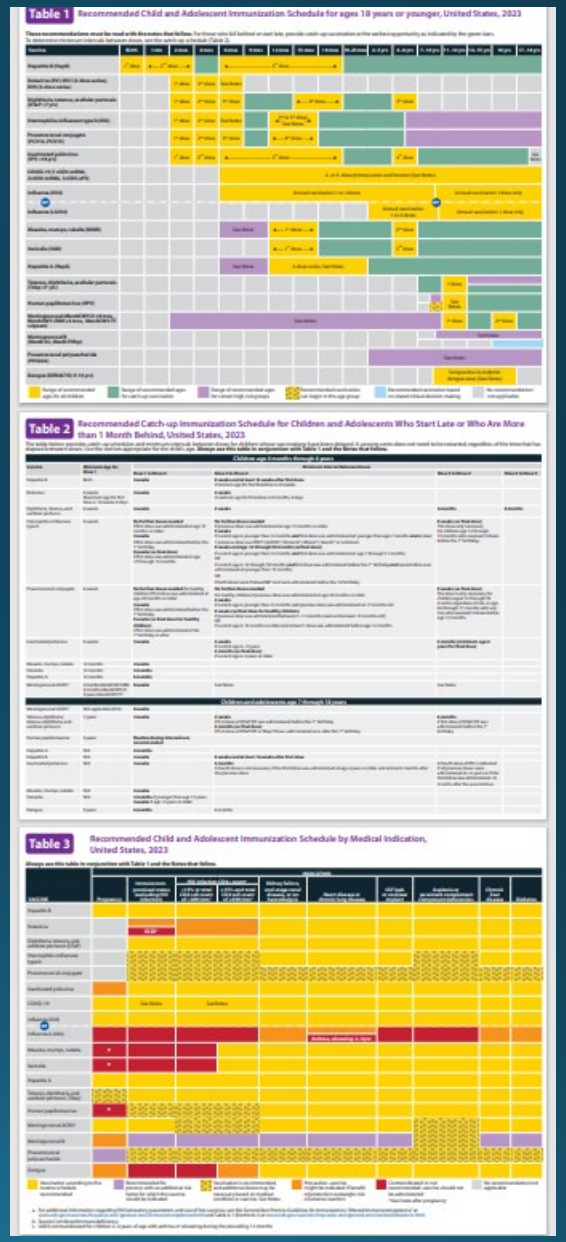
*MMWR, April 20, 2018/Vol. 67/No. 15

2023 Childhood and Adolescent Immunization Schedules

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

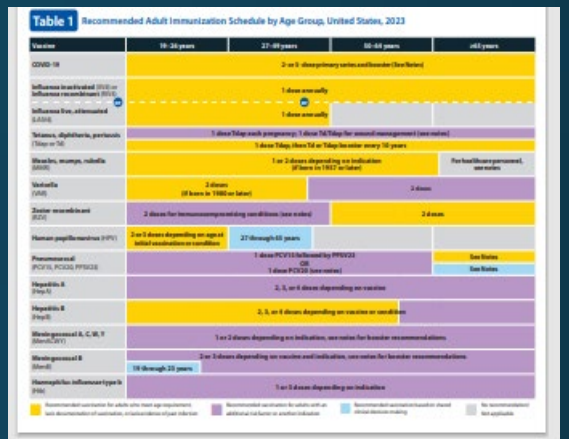
Changes
- Clarification of the charts
- Additional information in the Notes section

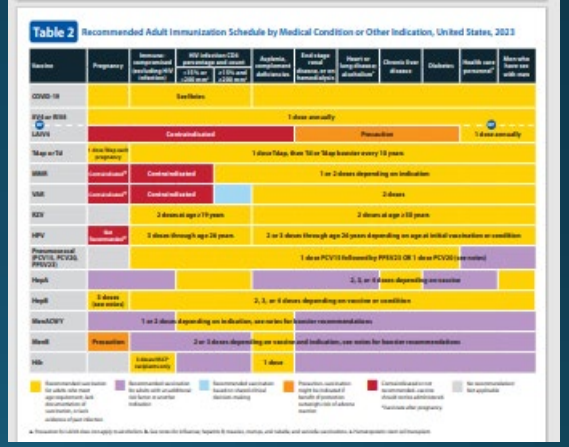
READ THE FOOTNOTES TO ACCESS SPECIFIC VACCINE ADMINISTRATION DETAILS!



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





Changes

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

READ THE FOOTNOTES TO ACCESS SPECIFIC VACCINE ADMINISTRATION DETAILS!

Updated Vaccine Storage and Handling Recommendations

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

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

Maintaining Appropriate Vaccine Storage & Handling

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

*Vaccine Storage and Handling Toolkit, January 2020

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

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

Vaccine	Dose	Route
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)	Intra-nasal spray
Influenza, inactivated (IIV); for ages 6–35 months	Afluria: 0.25 mL Fluzone: 0.25 or 0.5 mL Fluarix, Flucelvax, FluLaval: 0.5 mL	IM
Influenza, inactivated (IIV), ≥3 yrs; **recombinant** (RIV), ≥18 yrs; **high-dose** (HD-IIV) ≥65 yrs	0.5 mL FluZone HD: 0.7 mL	IM
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.

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

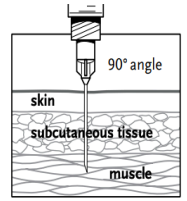
[1] A 5/8" needle may be used in newborns, preterm infants, and patients weighing less than 130 lbs (<60 kg) for IM injection in the deltoid muscle only if the skin stretched tight, the subcutaneous tissue is not bunched, and the injection is made at a 90-degree angle to the skin.

[2] Preferred site

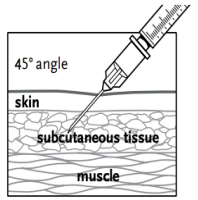
NOTE: Always refer to the package insert included with each biologic for complete vaccine administration information. CDC's Advisory Committee on Immunization Practices (ACIP) recommendations for the particular vaccine should be reviewed as well. Access the ACIP recommendations at www.immunize.org/acip.

Intranasal (NAS) administration of Flumist (LAIV) vaccine

Intramuscular (IM) injection



Subcutaneous (Subcut) injection



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www.immunize.org/catg.d/p3085.pdf . Item #P3085 (11/21)

https://www.immunize.org/catg.d/p3085.pdf

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

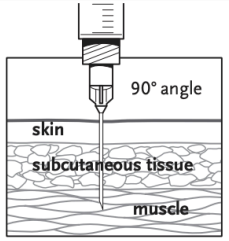
- Diphtheria-tetanus-pertussis (DTaP, Tdap)
- Diphtheria-tetanus (DT, Td)
- *Haemophilus influenzae* type b (Hib)
- Hepatitis A (HepA)
- Hepatitis B (HepB)
- Human papillomavirus (HPV)
- Inactivated influenza (IIV)
- Meningococcal serogroups A,C,W, Y (MenACWY)
- Meningococcal serogroup B (MenB)
- Pneumococcal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

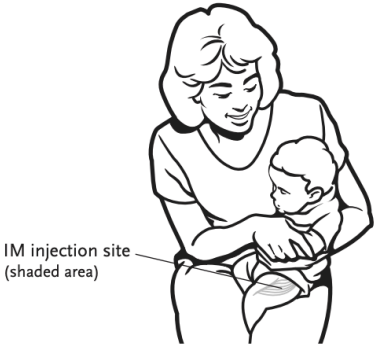
Insert needle at a 90° angle to the skin with a quick thrust.

(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.

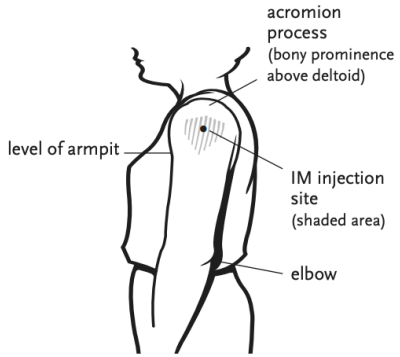
¶ CDC. "General Best Practices Guidelines for Immunization: Best Practices Guidance of the ACIP" at https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf

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.

CONTINUED ON THE NEXT PAGE ▶

immunization action coalition
IAC
immunize.org

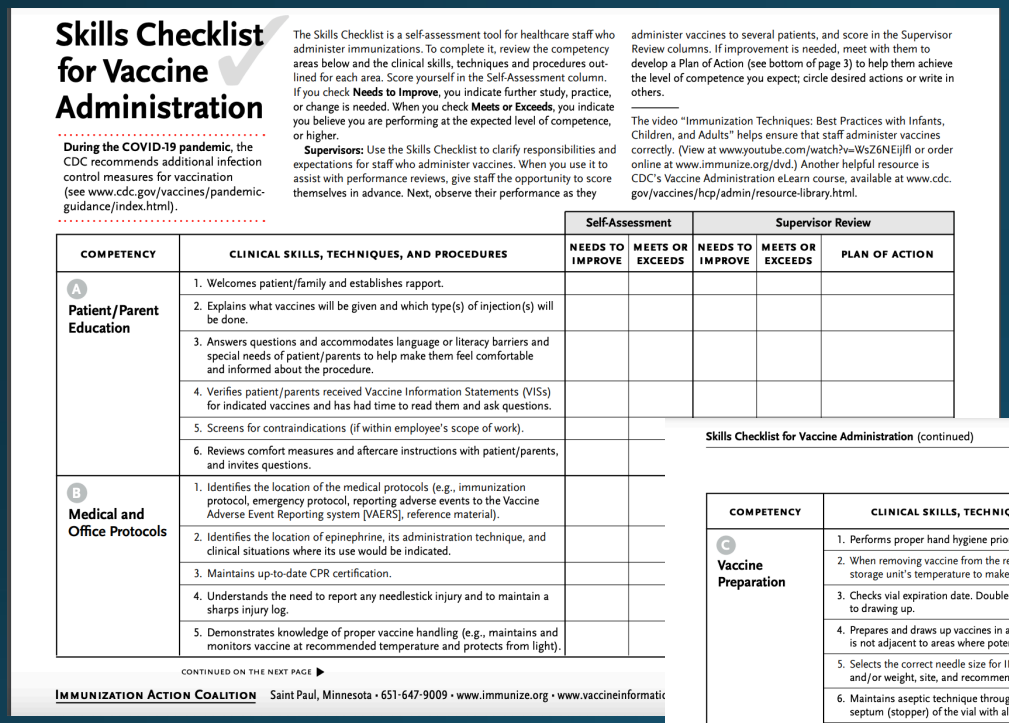
Saint Paul, Minnesota • 651-647-9009 • www.immunize.org • www.vaccineinformation.org

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

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

July 2023

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

Improper Immunization Administration Practices with Any Vaccine

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

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

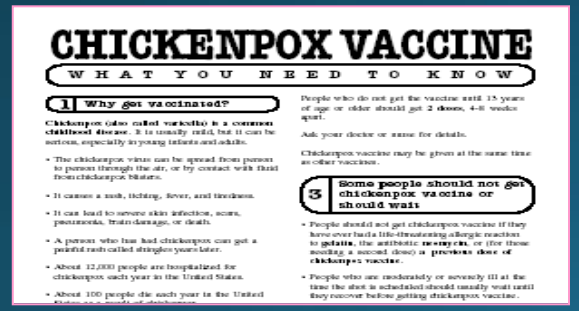
Never use partial doses from 2 or more vials to obtain a dose of vaccine.**

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

*CDC, NCEZID, DHQP. Injection Safety Information for Providers: www.cdc.gov/injectionsafety/providers.html
**http://www.immunize.org/askexperts/administering-vaccines.asp
**Vaccine Storage and Handling Toolkit, January, 2020

Always Document…

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


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

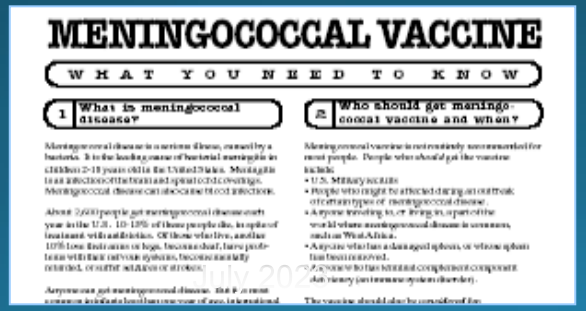
People who do not get the vaccine until 13 years of age or older should get 2 doses, 4–8 weeks apart.

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 these people die, in spite of treatment with antibiotics. Of those who live, another 10% lose limb arms or legs, become deaf, have problems with their nervous systems, become mentally disabled, or suffer seizures or strokes.

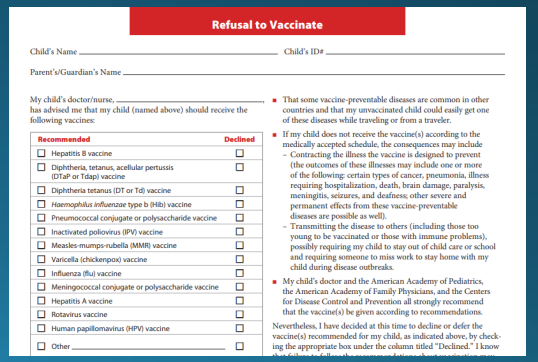
Anyone can get meningococcal disease. But it is most common in children less than one year of age, in adolescents

2 Who should get meningococcal vaccine and when?

Meningococcal vaccine is 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

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

Test Your Knowledge!

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

Is this storage space appropriate?

Test Your Knowledge!

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

Is this storage space appropriate?

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

Exemptions From School/Day Care Requirements

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

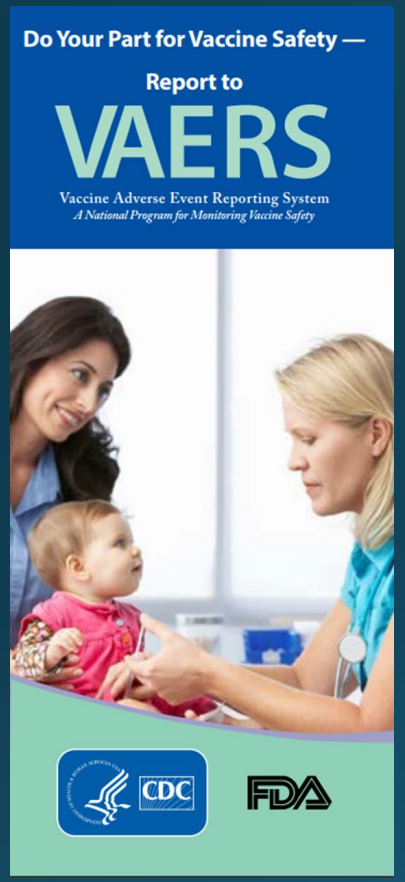
- Used when a physical disability or medical condition contraindicates a particular vaccine.
- Requires an annual review.
- The medical exemption is documented in GRITS.

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.

Monitoring Vaccine Safety



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

Option 1 - Report Online to VAERS (Preferred)
Submit a VAERS report online. The report must be completed online and submitted in one sitting and cannot be saved and returned to at a later time. Your information will be erased if you are inactive for 20 minutes; you will receive a warning after 15 minutes.

Option 2 - Report using a Writable PDF Form
Download the Writable PDF Form to a computer. Complete the VAERS report offline if you do not have time to complete it all at once. Return to this page to upload the completed Writable PDF form by clicking here.
If you need further assistance with reporting to VAERS, please email info@VAERS.org or call 1-800-822-7967.

- **FDA and Vaccine Data Link Safety Project**
- **VERP: VACCINE ERROR REPORTING SYSTEM**

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

Invalid Contraindications to Vaccine

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

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

Vaccine Risk Perception

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

Concerns

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

Provider Strategies to Improve Vaccination Rates

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

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

Provider Strategies (cont'd)

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

*Children's Hospital of Philadelphia, Vaccine Update for Healthcare Providers, "News & Views: Addressing Vaccine Hesitancy," March 21, 2017
**AAP Publications, "Document informed refusal just as you would informed consent," James P. Scibilia, M.D. FAAP, October 30, 2018

Vaccine Schedules that Vary From ACIP/AAP/AAFP Recommendations

Alternate Schedules

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

Concerns re: alternate schedules

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

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

Anti-Vaccine Movement

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

Encourage parents/patients to:

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

Global Vaccine Awareness League

Think Twice
Global Vaccine Institute

NATIONAL VACCINE INFORMATION CENTER
July 2023

People Advocating
PAVE
Vaccine Education

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™

Stay Current!

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

YOU ARE ALL PART OF THE TEAM THAT CAN

MAKE SURE YOUR PATIENTS RECEIVE THE

IMMUNIZATIONS THEY NEED!

Online Resources

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

Parent's Guide to Childhood Immunizations – www.cdc.gov/vaccines/parents/tools/parents-guide/index.html

Order Information for Free CDC Immunization Materials for Providers and Patients – wwwn.cdc.gov/pubs/CDCInfoOnDemand.aspx

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

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

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

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

Ask the Experts – www.immunize.org/askexperts/

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

Questions?

Contacts for more immunization information and resources!

National Center for Immunization and Respiratory Diseases, CDC

E-mail ▶ **NIPInfo@cdc.gov**

Hotline 800.CDC.INFO

Website **http://www.cdc.gov/vaccines**

Georgia Immunization Program

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

Hotline 404-657-3158

Website **http://dph.georgia.gov/immunization-section**

Immunization Action Coalition

E-mail **admin@immunize.org**

Phone 651.647.9009

Website **www.immunize.org**

Test Your Knowledge!
EPIC 2023

Test Your Knowledge!

Five-year-old Tonia received her second MMR a week ago.

How long should she wait before receiving live varicella zoster vaccine?

Test Your Knowledge!

Five-year-old Tonia received her second MMR a week ago.

How long should she wait before receiving live varicella zoster vaccine?

Live vaccines can be administered simultaneously with another live vaccine (for example MMR, varicella),but if not given at the same visit, ACIP recommends waiting 4 weeks before administering the second live vaccine.

*Immunization Action Coalition, Ask the Experts - Reviewed January 2017

Test Your Knowledge!

Logan is an 8 year old boy who has never had DTaP vaccine. His mother was hesitant to immunize him when he was younger. Now she is willing to have him immunized.

What vaccine would you use to immunize him against diphtheria, tetanus and pertussis?

Test Your Knowledge!

Logan is an 8 year old boy who has never had DTaP vaccine. His mother was hesitant to immunize him when he was younger. Now she is willing to have him immunized.

What vaccine would you use to immunize him against diphtheria, tetanus and pertussis?

Logan should receive the following (either Td or Tdap may be used for Dose 2 and/or 3)*:

Dose 1---Tdap

Dose 2 ---Td or Tdap 4 weeks after Dose 1

Dose 3 ---Td or Tdap 6 months after Dose 2

An additional Tdap should be given at age 11-12.

*MMWR, January 24, 2020/ Vol 69/No.

Test Your Knowledge!

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

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

Test Your Knowledge!

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

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

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

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

Test Your Knowledge!

Ethan is 17 years old. After his second DTP vaccine at 4 months of age he cried persistently for 4 hours, had a fever of 104°F, and developed a severe local reaction at the injection site.

His pediatrician subsequently administered DT at 6 months, 18 months and 5 years of age. He received Td when he was 12 years old.

With this history of a severe reaction to pertussis vaccine, should he receive Tdap?

Test Your Knowledge!

Ethan is 17 years old. After his second DTP vaccine at 4 months of age he cried persistently for 4 hours, had a fever of 104°F, and developed a severe local reaction at the injection site.

His pediatrician subsequently administered DT at 6 months, 18 months and 5 years of age. He received Td when he was 12 years old.

With this history of a severe reaction to pertussis vaccine, should he receive Tdap?

Yes, administer Tdap. These adverse reactions in infancy are not contraindications or precautions for Tdap vaccination in adolescents.

***Preventing Tetanus, Diphtheria, and Pertussis Among Adolescents: Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis Vaccines MMWR Recommendations and Reports March 24, 2006 / Vol. 55 / No. RR-3**

Test Your Knowledge!

Dakota is an 18 year girl who will be starting her first year of college in August.

She had her first dose of HPV vaccine on April 5 and her second dose on May 8.

She will not be coming home again until late November.

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

Test Your Knowledge!

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

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

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

***Immunization Action Coalition, Ask the Experts, April 2012**

Test Your Knowledge!

Ben is a 25-year-old plumber. Three months ago he had a motorcycle wreck causing multiple fractures, lacerations, and a ruptured spleen. His spleen was removed. He received Td in the ER.
He had chicken pox when he was 6 years old but has no idea if he ever had an MMR.

What vaccines do you recommend?

Test Your Knowledge!

Ben is a 25-year-old plumber. Three months ago he had a motorcycle wreck causing multiple fractures, lacerations, and a ruptured spleen. His spleen was removed. He received Td in the ER.
He had chicken pox when he was 6 years old but has no idea if he ever had an MMR.

What vaccines do you recommend?

Tdap, MCV4, MenB, PCV15/20, PPSV23, MMR, and consider Hib

Influenza vaccine (in fall), COVID-19 vaccine

HPV?

***Adult Immunization Schedule**
**Immunization Action Coalition, Ask the Experts- Needle Tips; September 2009

Test Your Knowledge!

Paige is 24 years old. She has well controlled diabetes. She will be getting married in 3 months. Paige has received 2 doses of MMR and her last Td was 4 years ago. She denies ever having chicken pox but her 2 younger siblings had chicken pox.

What vaccines are recommended now?

Test Your Knowledge!

Paige is 24 years old. She has well controlled diabetes. She will be getting married in 3 months. Paige has received 2 doses of MMR and her last Td was 4 years ago. She denies ever having chicken pox but her 2 younger siblings had chicken pox.

What vaccines are recommended now?

Tdap, PPSV23/PCV20/PCV15, hepatitis B, HPV, varicella

Influenza vaccine (in fall), COVID-19 vaccine

***Current Adult Immunization Schedule**

Test Your Knowledge!

Sam is a 32 year old carpenter. He punctured the palm of his hand with one of his tools at 6pm Friday. The injury caused minimal bleeding and he says it doesn't need stitches.

Does he need tetanus vaccine tonight or can he wait until Monday when your office is open?

Test Your Knowledge!

Sam is a 32 year old carpenter. He punctured the palm of his hand with one of his tools at 6pm Friday. The injury caused minimal bleeding and he says it doesn't need stitches.

Does he need tetanus vaccine tonight or can he wait until Monday when your office is open?

The decision to delay a booster dose of tetanus toxoid following an injury should be based on the nature of the injury and likelihood that the injured person is susceptible to tetanus. If a tetanus booster is recommended he should receive Tdap if he has not received Tdap previously.

***Updated Recommendations for Use of Tetanus Toxoid, Reduced Diphtheria Toxoid and Acellular Pertussis (Tdap) Vaccine from the Advisory Committee on Immunization Practices, 2010 MMWR / January 14, 2011 / Vol. 60 / No. 1**

Test Your Knowledge!

A 45-year-old patient will be traveling to Haiti for a mission trip. She doesn't recall ever getting an MMR booster. She was immune to rubella when pregnant 20 years ago. Her measles titer is negative.

Would you recommend an MMR booster?

Test Your Knowledge!

A 45-year-old patient will be traveling to Haiti for a mission trip. She doesn't recall ever getting an MMR booster. She was immune to rubella when pregnant 20 years ago. Her measles titer is negative.

Would you recommend an MMR booster?

ACIP recommends 2 doses of MMR given at least 4 weeks apart for any adult born in 1957 or later who plans to travel internationally. There is no harm in giving MMR vaccine to a person who may already be immune to one or more of the vaccine viruses.

***Immunization Action Coalition, Ask the Experts - Reviewed July 2014**

Test Your Knowledge!

Lillian, a 50 year old grandmother, was given DTaP instead of Tdap.

Does she need to receive one dose of Tdap?

Test Your Knowledge!

Lillian, a 50 year old grandmother, was given DTaP instead of Tdap.

Does she need to receive one dose of Tdap?

Lillian received the appropriate amount of tetanus toxoid and MORE diphtheria toxoid and pertussis antigen than is recommended. Count the dose as Tdap. The patient does not need a repeat dose of Tdap.

Take measures to prevent this error in the future.

***Immunization Action Coalition, Ask the Experts - Reviewed July 2014**

Test Your Knowledge!

Morris is a 59 year old accountant. He is an alcoholic with chronic liver disease and smokes 1 pack of cigarettes per day. No other significant medical problems. His last tetanus booster was 12 years ago. He states he has never had measles or chicken pox.

What vaccines does he need?

Test Your Knowledge!

Morris is a 59 year old accountant. He is an alcoholic with chronic liver disease and smokes 1 pack of cigarettes per day. No other significant medical problems. His last tetanus booster was 12 years ago. He states he has never had measles or chicken pox.

What vaccines does he need?

Tdap, hepatitis A, hepatitis B, PPSV23/PCV15/PCV20 (alcoholic, liver disease and smoker) , Shingrix® since he was born before 1980 and therefore could be presumed to have had or developed immunity to chickenpox

MMR (if he has no documentation of MMR)

Influenza vaccine (in fall), COVID-19 vaccine

Test Your Knowledge!

Hazel is 61 years old. She had major surgery one month ago requiring a blood transfusion. During her visit to your office today she tells you she would like to get the shingles vaccine.

How would you respond to her request?

Test Your Knowledge!

Hazel is 61 years old. She had major surgery one month ago requiring a blood transfusion. During her visit to your office today she tells you she would like to get the shingles vaccine.

How would you respond to her request?

Zoster vaccine can be given to persons who have recently received blood products. The amount of antigen in zoster vaccine is so substantial that it overpowers any antibody to herpes zoster that may be in the blood product.

***Immunization Action Coalition, Ask the Experts, September 2011**

Test Your Knowledge!

Sixty five year old Nadine requests the shingles vaccine. In addition, she needs pneumococcal and influenza vaccine.

Should she receive all 3 vaccines on the same day?

Test Your Knowledge!

Sixty-five-year-old Nadine requests the shingles vaccine. In addition, she needs pneumococcal and influenza vaccine.

Should she receive all 3 vaccines on the same day?

Yes.
ACIP states that either shingles vaccine may be given at the same visit along with other appropriate and recommended vaccines, such as pneumococcal and/or influenza.

***Immunization Action Coalition, Ask the Experts, February, 2018**

Test Your Knowledge!

Varicella vaccine and MMR vaccine were administered to a 12 month old child. Before the child left the office the nurse noticed that the MMR vaccine expired at the end of the previous month (2 days ago).

What action should you take?

Test Your Knowledge!

Varicella vaccine and MMR vaccine were administered to a 12 month old child. Before the child left the office the nurse noticed that the MMR vaccine expired at the end of the previous month (2 days ago).

What action should you take?

The dose must be repeated. Because MMR is a live virus vaccine you must wait at least 4 weeks after the expired dose was given before repeating the vaccine. If the expired dose was an inactivated vaccine, the dose should be repeated as soon as possible.

***Immunization Action Coalition, Ask the Experts IAC Express, Issue number 789: April 6, 2009**