

EPIC® Immunization 2020 Update Children & Adolescents

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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

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Faculty Disclosure Information

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

*Accreditation Council for Continuing Medical Education
**American Nurses Credentialing Center Commission on Accreditation

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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

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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	2018 MOST RECENT REPORTS OR ESTIMATES OF U.S. CASES	PERCENT DECREASE
Diphtheria	21,053	1 ²	>99%
<i>H. influenzae</i> (invasive, <5 years of age)	20,000	33 ^{2,3}	>99%
Hepatitis A	117,333	4,000 ⁴	97%
Hepatitis B (acute)	66,232	20,900 ⁴	68%
Measles	530,217	273 ⁵	>99%
Meningococcal disease	2,886 ⁶	340 ⁷	88%
Mumps	162,344	2,251 ¹	99%
Pertussis	200,752	13,439 ⁸	93%
Pneumococcal disease (invasive, <5 years of age)	16,069	1,700 ⁴	89%
Polio (paralytic)	16,316	0 ⁹	100%
Rotavirus (hospitalizations, <3 years of age)	62,500 ¹⁰	30,625 ⁴	51%
Rubella	47,745	5 ¹	>99%
Congenital Rubella Syndrome	152	0 ¹	100%
Smallpox	29,005	0 ¹	100%
Tetanus	580	20 ¹	97%
Varicella	4,085,120	102,128 ¹	98%

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

Advisory Committee on Immunization Practices (ACIP)

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

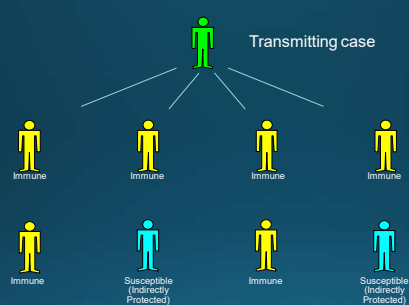


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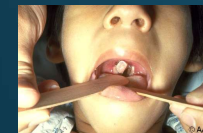
Community Immunity

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.

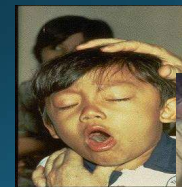
7



Diphtheria



Tetanus



Pertussis

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

ACIP Recommendations:

DTaP

- Administered at 2, 4, 6, 15-18 months and 4-6 years (Not given after age 6)

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 dose
- Routine decennial booster
- Tetanus prophylaxis for wound management
- Unvaccinated persons 7-18 yrs. of age
 - 3 doses of Td or Tdap given at appropriate intervals—see Catch-up Schedule*

2020 Childhood Schedule: Children 7-10 years of age who receive Tdap as part of the catch-up series should be given Tdap again at ages 11-12 years.*

No minimum interval between doses of Td and Tdap**

*MMWR, January 24, 2020/ Vol.69/No. 3

**<https://www.immunize.org/catg.d/p2055.pdf>

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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 years 2015-2016 Dose #3 coverage = 93.8%, but Dose #4 = 80.3%

Common Provider Challenges

- Provider confusion about when to administer the 4th dose
- 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 all of these challenges.

*Human Vaccines & Immunotherapeutics <https://doi.org/10.1080/21645515.2019.1699357>

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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 (Not available until 2021)	IM

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Tdap for Pregnant Women*

ACIP recommends:

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

Optimal timing:

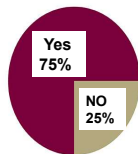
- Between 27 and 36 weeks gestation.
- Vaccinating earlier in the 27 through 36 week window will maximize passive antibody transfer to the infant.
- This has been shown to be 80%-91% effective.
- If Tdap is not given during pregnancy, administer Tdap immediately postpartum.

*MMWR, January 24, 2020/ Vol.69/No. 3

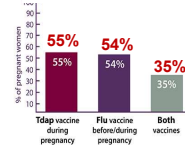
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Vaccines often offered, but many pregnant women and babies left unprotected

Women who report provider offer or referral for flu and Tdap vaccine



Flu and Tdap vaccination coverage for pregnant women



SOURCE: CDC Internet Panel Survey 2019

Vitalsigns
www.cdc.gov/vitalsigns/national-network



<https://www.cdc.gov/media/releases/2019/p1008-vaccination-moms-babies-unprotected.html>

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Haemophilus influenzae type b (Hib)

ACIP recommends:

3-4 doses of Hib (depending on brand)

- Dose 1 @ 2 months of age
- Dose 2 @ 4 months of age
- Dose 3 @ 6 months of age
- (Not required if Pedvax HIB® is administered at 2 and 4 months of age)
- Booster dose @ 12 through 15 months of age

One dose of Hib for unimmunized persons 5 through 18 years who have asplenia, sickle cell disease or HIV infection.

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

MMWR, February 28, 2014, Vol 63, #RR01



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Polio

ACIP Recommendation:*

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 mos.
- Final dose at 4 years of age or older regardless of the number of previous doses
- Only trivalent OPV (tOPV) given before 4/1/2016 counts toward U.S. vaccination requirements***
- If documentation not available (for persons ≤18 yrs.) give routine IPV series.
- Travelers---A booster dose may be recommended, depending on destination and traveler's history of polio vaccination. Go to: www.cdc.gov/vaccines/travel**



Source: World Health Organization

*MMWR, August 7, 2009, Vol 58, #30

**MMWR, July 11, 2014, Vol 63, # 27

***<https://wwwnc.cdc.gov/travel/news-announcements/polio-guidance-new-requirements>

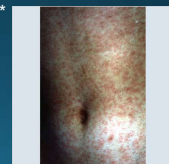
***MMWR January 13, 2017 / 66(01):23-25

MEASLES*

- Incubation period---8 to 14 days from exposure to onset of symptoms
- Symptoms: fever, cough, coryza, conjunctivitis, maculopapular rash and Koplik spots
- Complications: otitis media, pneumonia, croup, & diarrhea
- Acute encephalitis occurs in 1 out of 1,000 cases.
- Death occurs in 1 to 3 of every 1,000 cases.
- Subacute sclerosing panencephalitis (SSPE) is a progressive neurological disorder that is rare but always fatal. It usually occurs 7-10 years after measles infection.**
- Measles infection causes generalized immunosuppression that may make other infections more severe. ***

Measles Vaccine

- 95% of people develop serum measles antibody after one dose.
- 99% after 2 doses.
- 5% or less may lose protection after several years.



*AAP Red Book, 31st Edition 2018

** <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6027681> <https://www.aappublications.org/news/2016/10/28/Measles102816/>

*** Science, 1 November 2019 - Vol. 366, Issue 6465

Source: Immunization Action Coalition

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Measles, Mumps, Rubella

Measles (M)



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

Mumps (M)



Source: Creative Commons

Rubella (R)



Congenital Rubella (R)



MMR Vaccine*

ACIP recommends 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.

Other Recommendations:**

- Travelers to foreign countries should be appropriately immunized with MMR prior to leaving U.S.
- Infants 6-12 mos. of age traveling abroad should receive 1 dose of MMR
- A 3rd MMR may be recommended in the instance of a public health-declared mumps outbreak.

Acceptable presumptive evidence of MMR immunity

- Documentation of age appropriate vaccination with MMR vaccine
- Laboratory evidence of immunity
- Laboratory confirmation of disease
- Birth before 1957—except for evidence of rubella immunity in women who could become pregnant

*MMWR, June 14, 2013, Vol 62, #RR-04

** MMWR, January 12, 2018, Vol 67(1):33-38

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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.

*MMWR, June 22, 2007, Vol 56, #RR-04

**Second dose can be administered at an earlier age, provided the interval between the first and second dose is at least 3 months.

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 women
- Healthcare provider diagnosis or verification of varicella disease
- History of herpes zoster based on healthcare provider diagnosis

MMWR 2007;56(RR-4): 16-17

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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 can be used.
- CDC recommends separate doses of MMR and varicella at early age
 - Slightly increased risk of febrile seizures with combination vaccine
- Providers should discuss benefits and risks of both vaccination options with parents

Dose 1 or 2 given at ages 48 months and older

- MMRV vaccine generally is preferred over separate injections of its equivalent component vaccines (i.e., MMR and varicella vaccines).

*MMWR, May 7, 2010, Vol 59, #RR03

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Pneumococcal Conjugate Vaccine (PCV13)*

- Children
- All children 2 mos.- 4 yrs.
 - Children age 5 with increased risk factors**
 - Children ages 6 - 18 yrs. with immunocompromising conditions, asplenia, cochlear or organ transplants***

Pneumococcal Polysaccharide Vaccine (PPSV23)*

- Children ≥2 yrs. with:
- Underlying medical conditions
 - Sickle cell, asplenia, immunocompromising conditions
 - Should receive a 2nd dose 5 yrs. after first dose**
 - Immunocompetent children with chronic illness
 - Heart or lung disease, diabetes, CSF leaks, cochlear implants

*MMWR, June 28, 2013, Vol 62, #25

**MMWR, December 10, 2010, Vol 59, #RR-11

***MMWR, June 28, 2013, Vol 62, #25

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FDA Recommended Influenza Antigens for 2020-2021 Season in the U.S.*

Trivalent Vaccines (IIV3):

A/Guangdong-Maonan/SWL1536/2019 (H1N1)
A/Hong Kong/2671/2019AHawaii/70/2019 (H1N1)
B/Washington/02/2019

Or A/Hawaii/70/2019 (H1N1)

A/Hong Kong/45/2019
B/Washington/02/2019

Quadrivalent Vaccines

(IIV4 & LAIV4) also include:

B/Phuket/3073/2013-like virus

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

Information below pertains to children 6 mos. through 8 yrs. of age

- If the child has received a total of ≥2 doses of vaccine in any prior flu season(s), even if not consecutive:
Give 1 dose this season
- If they have not or it's not known:
Give 2 doses, administered ≥ 4 wks. apart

*MMWR Recommendations and Reports Vol. 69 / No. 8 August 21, 2020

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Influenza Vaccines for 2020-2021 Season*

≥ 6 months	≥ 4 years	≥ 18 years	≥ 65 years
Fluzone (IIV4)* 0.25 ml (≥6 thru 35 mos.) Above not available for 2020-2021 0.5 ml (≥6 mos.)	Flucelvax** (ccIIV4) 0.5 ml	FluBlok*** (RIV4) 0.5 ml	Fluzone High-Dose* (HD-IIV4) 0.5 ml
Afluria (IIV4) * 0.25 ml (≥6 thru 35 mos.) 0.5 ml (≥ 3 years)			Fludac* (allIIV3) 0.5 ml
FluLaval (IIV4) * 0.5 ml dose (≥6 mos.)			Fludac* (allIIV4) 0.5 ml
Fluarix (IIV4) * 0.5 ml. dose (≥6 mos.)			

Egg allergy is no longer a contraindication for receiving influenza vaccine.

* Egg-based
** Cell-cultured
*** Recombinant

* MMWR Recommendation & Reports/Vol. 69/No. 38 August 21, 2020

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Live, Attenuated Influenza Vaccine (LAIV4)*

FluMist® MedImmune (Nasal Spray)
Licensed for healthy persons 2 through 49 years of age

LAIV4 MAY be used in the current season.

Contraindications to LAIV:

- Children 2-4 yrs. of age with a diagnosis of asthma
- Persons receiving aspirin-containing medications
- 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
- Pregnant women
- Persons who have received influenza antiviral medications **before or after receiving LAIV should consult their provider regarding the appropriate delay before vaccination or the need for revaccination.**

*MMWR Recommendations & Reports/Vol. 67/No. 3 August 24, 2018

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Hepatitis A Vaccine for Children*

ACIP recommends 2 doses of hepatitis A vaccine for:

- All children 12 through 23 months of age
(Separate the 2 doses by 6 to 18 months)
- Any child or adolescent 2 through 18 years, not previously vaccinated
- All persons >1 year of age living with HIV, with kidney, heart, liver or lung disease, or with diabetes
- All persons ≥ 12 mos. of age for post exposure prophylaxis (PEP)**
- Infants 6-11 mos. traveling outside the U.S. when protection against HAV is recommended

*MMWR, May 19, 2006, Vol 55, #RR-07 **MMWR, Nov. 2, 2018, Vol. 67, No. 43

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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 Hepatitis B vaccine recommendations:

- 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

*Recommended Immunization Schedule for Persons Age 0 Through 18 Years, United States, 2017
*MMWR, December 23, 2005, Vol 54, #RR16, Vol 60 ** <https://www.cdc.gov/hepatitis/hbv/bfaq.htm>

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Hepatitis B-Exposed Infants and Children*

Postexposure Prophylaxis (PEP)

- Administer hepatitis B immune globulin (HBIG) AND hepatitis B vaccine within 12 hours of birth
- HBIG can be administered up to 7 days after birth if the mother's hepatitis B surface antigen (HBsAg) lab result is unavailable at delivery

Vaccination Schedule

- Single antigen vaccine (e.g. Engerix-B, Recombivax HB)
 - HBIG and single antigen vaccine for Dose 1
 - Combination vaccine for Doses 2,3,4
 - Dose #2 at 2 months; Dose #3 at 4 months; Dose #4 at 6 months of age
- For infants weighing <2000 grams (4.4 lbs.), the birth dose should not be counted as part of the vaccine series; 3 additional doses of vaccine (for a total of 4 doses) should be given beginning at 1 month of age

*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.

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Post-vaccination serologic testing (PVST)*

ACIP Recommendations re: PVST

- PVST recommended for infants born to HBsAg-positive and HBsAg-unknown mothers
- Testing is recommended 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.

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Meningococcal Disease (caused by *N. meningitidis*)

Meningitis

~50% of cases 9-10% fatality rate

- Sudden high fever
- Severe headache, nausea and vomiting
- Stiff neck



Photo courtesy CDC, Dr. Brodsky & Mr. Gust

Meningococcemia

5%-20% of cases Up to 40% fatality rate

- Rash
- Vascular damage
- Disseminated intravascular coagulation
- Multi-organ failure
- Shock
- Death can occur in 24 hours



11-19% of survivors have permanent sequelae

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

*AAP Red Book 2015

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Meningococcal Conjugate Vaccine (MCV4)*

(Men A,C,Y, W-135)

Menactra™ licensed for 9 mos. through 55 years

Menveo® licensed for ages 2 mos. through 55 years

MenQuadfi (A, C, W, Y) licensed for ages ≥ 2 yrs.----1 dose

ACIP recommends:

- Dose 1---age 11-12 years preferred
- Booster dose---age 16 years
- Minimum interval between doses---8 weeks
- If 1st dose is received ≥16 years of age, a 2nd dose is not needed
- College students ≤21 years of age need 1 dose of MCV4 ≤5 years before enrollment.

Beginning July 1, 2021, a meningococcal conjugate (MCV4/MenACWY) booster will be required for all high school students entering the 11th grade and who are 16 years of age or older.**

Persons aged ≥56 years who are recommended meningococcal vaccination because they are at increased risk for meningococcal disease should receive MenACWY conjugate vaccine.

*MMWR, March 22, 2013, Vol 62, #RR02

**<https://dph.georgia.gov/immunization-section>

**<https://dph.georgia.gov/public-health-regulations/regulationsrule-making>

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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
- Microbiologists routinely exposed to isolates of *Neisseria meningitidis*
- Persons identified to be at increased risk because of a serogroup B meningococcal disease outbreak**
- The 2 vaccine products are not interchangeable.

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.

*MMWR, June 12, 2015, Vol. 64 #22; 608-611

** MMWR, October 23, 2015, Vol. 64 #41; 1171-1176

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Serogroup B Meningococcal Vaccine Booster Recommendations.....*

For persons at risk

- Persons ≥ 10 years of age who previously received a MenB vaccine series
- If a MenB series was completed ≥ 1 year ago, a dose should be given every 2-3 years thereafter, as long as the risk remains.

During an outbreak

- A 1-time booster is recommended if at least 1 year has elapsed since the primary series was completed.
- A booster dose interval of ≥ 6 months may be considered by public health officials depending on the specific outbreak, vaccination strategy, and projected duration of elevated risk.

For persons NOT at risk

- NONE of these recommendations apply to persons who only received the series as a permissive recommendation.

- See meningitis B ACIP statement for details. *<https://www.cdc.gov/vaccines/acip/index.html>

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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)

MenB-FHbp (Trumenba®)

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

MenB-4C (Bexsero®)

- 2 dose schedule – 0, 1-2 months

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Rotavirus Vaccines

RotaTeq® (Merck) and Rotarix® (GSK)*

- RotaTeq®: 3 doses; ages 2, 4, 6 months
- Rotarix®: 2 doses; ages 2 and 4 months

ACIP recommendation:

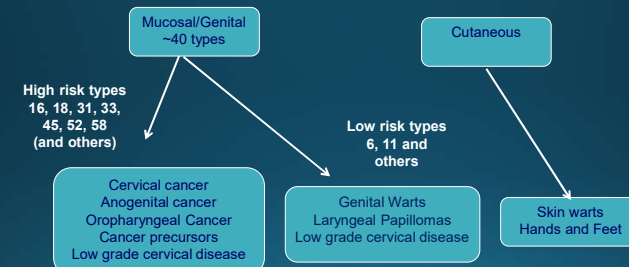
- 2-3 doses depending on brand
- Administer either vaccine as directed below:
 - Minimum age for first dose: 6 weeks
 - Maximum age for first dose: 14 weeks 6 days
 - Minimum interval between doses: 4 weeks
 - Maximum age for last dose: 8 months 0 days
- If any dose is Rotarix®, 3 doses are required
- Use RotaTeq® if allergy to latex

*MMWR, February 6, 2009, Vol 58, #RR-02

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Types of Human Papilloma Virus (HPV)*

(More Than 200 Types Identified)



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

*Red Book – AAP 2013 Report of the Committee on Infectious Diseases

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

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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.

*https://www.merck.com/product/usa/pi_circulars/g/gardasil_9/gardasil_9_pi.pdf

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

**MMWR, August 16, 2019, Vo1 68, No. 32

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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 certain immunocompromising conditions should be vaccinated with the 3 dose schedule: 0, 1-2, 6 months

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

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

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Reasons to Immunize Against HPV at 11-12 Years of Age*

- 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.

*Presented by Anne Schuchat, MD, RADM US Public Health Service, Asst. Surgeon General, Director NCIRD at Immunize Georgia Conference, Atlanta, GA, 9-11-14
Increasing HPV Vaccination Rates Among Adolescents: Challenges and Opportunities. PolicyLab: The Children's Hospital of Philadelphia, 2016.

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Strategies to Avoid Missed Opportunities*

- Provider Prompts
 - Automatic pop-up alerts through your EHR system
 - These can sometimes be pre-installed and then customized in your office
- Family-friendly office hours
 - Occasional evening or Saturday hours
 - "No-appointment-required" if needing immunizations only
- Immunization Champion in your practice
 - Manage vaccine supply and schedule periodic updates
 - Any member of the staff could fill this role

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

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Strategies (cont'd)*

- 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

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.

*http://www.immunize.org/askexperts/experts_hpv.asp

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Critical Elements for Immunization Services



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Recommended Healthcare Personnel Vaccinations

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

Healthcare Personnel Vaccination Recommendations	
Vaccines and recommendations in brief	
Hepatitis B – Personnel providing direct patient care (those at risk of exposure to blood or body fluids) should be vaccinated. All personnel should be vaccinated before starting work. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible.	
Influenza – One dose of influenza vaccine annually. Institutional vaccinees should be vaccinated before starting work. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible.	
Measles, mumps, rubella (MMR) – Two doses of MMR. The first dose should be given before starting work. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible.	
Varicella (chickenpox) – One dose of varicella vaccine. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible.	
Tetanus, diphtheria, pertussis (Tdap) – One dose of Tdap as soon as feasible in all HCP. One dose of Tdap should be given before starting work. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible.	
Meningococcal – One dose of meningococcal vaccine. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible. If a person is not vaccinated before starting work, they should be vaccinated as soon as possible.	

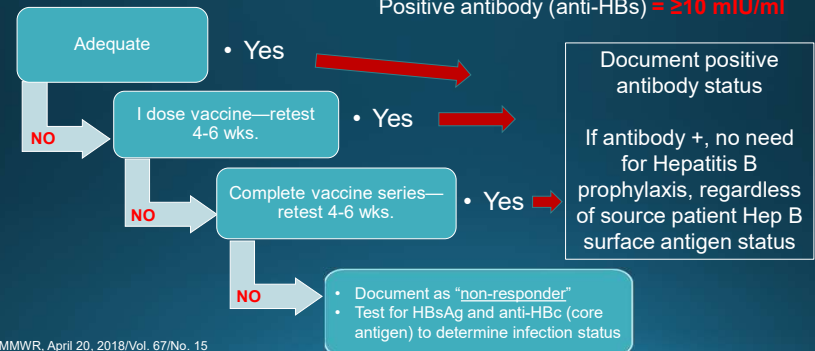
Are **YOU** up to date?

Available at www.immunize.org P#2017

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

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



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2020 Childhood and Adolescent Immunization Schedules*

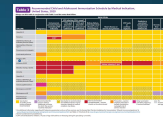
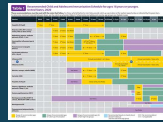
- Recommended Schedule for Children Ages 0-18 Years
- Catch-up Schedule
- Vaccines that might be indicated for children and adolescents aged 18 years or younger based on medical indications

Changes

- Gray boxes indicate "no recommendation/not applicable"
- Blue boxes added to indicate "shared clinical decision making"

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

*CDC Recommended Child and Adolescent Immunization Schedule, United States, 2020



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Indications Recommendations Requirements



Indication

- Information about the appropriate use of the vaccine

Recommendation

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

Requirement

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

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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

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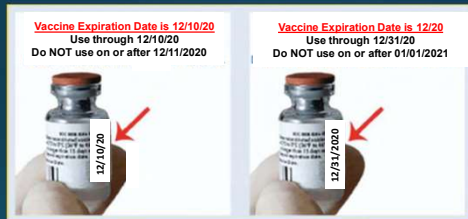
Maintaining Appropriate Vaccine Storage & Handling*

- 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.](#)

*Vaccine Storage and Handling Toolkit, January 2020

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Check Expiration Date of Vaccines and Diluents



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

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Improper Immunization Administration Practices*

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, NCEZ, 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

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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



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>

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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

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Why do we miss opportunities to immunize?

- Physician or patient unaware of the need
- Visits for mild illness, injury, or follow-up
- Need for multiple vaccines
- Invalid contraindications
- Inappropriate clinic policies
- Reimbursement deficiencies



Invalid Contraindications to Vaccine*

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

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

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Vaccine Risk Perception

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

Concerns

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

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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

58

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

59

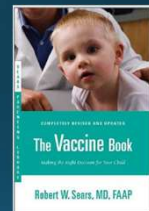
Vaccine Schedules Varying From ACIP/AAP/AAFP Recommendations

Alternate Schedules

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

Concerns re: alternate schedules

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



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

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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



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Resources for Factual & Responsible Vaccine Information



www.vaccinesafetynet.org



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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

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

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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

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

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

Refusal to Vaccinate Form –
https://dph.georgia.gov/search?search=refusal+to+vaccinate+form&sm_site_name=dph

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>

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

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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

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Test Your Knowledge!
EPIC 2020

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Test Your Knowledge!

Four month old Lucas was given Tdap instead of DTaP.

What should be done?

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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.

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

70

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?

71

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

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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?

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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.

74

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?

75

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)

*Current Child and Adolescent Immunization Schedule

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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?

77

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

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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?

79

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.

*Immunization Action Coalition - Item #P3036 4/11

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