A Clinician's Handbook for Childhood & Adult Immunizations in Georgia

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EPIC® Educating Physicians in their Communities & Practices

DPH GEORGIA DEPARTMENT OF PUBLIC HEALTH

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FROM THE EDITOR

VACS FACTS was developed and produced by the EPIC® (Educating Physicians and Practices In their Communities) program at the Georgia Chapter of the American Academy of Pediatrics (GA AAP) and the Immunization Program, Georgia Department of Public Health. A special thanks to Janet McGruder, MBA, BSN and Aralis Tavarez, RN, BSN with the Immunization Program for their hard work and dedication which made this edition of VACS FACTS possible. The editors would also like to thank the Georgia Chapter – American Academy of Pediatrics and other EPIC partners, the Georgia Academy of Family Physicians, Georgia OB/Gyn Society, Georgia Chapter-American College of Physicians (Internal Medicine) and the Immunization Office for their support & participation in the EPIC Immunization Program.

The contents of this handbook were derived from the following publications & source documents:
-Department of Health & Human Services - National Vaccine Advisory Committee
-Immunization Action Coalition
-2018 Report of the Committee on Infectious Disease, 31st Edition, American Academy of Pediatrics, Red Book
-CDC Advisory Committee on Immunization Practices recommendations

The material published in this edition of VACS FACTS is current as of May 2021. For the most up-to-date immunization information readers are advised to visit the Center for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices (ACIP) website at: www.cdc.gov/vaccines/acip/index.html

For more information on EPIC or to schedule an EPIC Immunization Program in your office, contact the Georgia EPIC program by calling 404-881-5054 or email: smcclain@gaaap.org or visit our website at www.GaEPIC.org

STANDARDS FOR CHILD & ADOLESCENT IMMUNIZATION PRACTICES

Availability of vaccines

1. Vaccination services are readily available.
2. Vaccinations are coordinated with other health care services and provided in a medical home when possible.
3. Barriers to vaccination are identified and minimized.
4. Patient costs are minimized.

Assessment of vaccination status

5. Health care professionals review the vaccination and health status of patients at every encounter to determine which vaccines are indicated.
6. Health care professionals assess for and follow only medically accepted contraindications.

Effective communication about vaccine benefits and risks

7. Parents/guardians and patients are educated about the benefits and risks of vaccination in a culturally appropriate manner and in easy-to-understand language.

Proper storage and administration of vaccines and documentation of vaccinations

8. Health care professionals follow appropriate procedures for vaccine storage and handling.
9. Up-to-date, written vaccination protocols are accessible at all locations where vaccines are administered.
10. People who administer vaccines and staff who manage or support vaccine administration are knowledgeable and receive ongoing education.
11. Health care professionals simultaneously administer as many indicated vaccine doses as possible.
12. Vaccination records for patients are accurate, complete, and easily accessible.
13. Health care professionals report adverse events after vaccination promptly and accurately to the Vaccine Adverse Events Reporting System (VAERS) and are aware of a separate program, the Vaccine Injury Compensation Program (VICP).
14. All personnel who have contact with patients are appropriately vaccinated.

Implementation of strategies to improve vaccination coverage

15. Systems are used to remind parents/guardians, patients, and health care professionals when vaccinations are due and to recall those who are overdue.
16. Office or clinic-based patient record reviews and vaccination coverage assessments are performed annually.
17. Health care professionals practice community-based approaches.

From the National Vaccine Advisory Committee (NVAC), 2003

Summary of 2013 National Vaccine Advisory Committee's standards for adult immunization practices

All providers

- Incorporate immunization needs assessment into every clinical encounter
- Strongly recommend needed vaccine(s) and either administer vaccine(s) or refer patient to a provider who can immunize.
- Stay up-to-date on, and educate patients about, vaccine recommendations.
- Implement systems to incorporate vaccine assessment into routine clinical care.
- Understand how to access immunization information systems (i.e., immunization registries).

Non-immunizing providers

- Routinely assess the immunization status of patients, recommend needed vaccine(s), and refer patient to an immunizing provider.
- Establish referral relationships with immunizing providers.
- Follow up to confirm patient receipt of recommended vaccine(s).

Immunizing providers

- Ensure professional competencies in immunizations.
- Assess immunization status in every patient care and counseling encounter and strongly recommend needed vaccine(s).
- Ensure that receipt of vaccination is documented in patient medical record and immunization registry.

Professional health-care related organizations/associations/health-care systems

- Provide immunization education and training of members, including trainees.
- Provide resources and assistance to implement protocols and other systems to incorporate vaccine needs assessment and vaccination or referral into routine practice.
- Encourage members to be up-to-date on their own immunizations.
- Assist members in staying up-to-date on immunization information and recommendations.
- Partner with other immunization stakeholders to educate the public.
- Seek out collaboration opportunities with other immunization stakeholders.
- Collect and share best practices for immunization.

- Advocate policies that support adult immunization standards.
- Insurers/payers/entities that cover adult immunization services should assure thei network is adequate to provide timely immunization access and augment with additional vaccine providers if necessary.

Public health departments

- Determine community needs, vaccination capacity, and barriers to adult immunization.
- Provide access to all ACIP-recommended vaccinations for insured and uninsured adults and work toward becoming an in-network provider for immunization services for insured adults.
- Partner with immunization stakeholders and support activities and policies to improve awareness of adult vaccine recommendations, increase vaccination rates, and reduce barriers.
- Ensure professional competencies in immunizations.
- Collect, analyze, and disseminate immunization data.
- Provide outreach and education to providers and the public.
- Work to decrease disparities in immunization coverage and access.
- Increase immunization registry access and use by vaccine providers for adult patients.
- Develop capacity to bill for immunization of injured people.
- Ensure preparedness for identifying and responding to outbreaks of vaccine-preventable diseases
- Promote adherence to applicable laws, regulations, and standards among adult immunization stakeholders.

GENERAL RECOMMENDATIONS APPLYING TO SPACING AND ADMINISTRATION OF ROUTINELY RECOMMENDED CHILDHOOD VACCINES

1) Simultaneous administration. This recommendation states that there are no contraindications to the simultaneous administration of any of the routinely recommended vaccines included on the current ACIP schedule. The only exception to this rule is that PCV and PPV should be separated by 8 weeks.

2) No minimum time intervals between the administration of 2 different inactivated vaccines. For example, you could give a DTaP one day and a HIB the next, or 2 weeks later. Again, the one exception is for doses of PCV and PPV.

3) If 2 different live virus vaccines are not administered on the same day, they must be separated by at least 4 weeks. This would apply specifically to doses of MMR and varicella, if not administered on the same day.

4) If 2 different live injectable vaccines are given <28 days apart, the one given second should be repeated ≥ 28 days after the second or invalid dose.

5) This recommendation states that vaccine doses should not be given at intervals less than the minimum intervals or earlier than the minimum age. Table 1 of the General Recommendations gives all the minimum intervals and ages for each dose of the recommended childhood vaccines.

6) The 4 day grace period

- In 2002 the ACIP instituted what is referred to as the grace period, for use in evaluating immunization records. Basically, it states that doses given ≤4 days before the minimum age or interval may be counted as valid doses.
- The exception to this is in regard to the spacing of doses of MMR and varicella.
- This rule should be used primarily for evaluating records, NOT for scheduling visits.
- In Georgia, this rule does not conflict with the requirements for school and day care. This is not true in some states.

7) If vaccines are administered later than the recommended schedule:

- Do not start over
- Do not repeat doses
- Continue with the rest of the series according to recommended intervals and ages.

8) The importance of administering vaccines by the recommended routes and sites. It does, however, state that in evaluating records, all doses given by nonstandard routes and sites may be accepted except:

- Rabies and hepatitis B given in the gluteus
- Hepatitis B not given IM
- Continue to discard and repeat vaccines given in "divided doses"
- Do not mix vaccines unless they are licensed to be mixed.

9) The use of a combination vaccine generally is preferred over separate injections of its equivalent component vaccines. Considerations should include provider assessment*, patient preference, and the potential for adverse events.

*Provider assessment should include the number of injections, vaccine availability, likelihood of improved coverage, likelihood of patient return, and storage and cost consideration.

10) Contraindications and precautions are circumstances that dictate when vaccines should not be administered.

- A contraindication is a condition in the recipient that increases the risk for a serious adverse reaction.
- A precaution is a condition in the recipient that might increase the risk for a serious adverse reaction. In some circumstances it may be necessary to weigh benefits vs. risks, as in an outbreak.

IMMUNIZATION RESOURCE LIST

American College of Physicians (Internal Medicine)
www.acponline.org

CDC National Immunization Information Hotline
(800) 232-4636 (800-CDC-INFO)
www.cdc.gov/vaccines

Georgia Academy of Family Physicians
(404) 321-7445
www.gafp.org

The American Congress of Obstetricians and Gynecologists
www.acog.org

Georgia Chapter - American Academy of Pediatrics
(404) 881-5094
www.gaaap.org

Georgia Office of Immunization (Department of Public Health)
(404) 657-3158
dph.georgia.gov/immunization-section

Georgia VFC Program (Department of Public Health)
404-657-5013
(800) 848-3868
dph.georgia.gov/vaccines-children-program

GRITS (Department of Public Health)
(800) 483-2958
dph.georgia.gov/georgia-immunization-registry-grits
www.grits.state.ga.us

Health Department
Phone #: _____

Immunization Action Coalition
www.immunize.org

National Network for Immunization Information (NNII)
www.immunizationinfo.org

Screening Checklist for Contraindications to Vaccines for Children and Teens

patient name _____

date of birth ___/___/___ (month / day / year)

For parents/guardians: The following questions will help us determine which vaccines your child may be given today. If you answer "yes" to any question, it does not necessarily mean your child should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	yes	no	don't know
1. Is the child sick today?	☐	☐	☐
2. Does the child have allergies to medications, food, a vaccine component, or latex?	☐	☐	☐
3. Has the child had a serious reaction to a vaccine in the past?	☐	☐	☐
4. Does the child have a long-term health problem with lung, heart, kidney or metabolic disease (e.g., diabetes), asthma, a blood disorder, no spleen, complement component deficiency, a cochlear implant, or a spinal fluid leak? Is he/she on long-term aspirin therapy?	☐	☐	☐
5. If the child to be vaccinated is 2 through 4 years of age, has a healthcare provider told you that the child had wheezing or asthma in the past 12 months?	☐	☐	☐
6. If your child is a baby, have you ever been told he or she has had intussusception?	☐	☐	☐
7. Has the child, a sibling, or a parent had a seizure; has the child had brain or other nervous system problems?	☐	☐	☐
8. Does the child have cancer, leukemia, HIV/AIDS, or any other immune system problem?	☐	☐	☐
9. Does the child have a parent, brother, or sister with an immune system problem?	☐	☐	☐
10. In the past 3 months, has the child taken medications that affect the immune system such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or had radiation treatments?	☐	☐	☐
11. In the past year, has the child received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug?	☐	☐	☐
12. Is the child/teen pregnant or is there a chance she could become pregnant during the next month?	☐	☐	☐
13. Has the child received vaccinations in the past 4 weeks?	☐	☐	☐

form completed by _____ date _____

form reviewed by _____ date _____

Did you bring your immunization record card with you? yes ☐ no ☐

It is important to have a personal record of your child's vaccinations. If you don't have one, ask the child's healthcare provider to give you one with all your child's vaccinations on it. Keep it in a safe place and bring it with you every time you seek medical care for your child. Your child will need this document to enter day care or school, for employment, or for international travel.

immunization action coalition
IAC
immunize.org

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

www.immunize.org/catg.d/p4060.pdf • Item #P4060 (10/20

Information for Healthcare Professionals about the Screening Checklist for Contraindications to Vaccines (Children and Teens)

Are you interested in knowing why we included a certain question on the screening checklist? If so, read the information below. If you want to find out e l en more, consult the references in ***Notes*** *below.*

note: For supporting documentation on the answers given below, go to the specific ACIP vaccine recommendation found at the following website: www.cdc.gov/vaccines/hcp/acip-recs/index.html

1. Is the child sick today? *[all vaccines]*

There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events. However, as a precaution with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (such as otitis media, upper respiratory infections, and diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

2. Does the child have allergies to medications, food, a vaccine component, or latex? *[all vaccines]*

An anaphylactic reaction to latex is a contraindication to vaccines that contain latex as a component or as part of the packaging (e.g., vial stoppers, prefilled syringe plungers, prefilled syringe caps). If a person has anaphylaxis after eating gelatin, do not administer vaccines containing gelatin. A local reaction to a prior vaccine dose or vaccine component, including latex, is not a contraindication to a subsequent dose or vaccine containing that component. For information on vaccines supplied in vials or syringes containing latex, see www.cdc.gov/vaccines-pubs/pinkbook/downloads/appendices/B/latex-table.pdf; for an extensive list of vaccine components, see www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf. People with egg allergy of any severity can receive any recommended influenza vaccine (i.e., any IIV, RIV, or LAIV) that is otherwise appropriate for the patien t age and health status. With the exception of ccIIV and RIV (which do not contain egg antigen), people with a history of severe allergic reaction to egg involving any symptom other than hives (e.g., angioedema, respiratory distress), or who required epinephrine or another emergency medical intervention, the vaccine should be administered in a medical setting, such as a clinic, health department, or physician office; vaccine administration should be supervised by a healthcare provider who is able to recognize and manage severe allergic conditions.

3. Has the child had a serious reaction to a vaccine in the past? *[all vaccines]*

History of anaphylactic reaction (see question 2) to a previous dose of vaccine or vaccine component is a contraindication for subsequent doses. History of encephalopathy within 7 days following DTP/DTaP is a contraindication for further doses of pertussis-containing vaccine. There are other adverse events that might have occurred following vaccination that constitute contraindications or precautions to future doses. Under normal circumstances, vaccines are deferred when a precaution is present. However, situations may arise when the benefit outweighs the risk (e.g., during a community pertussis outbreak).

4. Does the child have a long-term health problem with lung, heart, kidney, or metabolic disease (e.g., diabetes), asthma, a blood disorder, no spleen, complement component deficiency, a cochlear implant, or a spinal fluid leak? Is he/she on long-term aspirin therapy? *[MMR, MMRV, LAIV, VAR]*

A history of thrombocytopenia or thrombocytopenic purpura is a precaution to MMR and MMRV vaccines. The safety of LAIV in children and teens with lung, heart, kidney, or metabolic disease (e.g., diabetes), or a blood disorder has not been established. These conditions, including asthma in children ages 5 years and older, should be considered precautions for the use of LAIV. Children with functional or anatomic asplenia, complement deficiency, cochlear implant, or CSF leak should not receive LAIV. Children on long-term aspirin therapy should not be given LAIV; instead, they should be given IIV. Children with CSF leak, anatomic or functional asplenia, or cochlear implant, or on long-term aspirin therapy should not be given LAIV; instead, they should be given IIV. Aspirin use is a precaution to VAR.

5. If the child to be vaccinated is 2 through 4 years of age, has a healthcare provider told you that the child had wheezing or asthma in the past 12 months? *[LAIV]*

Children ages 2 through 4 years who have had a wheezing episode within the past 12 months should not be given LAIV. Instead, these children should be given IIV.

6. If your child is a baby, have you ever been told that he or she has had intussusception? *[Rotavirus]*

Infants who have a history of intussusception (i.e., the telescoping of one portion of the intestine into another) should not be given rotavirus vaccine.

7. Has the child, a sibling, or a parent had a seizure; has the child had brain or other nervous system problem? *[DTaP, Td, Tdap, IIV, LAIV, MMRV]*

DTaP and Tdap are contraindicated in children who have a history of encephalopathy within 7 days following DTP/DTaP. An unstable progressive neurologic problem is a precaution to the use of DTaP and Tdap. For children with stable neurologic disorders (including seizures) unrelated to vaccination, or for children with a family history of seizures, vaccinate as usual (exception: children with a personal or family [i.e., parent or sibling] history of seizures generally should not be vaccinated with MMRV; they should receive separate MMR and VAR vaccines). A history of Guillain-Barre syndrome (GBS) is a consideration with the following: 1) Td/Tdap: if GBS has occurred within weeks of a tetanus-containing vaccine and decision is made to continue vaccination, give Tdap instead of Td if no history of prior Tdap;

note: For summary information on contraindications and precautions to vaccines, go to the ACIP's General Best Practice Guidelines for Immunization at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

2) Influenza vaccine (IIV, LAIV, or RIV): if GBS has occurred within weeks of a prior influenza vaccination, vaccinate with IIV if at high risk for severe influenza complications.

8. Does the child have cancer, leukemia, HIV/AIDS, or any other immune system problem? *[LAIV, MMR, MMRV, RV, VAR]*

Live virus vaccines (e.g., MMR, MMRV, VAR, RV, LAIV) are usually contraindicated in immunocompromised children. However, there are exceptions. For example, MMR is recommended for asymptomatic HIV-infected children who do not have evidence of severe immunosuppression. Likewise, VAR should be considered for HIV-infected children age 12 months through 8 years with age-specific CD4+ T-lymphocyte percentage at 15% or greater, or for children age 9 years or older with CD4+ T-lymphocyte counts of greater than or equal to 200 cell/µL. VAR should be administered (if indicated) to persons with isolated humoral immunodeficiency. Immunosuppressed children should not receive LAIV. Infants who have been diagnosed with severe combined immunodeficiency (SCID) should not be given a live virus vaccine, including RV. Other forms of immunosuppression are a precaution, not a contraindication, to RV. For details, consult ACIP recommendations (see references in **Notes** above).

9. Does the child have a parent, brother, or sister with an immune system problem? *[MMR, MMRV, VAR]*

MMR, VAR, and MMRV vaccines should not be given to a child or teen with a family history of congenital or hereditary immunodeficiency in first-degree relatives (i.e., parents, siblings) unless the immune competence of the potential vaccine recipient has been clinically substantiated or verified by a laboratory.

10. In the past 3 months, has the child taken medications that affect the immune system such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or had radiation treatments? *[LAIV, MMR, MMRV, VAR]*

Live virus vaccines (e.g., LAIV, MMR, MMRV, VAR) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, consult the ACIP statement. Some immune mediator and immune modulator drugs (especially the antitumor-necrosis factor agents adalimumab, infliximab, and etanercept) may be immunosuppressive. A comprehensive list of immunosuppressive immune modulators is available in CDC Health Information for International Travel (the "Yellow Book"), at www.nc.cdc.gov/travel/yellowbook/2020/travelers-with-additional-considerations/immunocompromised-travelers. The use of live vaccines should be avoided in persons taking these drugs. To find specific vaccination schedules for stem cell transplant (bone marrow transplant) patients, see General Best Practice Guidelines for Immunization (referenced in **Notes** above). LAIV, when recommended, can be given only to healthy nonpregnant people ages 2 through 49 years.

11. In the past year, has the child received a transfusion of blood/blood products, or been given immune (gamma) globulin or an antiviral drug? *[MMR, MMRV, LAIV, VAR]*

Certain live virus vaccines (e.g., MMR, MMRV, LAIV, VAR) may need to be deferred, depending on several variables. Consult the most current ACIP recommendations (referenced in **Notes** above) for the most current information on intervals between antiviral drugs, immune globulin or blood product administration and live virus vaccines.

12. Is the child/teen pregnant or is there a chance she could become pregnant during the next month? *[HPV, IPV, LAIV, MenB, MMR, MMRV, VAR]*

Live virus vaccines (e.g., MMR, MMRV, VAR, LAIV) are contraindicated one month before and during pregnancy because of the theoretical risk of virus transmission to the fetus. Sexually active young women who receive a live virus vaccine should be instructed to practice careful contraception for one month following receipt of the vaccine. On theoretical grounds, IPV and MenB should not be given during pregnancy; however, it may be given if there is a risk of exposure. IIV and Tdap are both recommended during pregnancy. HPV vaccine is not recommended during pregnancy.

13. Has the child received vaccinations in the past 4 weeks? *[LAIV, MMR, MMRV, VAR, yellow fever]*

Children who were given either LAIV or an in ectable live virus vaccine (e.g., MMR, MMRV, VAR, yellow fever) should wait 28 days before receiving another vaccination of this type (30 days for yellow fever vaccine). Inactivated vaccines may be given at the same time or at any spacing interval.

vaccine abbreviations

LAIV = Live attenuated influenza vaccine
HPV = Human papillomavirus vaccine
IIV = Inactivated influenza vaccine
ccIIV = cell culture inactivated influenza vaccine
IPV = Inactivated poliovirus vaccine
MMR = Measles, mumps, and rubella vaccine
MMRV = MMR+VAR vaccine
RIV = Recombinant influenza vaccine
RV = Rotavirus vaccine
Td/Tdap = Tetanus, diphtheria, (acellular pertussis) vaccine
VAR = Varicella vaccine

Screening Checklist for Contraindications to HPV, MenACWY, MenB, and Tdap Vaccines for Teens

your name_____

date of birth____/____ /____
month day year

For parents/guardians: The following questions will help us determine if human papillomavirus (HPV), meningococcal conjugate (MenACWY), meningococcal serogroup B (MenB), and tetanus, diphtheria, and acellular pertussis (Tdap) vaccines may be given to your teen today. If you answer "yes" to any question, it does not necessarily mean your teen should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	yes	no	don't know
1. Is your teen sick today?	☐	☐	☐
2. Does your teen have allergies to a vaccine component or to latex?	☐	☐	☐
3. Has your teen had a serious reaction to a vaccine in the past?	☐	☐	☐
4. Has your teen had brain or other nervous system problems?	☐	☐	☐
5. For females: Is your teen pregnant?	☐	☐	☐

form completed by_____date_____

form reviewed by_____date_____

Did you bring your teen's immunization record card with you? **yes** ☐ **no** ☐

It is important to have a personal record of your teen's vaccinations. If you don't have one, ask your healthcare provider to give you one with all of your teen's vaccinations on it. Keep it in a safe place and be sure your teen carries it every time he/she seeks medical care. Your teen will likely need this document to enter school or college, for employment, or for international travel.

Information for Healthcare Professionals about the Screening Checklist for Contraindications to HPV, MenACWY, MenB, and Tdap Vaccines for Teens

Are you interested in knowing why we included a certain question on the screening checklist? If so, read the information below. If you want to find out e l en more, consult the references listed in ***Notes*** *below.*

note: For supporting documentation on the answers given below, go to the specific ACIP vaccine recommendation found at the following website: www.cdc.gov/vaccines/hcp/acip-recs/index.html

1. Is your teen sick today?

(This question applies to HPV, MenACWY, MenB, Tdap.)

There is no evidence that acute illness reduces vaccine efficacy or increases vaccine adverse events. However, all vaccines should be delayed until a moderate or severe acute illness has improved. Mild illnesses (such as otitis media, upper respiratory infections, and diarrhea) are NOT contraindications or precautions to vaccination. Do not withhold vaccination if a teen is taking antibiotics unless he/she is moderately or severely ill.

2. Does your teen have allergies to a vaccine component or to latex?

(This question applies to HPV, MenACWY, MenB, Tdap.)

A delayed-type local reaction following a prior vaccine dose is not a contraindication to a subsequent dose. History of severe allergy to a vaccine component occurs in minutes to hours, requires medical attention, and is a contraindication. For a table of vaccine components, go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf. For a table of vaccines supplied in vials or syringes that contain latex, go to www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/latex-table.pdf.

3. Has your teen had a serious reaction to a vaccine in the past?

(This question applies to HPV, MenACWY, MenB, Tdap.)

A local reaction following a prior vaccine dose is not a contraindication to a subsequent dose. However, history of an anaphylactic reaction (hives, swelling of the lips or tongue, acute respiratory distress, or collapse) following a previous dose of vaccine or vaccine component is a contraindication for subsequent doses.

note: For summary information on contraindications and precautions to vaccines, go to the ACIP's General Best Practice Guidelines for Immunization at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

4. Has the teen had brain or other nervous system problems?

(This question applies to Tdap.)

Tdap is contraindicated in teens who have a history of encephalopathy within 7 days following DTP/DTaP. An unstable progressive neurologic problem is a precaution to the use of Tdap. Under normal circumstances, vaccines are deferred when a precaution is present. However, situations may arise when the benefit of vaccinating outweighs the risk (e.g., during a community pertussis outbreak). For teens with stable neurologic disorders (including seizures) unrelated to vaccination, or for those with a family history of seizures, vaccinate as usual. A history of Guillain-Barré syndrome (GBS) is a consideration with Td or Tdap: if GBS occurred within 6 weeks of receipt of a tetanus-containing vaccine and a decision is made to continue vaccination, give age-appropriate Tdap instead of Td if there is no history of a prior Tdap dose, to improve pertussis protection.

5. For females; Is your teen pregnant?

(This question applies to HPV and MenB.)

Teens who are pregnant should not be given HPV vaccine. On theoretical grounds, MenB should not be given during pregnancy; however, it may be given if there is a risk of exposure. Pregnancy is not a contraindication or precaution for administering Tdap or MenACWY vaccine.

vaccine abbreviations

DTP= Diphtheria, tetanus, pertussis vaccine
DTaP= Diphtheria, tetanus, (acellular) pertussis vaccine
HPV = Human papillomavirus vaccine
MenB = Meningococcal serogroup B vaccine
MenACWY = Meningococcal serogroups A, C, W, Y
Td/Tdap = Tetanus, diphtheria, (acellular) pertussis vaccine

Screening Checklist for Contraindications to Vaccines for Adults

patient name _____

date of birth ____ / ____ / ____
month day year

For patients: The following questions will help us determine which vaccines you may be given today. If you answer "yes" to any question, it does not necessarily mean you should not be vaccinated. It just means additional questions must be asked. If a question is not clear, please ask your healthcare provider to explain it.

	yes	no	don't know
1. Are you sick today?	☐	☐	☐
2. Do you have allergies to medications, food, a vaccine component, or latex?	☐	☐	☐
3. Have you ever had a serious reaction after receiving a vaccination?	☐	☐	☐
4. Do you have a long-term health problem with heart, lung, kidney, or metabolic disease (e.g., diabetes), asthma, a blood disorder, no spleen, complement component deficiency, a cochlear implant, or a spinal fluid leak? Are you on long-term aspirin therapy?	☐	☐	☐
5. Do you have cancer, leukemia, HIV/AIDS, or any other immune system problem?	☐	☐	☐
6. Do you have a parent, brother, or sister with an immune system problem?	☐	☐	☐
7. In the past 3 months, have you taken medications that affect your immune system, such as prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or have you had radiation treatments?	☐	☐	☐
8. Have you had a seizure or a brain or other nervous system problem?	☐	☐	☐
9. During the past year, have you received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug?	☐	☐	☐
10. For women: Are you pregnant or is there a chance you could become pregnant during the next month?	☐	☐	☐
11. Have you received any vaccinations in the past 4 weeks?	☐	☐	☐

form completed by _____ date _____

form reviewed by _____ date _____

Did you bring your immunization record card with you? **yes** ☐ **no** ☐

It is important for you to have a personal record of your vaccinations. If you don't have a personal record, ask your healthcare provider to give you one. Keep this record in a safe place and bring it with you every time you seek medical care. Make sure your healthcare provider records all your vaccinations on it.

Information for Healthcare Professionals about the Screening Checklist for Contraindications to Vaccines for Adults

Are you interested in knowing why we included a certain question on the screening checklist? If so, read the information below. If you want to find out even more, consult the references in ***Notes*** *below.*

note: For supporting documentation on the answers given below, go to the specific ACIP vaccine recommendation found at the following website: www.cdc.gov/vaccines/hcp/acip-recs/index.html

1. Are you sick today? *[all vaccines]*

[illegible] vaccine adverse events. However, as a precaution with moderate or severe acute illness, all vaccines should be delayed until the illness has improved. Mild illnesses (e.g., upper respiratory infections, diarrhea) are NOT contraindications to vaccination. Do not withhold vaccination if a person is taking antibiotics.

2. Do you have allergies to medications, food, a vaccine component, or latex? *[all vaccines]*

An anaphylactic reaction to latex is a contraindication to vaccines that contain [illegible] gelatin, do not administer vaccines containing gelatin. A local reaction to a prior vaccine dose or vaccine component, including latex, is not a contraindication to a subsequent dose or vaccine containing that component. For information on vaccines supplied in vials or syringes containing latex, see www.cdc.gov/vaccines-pubs/pinkbook/downloads/appendices/B/latex-table.pdf; for an extensive list of vaccine components, see www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf.

People with egg allergy of any severity can receive any IIV, RIV, or LAIV that is otherwise appropriate for the patient's age and health status. With the exception of ccIIV and RIV (which do not contain egg antigen), people with a history of severe allergic reaction to egg involving any symptom other than hives (e.g., angioedema, respiratory distress), or who required epinephrine or another emergency medical intervention, the vaccine should be administered in a medical setting [illegible] tion should be supervised by a healthcare provider who is able to recognize and manage severe allergic conditions.

3. Have you ever had a serious reaction after receiving a vaccination? *[all vaccines]*

History of anaphylactic reaction (see question 2) to a previous dose of vaccine or vaccine component is a contraindication for subsequent doses. Under normal circumstances, vaccines are deferred when a precaution is present. However, [illegible] pertussis outbreak).

4. Do you have a long-term health problem with heart, lung, kidney, or metabolic disease (e.g., diabetes), asthma, a blood disorder, no spleen, complement component deficiency, a cochlear implant, or a spinal fluid leak? Are you on long term aspirin therapy? *[MMR, VAR, LAIV]*

A history of thrombocytopenia or thrombocytopenic purpura is a precaution to MMR vaccine. LAIV is not recommended for people with anatomic or functional [illegible] Underlying health conditions of the heart, lung, kidney, or metabolic disease (e..g., diabetes) and asthma are considered precautions for the use of LAIV. Aspi- rin use is a precaution to VAR.

5. Do you have cancer, leukemia, HIV/AIDS, or any other immune system problem? *[LAIV, MMR, VAR]*

Live virus vaccines (e.g., LAIV, MMR, VAR) are usually contraindicated in immunocompromised people. However, there are exceptions. For example, MMR vaccine is recommended and VAR vaccine may be considered for adults with CD4+ T-lymphocyte counts of greater than or equal to 200 cells/µL. Immuno-suppressed people should not receive LAIV.

6. Do you have a parent, brother, or sister with an immune system problem? *[MMR, VAR]*

MMR or VAR vaccines should not be administered to persons who have a family [illegible] (i.e., parents and siblings), unless the immune competence of the potential vaccine [illegible]

note: For summary information on contraindications and precautions to vaccines, go to the ACIP's General Best Practice Guidelines for Immunization at www.cdc.gov/vaccines/hcp/acip-recs/general-recs/contraindications.html

7. In the past 3 months, have you taken medications that affect your immune system, such as cortisone, prednisone, other steroids, or anticancer drugs; drugs for the treatment of rheumatoid arthritis, Crohn's disease, or psoriasis; or have you had radiation treatments? *[LAIV, MMR, VAR]*

Live virus vaccines (e.g., LAIV, MMR, VAR) should be postponed until after chemotherapy or long-term high-dose steroid therapy has ended. For details and length of time to postpone, see references in **Notes** above. Some immune mediator and immune modulator drugs (especially the anti-tumor necrosis factor [illegible] may be immunosuppressive. A comprehensive list of immunosuppressive immune modulators is available in CDC Health Information for International Travel (the "Yellow Book") available at wwwnc.cdc.gov/travel/yellowbook/2020/ travelers-with-additional-considerations/immunocompromised-travelers. The use of live virus vaccines should be avoided in persons taking these drugs. To [illegible] plant) patients, see references in **Notes** above.

8. Have you had a seizure or a brain or other nervous system problem? *[influenza, Td/Tdap]*

Tdap is contraindicated in people who have a history of encephalopathy within 7 days following DTP/DTaP. An unstable progressive neurologic problem is a precaution to the use of Tdap. For people with stable neurologic disorders (including seizures) unrelated to vaccination, or for people with a family history of seizure, vaccinate as usual. A history of Guillain-Barré syndrome (GBS) is a consideration with the following: 1) Td/Tdap: if GBS has occurred within 6 weeks of a tetanus-toxoid vaccine and decision is made to continue vaccination, give Tdap instead of [illegible]

9. During the past year, have you received a transfusion of blood or blood products, or been given immune (gamma) globulin or an antiviral drug? *[MMR, LAIV, VAR]*

Certain live virus vaccines (e.g., MMR, LAIV, VAR) may need to be deferred, depending on several variables. Consult General Best Practice Guidelines for Immunization (referenced in **Notes** above) for current information on intervals between antiviral drugs, immune globulin or blood product administration and live virus vaccines.

10. For women: Are you pregnant or is there a chance you could become pregnant during the next month? *[HPV, IPV, MenB, MMR, LAIV, VAR]*

Live virus vaccines (e.g., MMR, VAR, LAIV) are contraindicated one month before and during pregnancy because of the theoretical risk of virus transmission to the fetus. Sexually active women in their childbearing years who receive live virus vaccines should be instructed to avoid pregnancy for one month following receipt of the vaccine. On theoretical grounds, IPV and MenB should not be given during pregnancy; however, it may be given if there is a risk of exposure. IIV and Tdap are both recommended during pregnancy. HPV vaccine is not recommended during pregnancy.

11. Have you received any vaccinations in the past 4 weeks? *[LAIV, MMR, VAR, yellow fever]*

People who were given either LAIV or an injectable live virus vaccine (e.g., MMR, VAR, yellow fever) should wait 28 days before receiving another vaccination of this type (30 days for yellow fever). Inactivated vaccines may be given at any spacing interval if they are not administered simultaneously.

vaccine abbreviations

[illegible]

LAIV = Live attenuated influenza vaccine
HPV = Human papillomavirus vaccine
IIV = Inactivated influenza vaccine
ccIIV = Cell culture inactivated influenza vaccine
IPV = Inactivated poliovirus vaccine

MMR = Measles, mumps, and rubella vaccine RIV = Recombinant influenza vaccine Td/Tdap = Tetanus, diphtheria, (acellular pertussis) vaccine
VAR = Varicella vaccine

How to Administer Intramuscular and Subcutaneous Vaccine Injections

Administration by the Intramuscular (IM) Route

Administer these vaccines via IM route

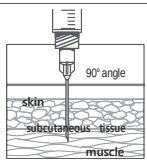
- Diphtheria-tetanus-pertussis (DTaP, Tdap)
- Diphtheria-tetanus (DT, Td)
- *Haemophilus influenzae* type b (Hib)
- Hepatitis A (HepA)
- Hepatitis B (HepB)
- Human papillomavirus (HPV)
- Inactivated influenza (IIV)
- Meningococcal serogroups A,C,W, Y (MenACWY)
- Meningococcal serogroup B (MenB)
- Pneumococcal 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	⅝"* (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	⅝*–1" (22–25 gauge)
Children (3–10 years)	Deltoid muscle (upper arm)	⅝*–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)	⅝†–1" (22–25 gauge)
	Alternate site: Anterolateral thigh muscle	1–1½" (22–25 gauge)

* A ⅝" 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 ⅝" 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.

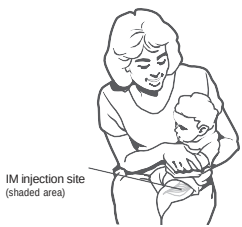
Insert needle at a 90° angle to the skin with a quick thrust.

(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.

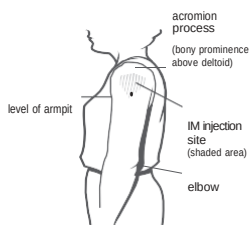
¶ CDC. "General Best Practices Guidelines for Immunization: Best Practices Guidance of the ACIP" at https://www.cdc.gov/vaccines/hcp/acip-recs/general-recs/downloads/general-recs.pdf

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

Technical content reviewed by the Centers for Disease Control and Prevention

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

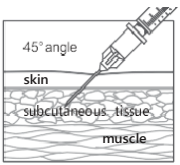
Administration by the Subcutaneous (Subcut) Route

Administer these vaccines via Subcut route

- Measles, mumps, and rubella (MMR)
- Varicella (VAR)
- Zoster, live (ZVL)

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

patient age	injection site	needle size
Birth to 12 months	Fatty tissue overlying the anterolateral thigh muscle	⅝" (23-25 gauge)
12 months and older	Fatty tissue overlying the anterolateral thigh muscle or fatty tissue over triceps	⅝" (23-25 gauge)



Needle insertion

Pinch up on subcutaneous tissue to prevent injection into muscle.

Insert needle at 45° angle to the skin.

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

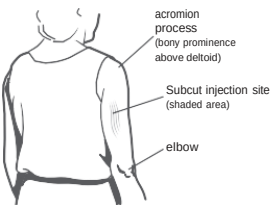
Multiple injections given in the same extremity should be separated by a minimum of 1".

* 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/

Subcutaneous (Subcut) injection site for infants

Insert needle at a 45° angle into fatty tissue of the anterolateral thigh. Make sure you pinch up on subcutaneous tissue to prevent injection into the muscle.

Subcutaneous (Subcut) injection site for children (after the 1st birthday) and adults



Insert needle at a 45° angle into the fatty tissue overlying the triceps muscle. Make sure you pinch up on the subcutaneous tissue to prevent injection into the muscle.

ANAPHYLAXIS

Anaphylaxis is a medical emergency. Onset and severity of anaphylaxis may vary considerably. Anaphylaxis usually begins within minutes of exposure to the causative agent, and, in general, the more rapid the onset, the more severe the overall course. Anyone administering vaccine should be prepared to recognize and treat systemic anaphylaxis.

Signs and symptoms of Anaphylactic Reactions include:

(1) *cutaneous*: pruritis, flushing, urticaria, angioedema;
(2) *respiratory*: hoarse voice and stridor, cough, wheeze, dyspnea, cyanosis;
(3) *cardiovascular*: rapid weak pulse, hypotension, arrhythmias;
(4) *gastrointestinal*: cramps, vomiting, diarrhea, dry mouth

From: Red Book (2018) Report of the Committee on Infectious Diseases, 31st Edition, American Academy of Pediatrics.

VAERS

What is VAERS?
The Vaccine Adverse Event Reporting System (VAERS) is a national vaccine safety surveillance program co-sponsored by the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA). VAERS collects and analyzes information from reports of adverse events following immunization. By monitoring such events, VAERS helps to identify any important new safety concerns and thereby assists in ensuring that the benefits of vaccines continue to be far greater than the risks.

What events should I report to VAERS?
VAERS encourages the reporting of any clinically significant adverse event that occurs after the administration of any vaccine licensed in the United States. You should report clinically significant adverse events even if you are unsure whether a vaccine caused the event.

The National Childhood Vaccine Injury Act requires health care providers to report:

- Any event listed by the vaccine manufacturer as a contraindication to subsequent doses of the vaccine.
- Any event listed in the Reportable Events Table* that occurs within the specified time period after vaccination.

*A copy of the Reportable Events Table can be obtained from the VAERS web site at https://vaers.hhs.gov/resources/infoproviders.html or by calling VAERS at 1-800-822-7967.

Who can report to VAERS?
Anyone can report to VAERS: healthcare providers, vaccine manufacturers, state immunization programs, vaccine recipients and / or their families.

How do I report to VAERS?

There are two ways to submit an online Report to VAERS at https://vaers.hhs.gov/reportevent.html -

- Option 1 - Report online to VAERS. The report must be completed online and submitted in one sitting and cannot be saved and returned to at a later time.
- Option 2 - Download the writable PDF form to a computer and complete the VAERS report offline. Once the form is completed upload and submit to VAERS.

Private health care providers should report directly to VAERS via the options listed above.

Public health care providers should report directly to VAERS and also send a copy of the report to the state immunization program via fax to 404-657-1463.

Policy Guide 3231REQ

Vaccine Requirements for Attending Facilities and Schools in Georgia

Relative to the Certificate of Immunization (Form 3231)

Required Doses for Attendance in Facilities and Schools For Children Who Started Immunizations Before Age 7 Years*

Required Vaccines with footnote numbers in [ ]	2 Months of Age	4 Months of Age	6 Months of Age	12 Months of Age	15 Months of Age	18 Months of Age	24 Months of Age	4-6 Yrs.* (School Entry)	Total Doses Required** For Checking Complete For School Attendance Box on Immunization Certificate
[1] DTP/DTaP/DT	1	2	3	4				5	4 of 5 (See Footnote [1])
[2] Hepatitis B	1	2		3					3 (See Footnote [2])
[3] Hib PRP-T or	1	2	3	4					N/A for school (See Footnote [3])
[3] Hib PRP-OMP	1	2		3					N/A for school (See Footnote [3])
[4] Polio	1	2		3				4	3 or 4 (See Footnote [4])
[5] MMR				1				2	2 (See Footnote [5])
[6] Varicella				1				2	2 (See Footnote [6])
[7] PCV	1	2	3	4					N/A for school (See Footnote [7])
[8] Hepatitis A				1			2		(See Footnote [8])

*These requ
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Minimum Ages For Initial Immunization And Minimum Intervals Between Doses

Vaccine	Minimum Age For For First Dose	Minimum interval from dose 1 to 2	Minimum interval from dose 2 to 3	Minimum interval from dose 3 to 4	Minimum interval from dose 4 to 5
[1] DTP/DTaP (DT)	6 weeks	1 month	1 month	6 months	See Footnote [1]
[2] Hepatitis B	birth	1 month	See Footnote [2]	N/A	N/A
[3]Hib(Primary Series)					
PRP-T (ActHIB)	6 weeks	1 month	1 month	See Footnote [3]	N/A
PRP-OMP (Pedvax)	6 weeks	1 month	See Footnote [3]	N/A	N/A
[4] Polio	6 weeks	1 month	1 month	See Footnote [4]	N/A
[5] MMR	12 months	1 month	N/A	N/A	N/A
[6] Varicella	12 months	3 months	N/A	N/A	N/A
[7] PCV	6 weeks	1 month	1 month	See Footnote [7]	N/A
[8] Hepatitis A	12 months	6 months			

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[1] One dose of DTP/DTaP/DT must be on or after the 4th birthday. If the 4th dose was on or after the 4th birthday, the 5th dose is not needed. The 4th dose should be administer a minimum of 6 months after the 3rd dose. However, the 4th dose does not need to be repeated if administered ≥ 4 months after dose 3. Total doses of diphtheria and tetanus toxoids should not exceed 6 before the 7th birthday.

[2] The 3rd dose of Hepatitis B vaccine should be given a minimum of 4 months after the 1st dose and 2 months after the 2nd dose and not before 24 weeks of age.

[3] The number of doses of Hib depends on age at 1st dose and brand of vaccine given. The last dose in the series, whether 3rd or 4th, should be given at least 2 months after the previous dose and not before 12 months of age. Hib is required for children younger than 5 years attending facilities. Hib is not required for admission to kindergarten (5 years) through grade 12 and is not indicated for children who have reached the 5th birthday. One dose is sufficient if it is given at age 15 months or later. Brand names for PRP-T is A PRP-OMP is Pedvax Hib and the Hib component of Comvax(Hepatitis B-Hib) is Pedvax Hib.

[4] Booster dose must be given on or after the 4th birthday and a 6 month interval is required between the last dose of the primary series and the booster dose. If the 3rd dose of a given on or after the 4th birthday, a 4th dose is not required provided there is a 6 month interval since the previous dose.

[5] The MMR requirement is 2 doses of measles vaccine, 2 doses of mumps vaccine and 1 dose of rubella vaccine . The vaccines may be given as MMR or MMRV (combined anti single antigens.

[6] The varicella requirement is for 2 doses of varicella-containing vaccine for entry into any level, K-12. (See Side 2 of REQ, Footnote [4]).These may be administered as single do combination as MMRV.

[7] The number of doses in the PCV series depends on age at 1st dose. The last dose in the series should be given at least 2 months after the previous dose and not before 12 mo

[8] Hepatitis A vaccine should be administered to all children born on or after 1-1-06.

Policy Guide 3231REQ

Vaccine Requirements for Attending Facilities and Schools in Georgia

Relative to the Certificate of Immunization (Form 3231)

Required Doses for Attendance in Schools For Children Who Started Immunizations At Age 7 Years or Older*

Required Vaccines** with footnote numbers in [ ]	First Visit	1 Month After First	1 Month After Second	1 Month After Third	4 Months After First	6 Months After Previous	Total Doses Require Complete For Sc Box on Immuniza
[1]Hepatitis B Engerix 10 mcg or Recombivax 5 mcg	1	2			3		3 (See Fo
Recombivax 10 mcg (11-15 years only)	1				2		2 (See Fo
[2]Polio	1	2	3			4 or 3	3 or 4 (See F
[3]MMR	1	2					2 (See Fo
[4]Varicella	1	2					2 (See Fo
[5]Td/Tdap	1(Tdap)	2(Td)				3(Td)	3 (See Fo
[6] Meningococcal	1 or 2 doses						1 or 2 (See Foo

*These requirements were established in accordance with the current Recommended Childhood Immunization Schedule, United States. See References.

**There are other vaccines included in the Childhood Immunization Schedule that are recommended routinely but are not required in GA for child care or sch

***Children who are behind schedule may attend while in the process of completing requirements with minimum intervals indicated above. With respect to the 1 month is a minimum of 4 weeks or 28 days.

Footnotes:

[1] The 3rd dose of Hepatitis B Engerix-B 10 mcg or Recombivax-HB 5 mcg should be given a minimum of 4 months after the 1st dose and 2 mont A 3rd dose is not needed when 2 doses of Adult Recombivax-HB 10 mcg are given when a child is 11-15 years old and the 2 doses are at l Documentation of the vaccine brand of this alternate schedule is very important, especially when issuing the 3231 certificate.

[2] If the 3rd dose of all IPV or OPV series is given on or after the 4th birthday, a 4th dose is not required provided there is a 6 month interval since

[3] The MMR requirement is 2 doses of measles vaccine, 2 doses of mumps vaccine and 1 dose of rubella vaccine . The vaccines may be given a MMR or MMRV (combined antigens) or as single antigens.

[4] Two doses of varicella vaccine are required for children entering school at any level, K-12, for the first time. For children already enrolled, the s at 6th grade. If given before age 12, the doses should be separated by 3 months, however, the 2nd dose does not need to be repeated if ad after 1st dose. If given on or after the 13th birthday, the doses should be separated by 4 or more weeks.

[5] One dose of Tdap is required for 7th grade. Tdap can be administered regardless of the interval since the last Td. If a primary series is indicat preferably the first dose, should be Tdap. A dose of Tdap given on or after the 7th birthday meets school requirement.

[6] One dose of MCV4 is required for 7th grade; routinely at age 11-12 years. A dose of MCV4 given on or after age 10 years meets school require A booster dose of MCV4 is required for 11th grade; routinely at age 16 years or older. If the first dose of MCV4 is given at 16 years or older, a b

References:
- Official Code of Georgia Annotated, Section 20-2-771
- Rules of the Department of Public Health, Chapter 511-2-2
- Georgia Immunization Program Manual
- Georgia VFC Program Manual
- Recommendations of the Advisory Committee on Immunization Practices (ACIP)
- The Red Book - Report of the Committee on Infectious Diseases
- Recommended Childhood & Catch-Up Immuniza
- Centers for Disease Control and Prevention
- American Academy of Pediatrics (AAP)
- Approved by ACIP, AAP and American Academy (AAFP)

TIPS for Vaccine Storage and Handling

Assign Responsibility of Handling Vaccines
One person should take primary responsibility for handling vaccines, but a back-up person should also be designated. Every employee should know what to do if a vaccine shipment arrives.

Check Vaccine Shipments
Examine shipments carefully, checking the cooler and contents for physical damage. Compare contents to packing slips. Check the shipping date. Document vaccines received on inventory log.

Store in Appropriate Type of Refrigerator or Freezer

CDC recommends stand-alone units, meaning self-contained units that only refrigerate or freeze suitable for vaccine storage (no dorm-style refrigerators). Food and beverages should not be stored with vaccines!

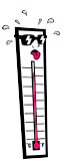
Store in Appropriate Location in Refrigerator and Freezer
Vaccines should be stored in the center, allowing for proper ventilation. Do NOT store in doors, vegetable bins, loc-tight containers, on the bottom, or near the sides of the unit.

Keep Vaccines Organized
Rotate stock, routinely checking expiration dates. Label open vials. Keep VFC stock separate from privately purchased vaccines.

Check and Document Temperatures
VFC providers are required to check and record storage unit minimum and maximum temperatures at the start of each workday. If storage unit does not display **min** and **max** temperatures, then record the current temperature a minimum of 2 times per day (at the start and end of workday). This should be done even if there is a temperature alarm.

- Take all temperatures in *either* Fahrenheit or Celsius
- Record ambient room temperature as well (a standard household thermometer is sufficient for this purpose
- Keep temperature log posted on refrigerator and keep records for at least 3 years

If Temperatures are Outside of Ranges for the Refrigerator and/or Freezer, Take Appropriate Actions



- Notify primary/alternate vaccine coordinator or immediate supervisor
- Store the vaccine under proper conditions as quickly as possible
- Temporarily mark exposed vaccines **"DO NOT USE"** until you have verified whether or not the vaccine may be used
- Phone manufacturer of vaccine or VFC (404-657-5013) to check on viability of vaccine. Do NOT immediately discard vaccine!
- Document the action taken

Have a Routine Vaccine S&H Plan/Emergency Vaccine Retrieval and Storage Plan
Identify alternate personnel, locations and equipment to provide temporary storage for vaccines in the event of a power failure or natural disaster. Update plan annually!

Take Other Preventive Measures
Avoid using power outlets with built-in circuit switches. Use a safety-lock or an outlet cover. Post warning signs at the plug and on the refrigerator/freezer units. Label fuses and circuit breakers. Install a temperature alarm. Use water bottles and frozen coolant packs. Check door seals. Clean the coils and motor. Install back-up generators.

Required Temperature Ranges					
Fahrenheit	**Min**	**Max**	**Celsius**	**Min**	**Max**
Freezer	-58	5	**Freezer**	-50	-15
Refrigerator	36	46	**Refrigerator**	2	8

TABLE 3-1. Recommended and minimum ages and intervals between vaccine doses[a],[b],[c],[d]

Known as the "grace period", vaccine doses administered :::;4 days before the minimum interval or age are considered valid; however, local or state mandates might supersede this 4-day guideline

"3 calendar months" (or fewer) can be converted into weeks per the formula "1 month = 4 weeks"

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
DTaP-1[e]	2 months	6 weeks	8 weeks	4 weeks
DTaP-2	4 months	10 weeks	8 weeks	4 weeks
DTaP-3	6 months	14 weeks	6-12 months[f]	6 months[f]
DTaP-4	15-18 months	15 months[f]	3 years	6 months
DTaP-5[g]	4-6 years	4 years	—	—
HepA-1[e]	12-23 months	12 months	6-18 months	6 months
HepA-2	;;,18 months	18 months	—	—
HepB-1[h]	Birth	Birth	4 weeks-4 months	4 weeks
HepB-2	1-2 months	4 weeks	8 weeks-17 months	8 weeks
HepB-3[i]	6-18 months	24 weeks	—	—
Hib-1[j]	2 months	6 weeks	8 weeks	4 weeks
Hib-2	4 months	10 weeks	8 weeks	4 weeks
Hib-3[k]	6 months	14 weeks	6-9 months	8 weeks
Hib-4	12-15 months	12 months	—	—
HPV Two Dose Series[l]				
HPV-1	11-12 years	9 years	6 months	5 months
HPV-2	11-12 years (+6 months)	9 years + 5 months[m]	—	—
HPV Three Dose Series				
HPV-1[n]	11-12 years	9 years	1-2 months	4 weeks

TABLE 3-1. Recommended and minimum ages and intervals between vaccine doses[a],[b],[c],[d]

Known as the "grace period", vaccine doses administered :;;4 days before the minimum interval or age are considered valid; however, local or state mandates might supersede this 4-day guideline

“3 calendar months” (or fewer) can be converted into weeks per the formula “1 month = 4 weeks”

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
HPV-2	11-12 years (+1-2 months)	9 years (+4 weeks)	4 months	12 weeks[n]
HPV-3[n]	11-12 years (+6 months)	9 years (+5 months)	—	—
Influenza, inactivated[o]	❖6 months	6 months[p]	4 weeks	4 weeks
IPV-1[e]	2 months	6 weeks	8 weeks	4 weeks
IPV-2	4 months	10 weeks	8 weeks-14 months	4 weeks
IPV-3	6-18 months	14 weeks	3-5 years	6 months
IPV-4[q]	4-6 years	4 years	—	—
LAIV[o]	2-49 years	2 years	4 weeks	4 weeks
MenACWY-1[r]	11-12 years	2 months [s]	4-5 years	8 weeks
MenACWY-2	16 years	11 years (+8 weeks)[t]	—	—
MenB-1	Healthy adolescents: 16-23 years	16 years	Bexsero: 4 weeks Trumenba: 6 months[c]	Bexsero: 4 weeks Trumenba: 6 months[c]
	Persons at increased risk: ❖10 years	10 years	Bexsero: 4 weeks Trumenba: 1-2 months[c]	Bexsero: 4 weeks Trumenba: 1 month
MenB-2	Healthy adolescents: 16-23 years (+1 month)	16 years (+1 month)	—	—
	Persons at increased risk: ❖10 years (+1 month)	10 years (+1 month)	Bexsero: — Trumenba: 4-5 months[c]	Bexsero: — Trumenba: 4 months[c]

TABLE 3-1. Recommended and minimum ages and intervals between vaccine doses[a],[b],[c],[d]

Known as the "grace period", vaccine doses administered :::;4 days before the minimum interval or age are considered valid; however, local or state mandates might supersede this 4-day guideline

"3 calendar months" (or fewer) can be converted into weeks per the formula "1 month = 4 weeks"

Vaccine and dose number	Recommended age for this dose	Minimum age for this dose	Recommended interval to next dose	Minimum interval to next dose
MenB-3[u]	Persons at increased risk: ≥ 10 years (+ 6 months[c])	10 years (+ 6 months[c])	—	—
MMR-1[v]	12-15 months	12 months	3-5 years	4 weeks
MMR-2[v]	4-6 years	13 months	—	—
PCV13-1[j]	2 months	6 weeks	8 weeks	4 weeks
PCV13-2	4 months	10 weeks	8 weeks	4 weeks
PCV13-3	6 months	14 weeks	6 months	8 weeks
PCV13-4	12-15 months	12 months	—	—
PPSV-1	—	2 years	5 years	5 years
PPSV-2[w]	—	7 years	—	—
Rotavirus-1[x]	2 months	6 weeks	8 weeks	4 weeks
Rotavirus-2	4 months	10 weeks	8 weeks	4 weeks
Rotavirus-3[x]	6 months	14 weeks	—	—
Td	11-12 years	7 years	10 years	5 years
Tdap[y]	≥11 years	7 years	—	—
Varicella-1[v]	12-15 months	12 months	3-5 years	12 weeks[z]
Varicella-2[v]	4-6 years	15 months[aa]	—	—
RZV - 1	≥50 years	50 years[bb]	2-6 months	4 weeks
RZV - 2	≥50 years (+ 2-6 months)	50 years	—	—

Abbreviations: DTaP = diphtheria and tetanus toxoids and acellular pertussis; HepA = hepatitis A; HepB = hepatitis B; Hib = Haemophilus influenzae type b; HPV = human papillomavirus; IPV = inactivated poliovirus; LAIV = live, attenuated influenza vaccine; MenACWY = quadrivalent meningococcal conjugate vaccine; MenB = serogroup B meningococcal vaccine; MenB-4C = Bexsero; MenB-FHbp = Trumenba; MMR = measles, mumps, and rubella; MMRV = measles, mumps, rubella, and varicella; MPSV4 = quadrivalent meningococcal polysaccharide vaccine; PCV13 = pneumococcal conjugate vaccine; PPSV23= pneumococcal polysaccharide vaccine; PRP-OMP = polyribosylribitol phosphate-meningococcal outer membrane protein conjugate; RZV = recombinant zoster vaccine; Td = tetanus and diphtheria toxoids; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis.

[a] Combination vaccines are available. Use of licensed combination vaccines is generally preferred to separate injections of their equivalent component vaccines. When administering combination vaccines, the minimum age for administration is the oldest age for any of the individual components. The minimum interval between doses is equal to the greatest interval of any of the individual components.

[b] Information on travel vaccines, including typhoid, Japanese encephalitis, and yellow fever, is available at https://www.cdc.gov/travel. Information on other vaccines that are licensed in the United States but not distributed, including anthrax and smallpox, is available at http://emergency.cdc.gov/bioterrorism/ .

[c] "Months" refers to calendar months.

[d] Within a number range, a hyphen (-) should be read as "through."

[e] Combination vaccines containing the hepatitis B component are available (see Table 3-2). These vaccines should not be administered to infants aged <6 weeks because of the other vaccine components (i.e., Hib, DTaP, HepA, and IPV).

[f] The minimum recommended age for DTaP-4 is 15 months, with a recommended 6 months from DTaP-3 (the recommended interval between DTaP-3 and DTaP-4 is 6 months). However, DTaP4 need not be repeated if given on or after 12 months of age and at least 4 months after DTaP-3. The 4-day grace period can be applied when validating past doses and can be applied to the minimum age of 12 months and the minimum interval of 4 months between DTaP-3 and DTaP-4. The 4-day grace period can be used when planning doses ahead of time, but should be applied to the minimum age of 15 months and the minimum interval between DTaP-3 and DTaP-4 of 6 months.

[g] If a fourth dose of DTaP is given on or after the fourth birthday, a fifth dose is not needed if the interval between the third dose and fourth dose is at least 6 months.

[h] Adjuvanted Hepatitis B vaccine (HepB-CgG) can be administered to adults 18 years old and older on a two dose schedule, the first and second dose separated by 4 weeks.

[i] HepB-3 should be administered at least 8 weeks after HepB-2 and at least 16 weeks after HepB-1 and should not be administered before age 24 weeks.

[j] For Hib and PCV13, children receiving the first dose of vaccine at age '?7 months require fewer doses to complete the series.

[k] If PRP-OMP (Pedvax-Hib, Merck Vaccine Division) was administered at ages 2 and 4 months, a dose at age 6 months is not necessary. The final dose has a minimum age of 12 months.

[l] A two-dose schedule of HPV vaccine is recommended for most persons beginning the series between 9 through 14 years of age. See HPV vaccine-specific recommendations for details.
www.cdc.gov/mmwr/volumes/65/wr/pdfs/mm6549a5.pdf

[m] If a patient is eligible for a 2-dose HPV series, and the second dose is given less than four weeks after the first dose, it is an invalid dose. Administer another dose 6-12 months after the first dose. If the second dose is given less than five months after the first dose, but more than four weeks after the first dose, the next dose should be administered at least 12 weeks after the second dose, and at least 6-12 months after the first dose. The 4-day grace period may be used. If the third dose was administered before December 16, 2016, and was administered 12 weeks after the 2nd dose, and 16 weeks after the first dose, it is a valid dose. The 4-day grace period may be used. If the third dose was administered on or after December 16, 2016, and was administered 12 weeks after the 2nd dose and 5 months after the first dose, it is a valid dose. The 4-day grace period may be used.

[n] The minimum age for HPV-3 is based on the baseline minimum age for the first dose (i.e., 9 years) and the minimum interval of 5 months between the first and third dose. If the third dose was administered before December 16, 2016, and was administered 12 weeks after the 2nd dose, and 16 weeks after the first dose, it is a valid dose. The 4-day grace period may be used. If the third dose was administered on or after December 16, 2016, and was administered.

[o] One dose of influenza vaccine per season is recommended for most persons. To determine which children younger than 9 years should receive 2 doses in a single season, please see influenza vaccine-specific recommendations (*82*).

[p] The minimum age for inactivated influenza vaccine varies by vaccine manufacturer. See package insert for vaccine-specific minimum ages.

[q] A fourth dose is not needed if the third dose was administered at :24 years and at least 6 months after the previous dose.

[r] Revaccination with meningococcal vaccine is recommended for previously vaccinated persons who remain at high risk for meningococcal disease (*47*).

[s] MenACWY-D (Menactra) can be given as young as 9 months for high-risk persons. MenACWY-CRM (Menveo) can be given as young as 2 months for high-risk persons. Hib-MenCY can be given as young as 6 weeks for high-risk persons. Hib-MenCY is given as a 4-dose series at 2 months, 4 months, 6 months and 12-18 months. MenACWY-TT (MenQuadfi) can be given as young as 2 years for high-risk persons.

[t] For routine non-high risk adolescent vaccination, the minimum age for the booster dose is 16 years.

[u] This dose is not necessary if Bexsero is correctly administered, or if Trumenba is correctly administered to healthy adolescents.

[v] Combination MMRV vaccine can be used for children aged 12 months-12 years. See text for details.

[w] A second dose of PPSV23 5 years after the first dose is recommended for persons aged :::65 years at highest risk for serious pneumococcal infection and those who are likely to have a rapid decline in pneumococcal antibody concentration (*61*).

[x] The first dose of rotavirus must be administered at age 6 weeks through 14 weeks and 6 days. The vaccine series should not be started for infants aged :215 weeks, 0 days. Rotavirus should not be administered to children older than 8 months, 0 days of age regardless of the number of doses received between 6 weeks and 8 months, 0 days of age. If 2 doses of Rotarix (GlaxoSmithKline) are administered as age appropriate, a third dose is not necessary.

[y] Only 1 dose of Tdap is recommended. Subsequent doses should be given as Td or Tdap. For management of a tetanus-prone wound in persons who have received a primary series of tetanus-toxoid–containing vaccine, the minimum interval after a previous dose of any tetanus-containing vaccine is 5 years.

[z] A special grace period of 2 months, based on expert opinion, can be applied to the minimum interval of 3 months, when evaluating records retrospectively, which results in an acceptable minimum interval of 4 weeks. An additional 4 days should not be added on to this grace period.

[aa] A special grace period of 2 months, based on expert opinion, can be applied to the minimum age of 15 months when evaluating records retrospectively, which results in an acceptable minimum age of 13 months. An additional 4 days should not be added on to this grace period.

[bb] If a 1st dose of recombinant zoster vaccine is administered to someone 18 – 49 years of age, the dose does not need to be repeated. A 4 day grace period can be added to the absolute minimum age of 18 years when evaluating records retrospectively.

DTaP

Diphtheria, Tetanus, & Pertussis

Pathophysiology	**Diphtheria:** Bacteria Respiratory transmission Incubation 2-5 days **Tetanus:** Bacteria Enters the body through a wound Incubation3-21 days **Pertussis:** Bacteria Respiratory transmission Incubation 5-10 days
Vaccine Description	Inactivated polysaccharide vaccine, containing diphtheria toxoid, tetanus toxoid & acellular pertussis. **This vaccine is licensed for administration only to children 6 weeks through 6 years of age.** If child is 7 years of age or older, only Td and Tdap vaccines should be administered. (See Td/Tdap section of this booklet)
Dose & Route	0.5 mL given IM
Administration Schedule *Dose #4 may be administered at 12 months of age if separated by at least 6 months from Dose #3. Dose #4 does not need to be repeated if it has been inadvertently administered ≥ 4 months after Dose #3. The #5 Booster Dose is not needed if Dose #4 is given on or after the 4th birthday.	**Dose — Recommended Age** 1 2 months 2 4 months 3 6 months 4*..... ..15-18 months (1st booster dose) 5*..... …4-6 years (2nd booster dose) **Booster doses:** • *15-18 months of age • *4-6 years of age • 11-12 years of age o Tdap vaccine should be given as a booster at 11-12 years of age. Tdap may be administered regardless of the interval since the last tetanus-and diphtheria-toxoid-containing vaccine. (See Td/Tdap section of this booklet) o A dose of Tdap or DTaP administered at 10 years of age may now be counted as the adolescent Tdap booster. o A dose of Tdap or DTaP administered at 7 through 9 years of age should not be counted as the adolescent dose, and Tdap should be administered at 11-12 years of age. o Two diphtheria, tetanus, and acellular pertussis vaccines (Tdap) are licensed: o Boostrix™ for administration to persons 10 years of age and older o Adacel™ for administration to persons 10-64 years of age • Every 10 years thereafter for life o Td or Tdap vaccine should be given every 10 years after the administration of Tdap at 11-12 years of age. (See Td/Tdap section of this booklet)
Minimum Intervals	**Dose — Minimum Interval** 1… ..... 6 weeks of age 2 4 weeks from dose 1 3 4 weeks from dose 2 4*..... No less than 6 months from dose 3 5*..... No less than 6 months from dose 4

Contraindications	• Anaphylactic reaction to any of the vaccine components. • Life threatening allergic reaction after a previous dose of DTaP or DT (Pediatric diphtheria and tetanus vaccine which is used in lieu of DTaP only if there is a contraindication to pertussis vaccine.) • Encephalopathy within 7 days of a previous dose not attributable to another identifiable cause
Precautions	• Acute, moderate, or severe illness with or without fever. Immunize as soon as illness subsides. • Temperature of 105 degrees within 48 hours after a previous dose of DTP/DTaP Collapse or shock-like state within 48 hours after receiving a previous dose of DTP/DTaP • Persistent, inconsolable crying lasting >3 hours, occurring within 48 hours • Convulsions with or without fever occurring within 3 days
Special Situations	• Wound management in children less than age 7 years with history of 3 or more doses of tetanus-toxoid-containing vaccine: for all wounds except clean and minor wounds, administer DTaP if more than 5 years since last dose of tetanus-toxoid-containing vaccine

Td/Tdap

Tetanus, Diphtheria & Tetanus. Diphtheria and Pertussis

Pathophysiology	**Diphtheria:** Bacteria Respiratory transmission Incubation 2-5 days **Tetanus:** Bacteria Enters the body through a wound Incubation 3-21 days **Pertussis:** Bacteria Respiratory transmission Incubation 5-10 days
Vaccine Description	• Inactivated polysaccharide vaccine, containing diphtheria toxoid, tetanus toxoid & acellular pertussis • Two diphtheria, tetanus and acellular pertussis vaccines (Tdap) are licensed: o Boostrix™ for administration to persons 10 years of age and older o Adacel™ for administration to persons 10-64 years of age
Dose & Route	0.5 mL given IM
Administration Schedule Tdap can be administered regardless of interval since the last tetanus-or diphtheria-toxoid containing vaccine. *Fully vaccinated is defined as 5 doses of DTaP or 4 doses of DTaP if the fourth dose was administered on or after the fourth birthday and at least 6 months after the 3rd dose.	***Administration schedule for Td/ Tdap booster doses following a primary DTaP/Td series:**** • Adolescents 11-12 years: 1 dose Tdap ***Catch-up vaccination*** • Adolescents age 13-18 years who have not received Tdap: 1 dose Tdap, then Td or Tdap booster every 10 years • Persons age 7-18 years not fully vaccinated with DTaP: 1 dose Tdap as part of catch-up series (preferably the first dose); if additional doses are needed, use Td or Tdap • Children age 7-9 years who receive Tdap inadvertently or as part of the catch-up series should receive the routine Tdap dose at 11-12 years • Children age 10 years who receive Tdap do not need the routine Tdap dose at age 11-12 years • DTaP inadvertently given after the 7th birthday: Child age 7-9 years: DTaP may count as part of catch-up series; routine Tdap dose at 11-12 should be administered. Children age 10-18 years: count dose of DTaP as the adolescent Tdap booster **Dose Minimal Dose Intervals** 1 ..... 0 2… ..... 4 weeks after dose #1 3… ..... 6 months after dose #2

Adults aged 19 and older	***Administration Schedule for Td/ Tdap booster doses following a primary DTaP/Td series:**** • Td or Tdap should be given every 10 years following a dose of Tdap or for tetanus prophylaxis in wound management • Adults 19-64 years of age, especially those who have close contact with infants < 1 year of age, should receive a single dose of Tdap to replace a single dose of Td as a booster immunization if they have not already received Tdap. • Adults 65 years and older who have or anticipate having close contact with an infant aged less than 12 months should receive a single dose of Tdap. • Other adults 65 years and older may be given a single dose of Tdap.
Contraindications for Td and Tdap	**Td and Tdap:** • Anaphylactic reaction to any of the vaccine components. • Life threatening allergic reaction after a previous dose of DTP, DTaP, DT, Td or Tdap **Tdap:** • Encephalopathy not attributed to another identifiable cause within 7 days of a previous dose of a pertussis containing vaccine
Precautions	**Td, Tdap:** • Acute, moderate or severe illness with or without fever • Arthus-type hypersensitivity reactions • Guillain-Barré syndrome (GBS) within 6 wks. after a previous dose of tetanus toxoid containing vaccine **Tdap:** • Progressive neurological disorder, uncontrolled epilepsy, or progressive encephalopathy until treatment regimen has been established and condition stabilized
Special Considerations	**Pregnancy/Postpartum:** Pregnant women should receive a dose of Tdap during each pregnancy irrespective of their prior history of receiving Tdap. Optimal timing for Tdap administration is between 27 and 36 weeks of gestation for women not previously vaccinated with Tdap, If Tdap is not administered during pregnancy, Tdap should be administered immediately postpartum. **Wound management:** Wound management in persons age 7 years or older with history of 3 or more doses of tetanus-toxoid-containing vaccine: For clean and minor wounds, administer Tdap or Td if more than 10 years since last dose of tetanus-toxoid-containing vaccine; for all other wounds, administer Tdap or Td if more than 5 years since last dose of tetanus-toxoid-containing vaccine. Tdap is preferred for persons age 11 years or older who have not previously received Tdap or whose Tdap history is unknown. If a tetanus-toxoid-containing vaccine is indicated for a pregnant adolescent, use Tdap. For detailed information, see https://www.cdc.gov/mmwr/volumes/69/wr/mm6903a5.htm. **Simultaneous Administration:** • Tdap and MCV4 should be administered to adolescents 11-18 during the same visit if both vaccines are indicated and available.

DTaP, Tdap, and Td Catch-up Vaccination Recommendations by Prior Vaccine History and Age

This table summarizes the recommendations of CDC's Advisory Committee on Immunization Practices for the use of DTaP, Tdap, and Td in children, adolescents, and adults who are unvaccinated or who have fallen behind. The table includes the 2020 ACIP update which allows either Td or Tdap for the 10-year booster, and for catch-up doses for people that have already had at least one Tdap.

For use in infants and children through age 6 years — **DTaP** = Diphtheria and tetanus toxoids with acellular pertussis vaccine; **DT (pediatric)** = Diphtheria and tetanus toxoids (no pertussis)

For use in children age 7 years and older and adults — **Tdap** = Tetanus and diphtheria toxoids with acellular pertussis vaccine; **Td (adult)** = Tetanus and diphtheria toxoids

Current Age of Child or Adult	No. of Prior Documented Doses	Minimum Interval Between Doses of DTaP, Tdap, or Td Starting from the Most Recent Dose Given			
		dose 1 to dose 2	dose 2 to dose 3	dose 3 to dose 4	dose 4 to dose 5
4 months through 6 years	Unknown	4 weeks	4 weeks	6 months[1]	6 months[2]
	0	4 weeks	4 weeks	6 months[1]	6 months[2]
	1	4 weeks	4 weeks	6 months[1]	6 months[2]
	2		4 weeks	6 months[1]	6 months[2]
	3			6 months[1]	6 months[2]
	4				6 months[2]
7 through 18 years[3] or Adults age 19 years and older[4]	Unknown	4 weeks	6 months		
	0	4 weeks	6 months		
	1	4 weeks	4 weeks, if dose 1 given at younger than age 12 mos; 6 months if dose 1 given at age 12 mos or older	6 months, if dose 1 given at younger than age 12 mos	
	2		4 weeks, if dose 1 given at younger than age 12 mos; 6 months if dose 1 given at age 12 mos or older	6 months, if dose 1 given at younger than age 12 mos	
	3			6 months, if dose 1 given at younger than age 12 mos	

- Children ages 2 months through 6 years should receive DTaP; the pediatric product, DT, should only be used in children with a valid contraindication to the pertussis component.
- The routine schedule for administering DTaP to children is a 3-dose series at age 2, 4, and 6 months, followed by boosters at age 15–18 months and 4–6 years. The first booster may be given at age 12–15 months as long as there is an interval of at least 6 months from the preceding dose.
- Adults who have not completed a 3-dose primary series with Td-containing vaccine, including any doses received as children, should begin or complete a series with Tdap as the first dose administered.
- For children and adults who fall behind in completion of their vaccine series, there is no need to restart the series. Simply resume where they've left off.
- Products manufactured by different companies are interchangeable.
- All adults should receive 1 dose of Tdap, if they haven't previously received Tdap.
- Pregnant women should receive Tdap during each pregnancy, preferably during the early part of gestational weeks 27–36. Women who have never received Tdap and fail to receive it during their pregnancy should receive it immediately postpartum.
- Tdap can be given with no minimum interval since the previous tetanus toxoid-containing product (e.g., DTaP, Td).
- Patients with a history of pertussis should receive DTaP or Tdap according to routine recommendations.
- Patients needing prophylaxis against tetanus should be given DTaP, Tdap, or Td, as appropriate, unless there is a contraindication to the other vaccine components.
- Adults and adolescents who have received Tdap, should be given Td or Tdap as their subsequent 10-year booster doses.

footnotes

1. Infants should be no younger than age 12 months when receiving dose #4.
2. Dose 5 should be given no younger than age 4 years. Dose 5 is not necessary if dose 4 was given after age 4 years.
3. Children age 7 years or older with an incomplete history of DTaP should be given Tdap as the first dose in the catch-up series. If given at age 7 through 9 years, the routine Tdap dose at age 11–12 years should be given. If given at age 10 years, no additional dose is needed at age 11–12 years.
4. Adults of all ages who have never received Tdap as an adolescent or adult, or for whom vaccine status is unknown, should receive Tdap as their first dose, followed by Td or Tdap to either complete their primary series or as their 10-year boosters.

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www.immunize.org/catg.d/p2055.pdf · Item #P2055 (3/20)

Hib
***Haemophilus Influenzae* type B**

Pathophysiology	Bacteria Humans are the only known reservoir Respiratory transmission is presumed
Vaccine Description	Inactivated vaccine
Dose & Route	0.5 mL given IM
Administration Schedule	**Dose Recommended Age** 1 ..... 2 months2 4 months 3..... 6 months - ***If Pedvax HIB™ vaccines are used at 2 and 4 months of age, a dose at 6 months is not required.*** Booster..... 12-15 months – ***Depending on which vaccine is used for primary series*** ***Hiberix*** (Haemophilus b Conjugate Vaccine [Tetanus Toxoid Conjugate]) is now approved for use as a 3-dose infant primary vaccination series at ages 2, 4, and 6 months. The first dose may be given as early as 6 weeks of age. Hiberix is also approved for the Booster dose. Booster: One dose at 15 through 18 months of age
Minimum Intervals	**Dose Minimum Interval and Ages** 1..... Must be at least 6 weeks of age 2 ..... 4 weeks from dose 1 3..... 4 weeks from dose 2 - ***if dose 3 is required*** Booster**…** 8 weeks from dose 2 or dose 3, and no earlier than 12 months of age
Contraindications	• Anaphylactic reaction following a prior dose of Hib • Defer vaccination in children with moderate or severeacute illness until illness subsides. • Hib conjugate vaccines are contraindicated in childrenyounger than 6 weeks of age. • Persons known to have a severe allergic reaction toany component of the vaccine. • Hiberix prefilled syringes might contain natural rubber latex, and the vial stoppers for, ActHib, and PedvaxHIB contain natural rubber latex, which mightcause allergic reactions in persons who are latex-sensitive
Special Considerations The total number of doses required depends upon the age ofthe child at first dose (See ACIP recommendations)	• Pentacel (combination DTaP/IPV/Hib) can also be used to vaccinate children against Hib infection. • As with all pertussis-containing vaccines, benefits and risk should be considered before administering Pentacel to persons with a history of fever ≥105 degrees F, hypotonic-hyporesponsive episode, persistent inconsolable crying lasting ≥3 hours within 48 hours after receipt of a pertussis-containing vaccine, or seizures within 3 days after receiving a pertussis-containing vaccine.

ACIP-Recommended Haemophilus influenzae type b (Hib)
Routine Vaccine Schedule

Type	Vaccine	2 months	4 months	6 months	12-15 months
PRP-T	ActHIB	X (1st)	X (2nd)	X (3rd)	X
	Pentacel*	X (1st)	X (2nd)	X (3rd)	X
	Hiberix	X (1st)	X (2nd)	X (3rd)	X
PRP-OMP	PedvaxHIB	X (1st)	X (2nd)	—	X

***The recommended age for the 4th dose of Pentacel is 15-18 months, but it can be given as early as 12 months, provided at least 6 months have elapsed since the 3rd dose.**

Haemophilus influenzae type b Vaccine Detailed Schedule for Unvaccinated Children

Vaccine	Age at 1st Dose (months)	Primary series	Booster
PRP-T	2-6	3 doses, 8 weeks apart	12-15 months
	7-11	2 doses, 4 weeks apart	12-15 months
	12-14	1 dose	2 months later
	15-59	1 dose	--
PRP-OMP	2-6	2 doses, 8 weeks apart	12-15 months
	7-11	2 doses, 4 weeks apart	12-15 months
	12-14	1 dose	2 months later
	15-59	1 dose	--

HepA
Hepatitis A (HAV)

Pathophysiology	Virus Transmitted by fecal-oral route Incubation 15-50 days	
Vaccine Description	Inactivated whole virus vaccine	
Dose & Route Note: Both brands are produced in pediatric and adult formulations and are packaged as single dose vials or pre-filled syringes	**Havrix™** Pediatric (12 mos. through 18 years) Adult (≥19 years)	0.5 mL given IM 1 mL given IM
	Vaqta™ Pediatric (12 mos. through 18 years) Adult (≥19 years)	25 units given IM 50 units given IM
	Twinrix™ (HepA & HepB) Adult (≥18 years)	1 mL given IM
Administration Schedule & Minimum Intervals	**Havrix™**	2 doses 0, 6-12 months
	Vaqta™	2 doses 0, 6-18 months
	Twinrix™ (HepA & HepB)	3 doses 0, 1, 6 months
Contraindications Pregnancy is **NOT** a contraindication for Hep A vaccine	• Anaphylactic reaction following a prior dose of Hep A or to any of its components (alum, 2-phenoxyethanol) • Defer vaccination in persons with moderate or severe acute illness until illness subsides.	
Special Considerations & Instructions Required for children attending childcare facilities and schools.	• Recommended for all children 12-23 months of age. • International travel: infants age 6-11 months give 1 dose before departure; revaccinate with 2 doses, separated by 6-11 months between 12 to 23 months of age. Unvaccinated age 12 months and older give 1st dose as soon as travel considered • At risk groups: men who have sex with men, injection or non-injection drug use, homelessness, work with hepatitis A virus, chronic liver disease, clotting factor disorders, or contact with international adoptee • Post-exposure prophylaxis: Recommendation for PEP have been updated to include Hep A vaccine for all unvaccinated persons aged ≥ 12 months, regardless of risk group, and co-administration of IG when indicated. • Recommended that all persons with HIV aged ≥ 1 be vaccinated with Hep A vaccine	

HepB
Hepatitis B Vaccine

Pathophysiology	**Hepatitis B Virus (HBV)** Transmitted by parenteral or mucosal exposure to HBsAg-positive blood and body fluids Incubation 45-160 days
Vaccine Description	Recombinant hepatitis B vaccine
Dose & Route:	Intramuscular. Hepatitis B vaccine administered by any route or site other than IM in the anterolateral thigh or deltoid muscle should not be counted as valid.

Age Group	**Single-Antigen Vaccine**					**Combination Vaccine**			
	Recombivax HB		**Engerix-B**		**Heplisav-B**	**Pediarix**		**Twinrix**	
	Dose (mcg)[1]	**Volume (mL)**	**Dose (mcg)[1]**	**Volume (mL)**	**Volume (mL)**	**Dose (mcg)[1]**	**Volume (mL)**	**Dose (mcg)1**	**Volume (mL)**
Infants (<1 year)	5	0.5	10	0.5	N/A	10	0.5	N/A[6]	N/A
Children (1-10 years)	5	0.5	10	0.5	N/A	10	0.5	N/A	N/A
Adolescents **11-15 yrs**	10	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
11-19 yrs	5	0.5	20	1.0	0.5 (18-19 yrs)				
Adults (>20 years)	10	1.0	20	1.0	0.5	N/A	N/A	20	1.0
Hemodialysis patients and other immunocompromised persons **<20 yrs[§]**	5	0.5	10	N/A	0.5	N/A	N/A	N/A	N/A
≥20 yrs	40[4]	1.0	40[5]	N/A	0.5				
Adolescents and Adults (≥ 18 yrs)					0.5	N/A	N/A	N/A	N/A

Administration Schedule

Dose Recommended Age Minimum Interval
1..... Birth
*Monovalent HepB vaccine only
2……1-2 months .....4 weeks from dose 1
3……6-18 months .....At least 8 weeks after 2nd dose and at least 16 weeks after 1st dose and infants must be at least 24 weeks of age

- All children and adolescents < 19 years and not previously vaccinated with hepatitis B series based on shared clinical decision making should be vaccinated at the earliest opportunity.
- It is permissible to administer 4 doses of hepatitis B vaccine (e.g., when combination vaccines are given after the birth dose).
- Adolescents and adults (≥ 18 years) may receive a 2-dose series of Hep B (Heplisav-B) at least 4 weeks apart.
- Adults aged ≥ 20 years at risk for hepatitis B infection or lack a risk factor but want protection should receive 1 mL x 3 doses typically given at 0, 2 & 6 months.

Contraindications	• Anaphylactic reaction following a prior dose of HepB • Persons with hypersensitivity to yeast, yeast products or any vaccine component • Defer vaccination in persons with moderate or severe acute illness until illness subsides. • Prefilled syringes might contain natural rubber latex, which might cause allergic reactions in persons who are latex-sensitive
Special Instructions • **Perinatal HepB website: dph.georgia.gov/perinatal-hepatitis-b**	Infants born to hepatitis B positive (*HBsAg)* women must receive hepatitis B vaccine and hepatitis B immune globulin (HBIG) within 12 hours of birth regardless of birth weight. Intervention — Recommended Age 1st dose .....Birth (within 12 hours) HBIG .....Birth (within 12 hours) 2nd dose .....1-2 months 3rd dose..... 6 months PVT*..... …9-18 months *PVT: Post vaccination Test-includes Hepatitis B Surface Antigen/ HBsAg (infection) and Hepatitis B Surface Antibody/Anti-HBs (antibody protection) Protocol available in the Georgia Immunization Program Manual For infants weighing less than **2000 grams** at birth: • If the mother is *HBsAg negative*, the 1st dose should be given **at birth or at next doctor's visit** • If the mother is *HBsAg positive or her status is unknown*, the infant should receive the 1st dose within 12 hours of birth regardless of birth weight, dose #2 at age 1 month, dose #3 at 2-4 months, and dose #4 at age 6 months. The infant should be tested at 9-12 months of age for infection and antibody. If the mother is *HBsAg positive*, the infant should also receive HBIG at birth within 12 hours of birth.
Special Populations	• Chronic liver disease • Hepatitis C virus infection • Percutaneous or mucosal risk of exposure to blood • Adults younger than age 60 years with diabetes mellitus or 60 years or older with diabetes mellitus based on individual clinical decision • Adults in pre-dialysis care or receiving hemodialysis or peritoneal dialysis • Current or recent injection drug use • Health care and public safety workers at risk for exposure to blood-contaminated body fluids • Sexual exposure risk; persons seeking evaluation or treatment for a STI; and men who have sex with men • Adults receiving care in settings where a high proportion of adults have risk for hepatitis B infection such as STD treatment center, drug abuse treatment and prevention services, hemodialysis and end-stage renal disease programs, institutions for developmentally disabled persons, health care settings targeting services to injection drug users or MSM, HIV testing and treatment facilities, and correctional facilities • Travel to countries with high or intermediate hepatitis B endemicity

Human Papillomavirus Vaccine

Pathophysiology	Certain types of human papillomavirus can cause squamous cell cervical cancer, cervical adenocarcinoma, and genital warts.
Vaccine Description	9vHPV(Gardasil™) HPV types 6,11,16,18, 31, 33, 45, 52 and 58
Dose & Route	0.5 mL given intramuscularly
Administration Schedule & Minimum Intervals If the HPV vaccine schedule is interrupted, the vaccine series does not need to be restarted.	**2 Dose Schedule (**Persons initiating the 1st dose prior to their 15th birthday**)** **Dose** **Minimum Interval** Dose 1 ..... 0 Dose 2 .....…6-12 months (5 months minimal interval from dose-1) **3 Dose Schedule** (Persons initiating vaccine after their 15th birthday or immunocompromised persons) **Dose** **Minimum Interval** Dose 1 .....0 Dose 2 .....2 months after dose-1 (4 weeks) Dose 3 .....6 months after dose-1 (12 weeks minimal interval from dose-2 and 24 weeks from dose-1) • Also recommended for males and females ages 13 through 26 who did not receive the vaccine previously • May be given at the same visit with other vaccines • Should be given to persons with a previous history of HPV infection • recommended for gay and bisexual men • Recommended for men and women with compromised immune systems (including people living with HIV/AIDS) through age 26, if they did not get fully vaccinated when they were younger. • Can be given based on shared clinical decision making for males and females ages 27 through 45
Minimum Age	Minimum age for all HPV vaccine is 9 years.
Contraindications	Anaphylactic reaction to any vaccine component or to previous dose of vaccine

Precautions	• Not recommended for use in pregnant women • Not intended for treatment of active genital warts or cervical cancer • Moderate or severe acute illness with fever
Special Considerations **Remember there is a VIS just for HPV9.**	Vaccination in no way should replace: • routine, periodic cervical cancer screening • protective sexual behaviors • Syncope can occur after vaccination, most commonly among adolescents and young adults. To avoid serious injury related to syncope episode, observation for 15 minutes after administration is recommended. • HPV vaccines are most effective for both males and females when given before first exposure to HPV through sexual contact. • HPV vaccines are not recommended for use in pregnant women. However, pregnancy testing is not needed before vaccination. If a woman is found to be pregnant after initiating the vaccination series, no intervention is needed; the remainder of the 3-dose series should be delayed until completion of pregnancy.

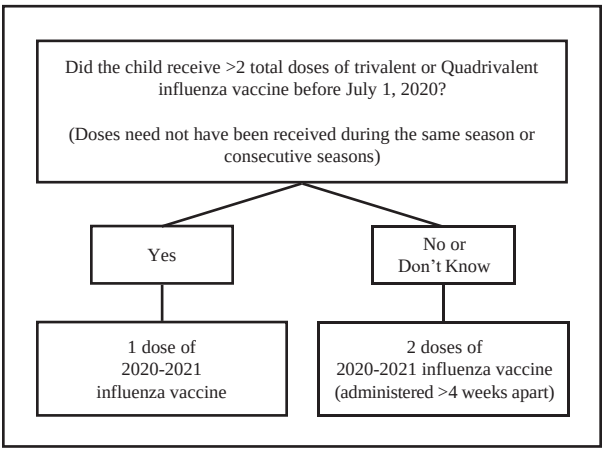
Influenza (IIV)
Inactivated Influenza Vaccine
Recombinant Influenza (RIV) and cell culture-based (ccIIV)

Pathophysiology	Virus Highly contagious Respiratory transmission Virus shed in respiratory secretions for 3-10 days
Vaccine Description	*IIV 3 -Trivalent*- Inactivated, split-virus vaccine composed of 3 virus strains two type A and one type B *IIV4 -Quadrivalent* -Inactivated, split-virus vaccine composed of 4 virus strains two types A and two type B *RIV3* – Recombinant influenza vaccine trivalent RIV4- Recombinant influenza vaccine quadrivalent *ccIIV4*- cell culture-based
Dose & Route	Administer an age-appropriate formulation and dose of influenza vaccine annually.
Brand Information	**Fluzone® sanofi-pasteur (IIV4) (0.25 mL)** Approved for persons 6 months through 35 months **Fluzone® sanofi-pasteur (IIV4) (0.5 mL)** Approved for persons 36 months and older **Fluzone High Dose® sanofi-pasteur (HD-IIV4) (0.0.7 mL)** Approved for persons 65 years and older **Afluria® Seqirus (IIV4) (0.25 mL)** Approved for persons 6 months through 35 months **Afluria® Seqirus (IIV4) (0.5 mL)** Approved for person 36 months and older **Fluarix™ GSK (IIV4) (0.5 mL)** Approved for persons 6 months of age and older **FluLaval ™ GSK (IIV4) (0.5 mL)** Approved for persons 6 months of age and older **Flublok® (RIV4) (0.5mL)** Approved for persons 18 years and older **Flucelvax® Seqirus (ccIIV4) (0.5 mL)** Approved for persons 4 years and older **Fluad™ Seqirus (aIIV3) (0.5 mL)** Approved for persons 65 years and older
Recommendations	Annual influenza vaccination is recommended for **all** people ages 6 months and older.
Contraindications	• Severe allergic reaction (e.g., anaphylaxis) after previous dose of any influenza vaccine or to a vaccine component, including egg protein. • Moderate or severe acute illness with or without fever. • History of Guillain-Barre Syndrome (GBS) within 6 weeks of previous influenza vaccination.
Special Considerations	• The best time to give influenza vaccine is October – November; however, influenza vaccine can be administered through May. • It takes approximately 2 weeks for influenza vaccine to be protective. Immunity from influenza vaccine rarely exceeds 1 year and the vaccine virus strains may vary each year.

Influenza (LAIV4)
Live Attenuated Influenza – FluMist Quadrivalent™

Pathophysiology	Virus Highly contagious Respiratory transmission Virus shed in respiratory secretions for 3-10 days
Vaccine Description	Live, attenuated, cold-adapted, 0.2ml intranasal quadrivalent vaccine composed of 4 virus strains - two type A and two type B
Dose & Route	0.2 mL dose (0.1 mL per nostril), sprayed into each nostril. If the vaccine recipient sneezes after administration, the dose should not be repeated. However, if nasal congestion is present that might impede delivery of the vaccine to the nasopharyngeal mucosa, deferral of administration should be considered until resolution of the illness, or IIV should be administered instead.
Brand Information	FluMist® AstraZeneca Approved for persons 2 years – 49 years of age
Recommendations	• Administer influenza vaccine annually to all children beginning at age 6 months. For most healthy, nonpregnant persons aged 2 through 49 years, either LAIV or IIV may be used. However, LAIV should NOT be administered to some persons, including 1) those with asthma, 2) children 2 through 4 years who had wheezing in the past 12 months, or 3) those who have any other underlying medical conditions that predispose them to influenza complications. • LAIV should be used for healthy children aged 2 through 8 years who have no contraindications or precautions.
Contraindications	• Moderate or severe acute illness with or without fever. • History of GBS within 6 weeks of previous influenza vaccination. • Receipt of specific antivirals (i.e., amantadine, rimantadine, zanamivir, or oseltamivir) 48 hours before vaccination. Avoid use of these antiviral drugs for 14 days after vaccination. • Persons aged <2 years or >49 years • Those with contraindications listed in the package insert • Children aged 2 through 17 years who are receiving aspirin or aspirin-containing products • Persons who have experienced severe allergic reactions to the vaccine or any of its components, or to a previous dose of any influenza vaccine • Pregnant women • Immunosuppressed persons • Persons with a history of egg allergy • Asthma in persons aged 5 years and older. • Children aged 2 through 4 years who have asthma or who have had a wheezing episode noted in the medical record within the past 12 months, or for whom parents report that a health care provider stated that they had wheezing or asthma within the last 12 months • Persons who have taken influenza antiviral medications within the previous 48 hours. • Persons who care for severely immunosuppressed persons who require a protective environment should not receive LAIV or should avoid contact with such persons for 7 days after receipt, given the theoretical risk for transmission of the live attenuated vaccine virus.
Precautions	• Persons of any age with asthma might be at increased risk for wheezing after administration of LAIV • Persons with other underlying medical conditions that might predispose them to complications after wild-type influenza infection (e.g., chronic pulmonary, cardiovascular [except isolated hypertension], renal, hepatic, neurologic, hematologic, or metabolic disorders [including diabetes mellitus] has not been established. These conditions, in addition to asthma in persons aged ≥5 years, should be considered precautions for the use of LAIV.
Special Considerations	• The best time to give influenza vaccine is October - November, however, influenza vaccine can be administered through May. http://www.cdc.gov/flu/pdf/freeresources/general/take3_step_vac.pdf • Immunity from influenza vaccine rarely exceeds 1 year and the vaccine virus strains may vary each year

Influenza vaccine dosing algorithm for children aged 6 months through 8 years
Advisory Committee on Immunization Practices, United States, 2020-2021 influenza season



As is the case for all vaccines, influenza vaccines contain various components that might cause allergic and anaphylactic reactions. Not all such reactions are related to egg proteins; however, the possibility of reactions to influenza vaccines in egg-allergic persons might be of concern to these persons and vaccine providers. Currently available influenza vaccines, with the exceptions of RIV4 (Flublok Quadrivalent, licensed for those aged ≥18 years) and ccIIV4 (Flucelvax Quadrivalent, licensed for those aged ≥4 years), are prepared by propagation of virus in embryonated eggs and might contain trace amounts of egg proteins, such as ovalbumin.

Severe allergic reactions to vaccines, although rare, can occur at any time, even in the absence of a history of previous allergic reaction. Therefore, all vaccine providers should be familiar with the office emergency plan and be certified in cardiopulmonary resuscitation. For persons who report a history of egg allergy, ACIP recommends the following:

- Persons with a history of egg allergy who have experienced only urticaria (hives) after exposure to egg should receive influenza vaccine. Any licensed, recommended influenza vaccine (i.e., any IIV, RIV4, or LAIV4) that is otherwise appropriate for the recipient's age and health status may be used.
- Persons who report having had reactions to egg involving symptoms other than urticaria (e.g., angioedema or swelling, respiratory distress, lightheadedness, or recurrent vomiting) or who required epinephrine or another emergency medical intervention may similarly receive any licensed, recommended influenza vaccine (i.e., any IIV, RIV4, or LAIV4) that is otherwise appropriate for their age and health status. If a vaccine other than ccIIV4 or RIV4 is used, the selected vaccine should be administered in an inpatient or outpatient medical setting (including but not necessarily limited to hospitals, clinics, health departments, and physician offices). Vaccine administration should be supervised by a health care provider who is able to recognize and manage severe allergic reactions.
- A previous severe allergic reaction to influenza vaccine, regardless of the component suspected of being responsible for the reaction, is a contraindication to future receipt of the vaccine.
- No postvaccination observation period is recommended specifically for egg-allergic persons. However, ACIP recommends that vaccine providers consider observing patients (seated or supine) for 15 minutes after administration of any vaccine to decrease the risk for injury should syncope occur.

Recommendations for flu vaccination of persons with egg allergy have not changed since the 2018-2019 flu season. CDC recommends:

- Persons with a history of egg allergy who have experienced only hives after exposure to egg should receive flu vaccine. Any licensed and recommended flu vaccine (i.e., any form of IIV or RIV) that is otherwise appropriate for the recipient's age and health status may be used.

- Persons who report having had reactions to egg involving symptoms other than hives, such as angioedema, respiratory distress, lightheadedness, or recurrent emesis; or who required epinephrine or another emergency medical intervention, may similarly receive any licensed and recommended flu vaccine (i.e., any form of IIV or RIV) that is otherwise appropriate for the recipient's age and health status. The selected vaccine should be administered in an inpatient or outpatient medical setting (including, but not necessarily limited to hospitals, clinics, health departments, and physician offices). Vaccine administration should be supervised by a health care provider who is able to recognize and manage severe allergic conditions.

- A previous severe allergic reaction to flu vaccine, regardless of the component suspected of being responsible for the reaction, is a contraindication to future receipt of the vaccine.

IPV
Inactivated Poliovirus

Pathophysiology	Virus Enters through the mouth Incubation 6-20 days
Vaccine Description	Inactivated poliovirus vaccine
Dose & Route	0.5 mL given subQ or IM
Administration Schedule	**Dose Recommended Age** 1 ..... 2 months 2 ..... 4 months 3… 6 - 18 months 4… 4-6 years
Final dose should be administered at ≥4 years of age regardless of the number of previous doses; the minimum interval from dose 3 to dose 4 is extended from 4 weeks to 6 months; the minimum interval from dose 1 to dose 2, and from dose 2 to dose 3, remains 4 weeks; the minimum age for dose 1 remains age 6 weeks. IPV is not routinely recommended for U.S. residents 18 years and older.	
Minimum Intervals	**Dose Minimum Interval and Ages** 1 …….6 weeks of age 2…….4 weeks from dose 1 3…….4 weeks from dose 2 4…….6 month from dose 3
Contraindications	• Anaphylactic reaction following a prior dose of IPV or to any of its components (neomycin, streptomycin, or Polymyxin B) • Defer vaccination in persons with moderate or severe acute illness until illness subsides
Special Considerations	• The combination vaccine Pediarix® (IPV, DTaP and Hep B) is ***approved for the first 3 doses*** of the IPV and DTaP series. • Pediarix® is not approved for booster doses nor indicated for children > 6 years of age • Pediarix® should not be used for infants younger than 6 weeks of age or children over 6 years of age. • Pentacel™ is approved for the primary series and first booster dose (doses 1-4). It is not indicated for children ≥ 5 years. • Kinrix™ is approved for the booster dose at age 4-6. Not to be administered to children aged < 4 years or ≥ 7 years. • Measles, mumps, rubella, varicella and hepatitis serology are listed as accepted evidence of immunity in both the current editions of Pink Book and Red Book. Neither resource makes any recommendation regarding accepting serology for polio as proof of immunity. The Georgia Immunization Program requires vaccination for polio immunity for attendance in Georgia childcare and school facilities.

Meningococcal Conjugate Vaccine B
(minimum age: 10 years)
MenB-4C, Bexsero; MenB-FHbp, Trumenba)

Pathophysiology	Bacteria
Vaccine Description	Inactivated conjugate vaccine, containing *Neisseria meningitidis serogroup B.*
Dose & Route	0.5 mL given IM
Administration	**Shared Clinical Decision-Making** **Adolescents not at increased risk age 16-23 years (preferred age 16-18 years) based on shared clinical decision-making:** • **Bexsero: 2-dose series at least 1 month apart** • **Trumenba: 2-dose series at least 6 months apart; if dose 2 is administered earlier than 6 months, administer a 3rd dose at least 4 months after dose 2** **Special Situations** **Anatomic or functional asplenia (including sickle cell disease), persistent complement component deficiency, complement inhibitor (e.g., eculizumab, ravulizumab) use, and microbiologists routinely exposed to Neisseria meningitidis:** • **Bexsero: 2-dose series at least 1 month apart** • **Trumenba: 3-dose series at 0, 1-2, 6 months** **MenB-4C and MenB-FHbp are not interchangeable (use same product for all doses in series); 1 dose MenB booster 1 year after primary series and revaccinate every 2-3 years if risk remains.** **Pregnancy: Delay MenB until after pregnancy unless at increased risk and vaccination benefits outweigh potential risk.** **For MenB booster dose recommendations for groups listed under "Special situations" and in an outbreak setting (e.g., in community or organizational settings and among men who have sex with men) and additional meningococcal vaccination information, see www.cdc.gov mmwr/volumes/69/rr/rr6909a1.htm**
Contraindications	Severe allergic reaction after a previous dose of Trumenba. Hypersensitivity, including severe allergic reaction, to any component of the vaccine, or after a previous dose of BEXSERO.
Precautions	The tip caps for of the pre-filled Bexsero syringes contain natural rubber latex which may cause allergic reactions in latex sensitive individuals.

Meningococcal Conjugate Vaccine (MenACWY)

Pathophysiology	Bacteria Direct contact with large droplet respiratory secretions transmission Incubation 3-7 days
Vaccine Description	Inactivated conjugate vaccine, containing *N. meningitidis* serogroups A, C, Y, and W-135 **Menactra®** Minimum age 9 months **Menveo®** Minimum age 2 months Bivalent meningococcal conjugate vaccine and Haemophilus influenza type b conjugate vaccine Hib-MenCY approved for use in ages 6 weeks through 18 months. MenQuadfi® Minimum age 2years
Dose & Route	0.5 mL given IM
Administration Schedule/Dose	Routine: 2-dose series at 11-12 years, 16 years Catch-up: Age 13-15 years 1-dose now and booster at age 16-18 years (minimum interval 8 weeks). Age 16-18 years 1-dose
Special Populations •For booster doses among persons with high-risk conditions refer to www.cdc.gov/mmwr/volumes/69/rr/rr6909a1.htm	• Anatomical or functional asplenia (including sickle cell disease) • HIV infection • Persistent complement component deficiency • Complement Inhibitor • Eculizumab or Ravulizumab use • Travel to or live in countries where meningococcal disease is hyperendemic or epidemic meningococcal disease, including countries in the African meningitis belt or during Hajj • At risk from a meningococcal disease outbreak attributed to serogroup A, C, W, or Y • Microbiologists routinely exposed to *Neisseria meningitidis*
Special Instructions	• MenACWY may be administered during pregnancy ifindicated. • Because vaccinees may develop syncope, sometimes resulting in falling with injury, observation for 15 minutes after administration is recommended. If syncope develops, patients should be observed until the symptoms resolve. • Menactra should be administered either before or at the same time as DTaP.

Routine Recommendations for Use of Meningococcal A,C,W,Y Vaccine (MenACWY)

This table covers routine vaccination of preteens and teens, as well as catch-up vaccination of teens and young adults.

Age of Patient	Vaccination History	Recommended MenACWY Schedule
Age 11 through 12 years	None	Give dose #1 of MenACWY.
Age 13 through 15 years	None	Give catch-up dose #1 of MenACWY.
Age 16 years	1 prior dose	Give dose #2 of MenACWY.
Age 16 through 18 years	None	Give 1 dose of MenACWY.
	1 prior dose when younger than 16 yrs	Give dose #2 of MenACWY.
Age 19 through 21 years	None, or 1 prior dose when younger than 16 yrs	Consider giving 1 dose of MenACWY.
First year college students living in residence halls	None, or 1 prior dose when younger than 16 yrs, or 1 prior dose since 16th birthday, but more than 5 yrs previously	Give 1 dose of MenACWY.

Risk-based Recommendations for Persons with Underlying Medical Conditions or Other Risk Factors

targeted group by age/or risk factor	primary dose(s)[1]	booster dose(s)[1]
Travelers to or residents of countries where meningococcal disease is hyperendemic or epidemic, people present during outbreaks caused by a vaccine serogroup,[2] and other people with prolonged increased risk for exposure (e.g., microbiologists routinely working with *Neisseria meningitidis*).		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose at age 12–18 months. If possible, vaccination should begin at age 2 months.	If primary vaccination is completed before the 7th birthday: give one booster dose 3 years after primary series, then every 5 years thereafter, as long as risk remains.[4] If primary vaccination is completed at age 7 years or older: give a booster dose every 5 years thereafter, as long as risk remains.
For age 7 through 23 months who have not initiated a series of MenACWY	If age 7–8 months, initiate 2-dose series of Menveo[3] or, if age 9–23 months, give either Menveo or Menactra.[4] Separate the 2 doses by at least 12 weeks.[5]	
For age 2 years and older	Give 1 dose of any MenACWY vaccine.[4]	
People with persistent complement component deficiencies[6]		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose at age 12–18 months. If possible, vaccination should begin at age 2 months.	If primary vaccination is completed before the 7th birthday: give one booster dose 3 years after primary series, then every 5 years thereafter, as long as risk remains.[4] If primary vaccination is completed at age 7 years or older: give a booster dose every 5 years thereafter, as long as risk remains.
For age 7 through 23 months who have not initiated a series of MenACWY	If age 7–8 months, initiate 2-dose series of Menveo[3] or, if age 9–23 months, give either Menveo or Menactra.[4] Separate the 2 doses by at least 12 weeks.	
For ages 2 years and older	Give 2 doses of MenACWY (any vaccine), 8 weeks apart.[4,7]	
People with HIV infection or functional or anatomic asplenia (including sickle cell disease)		
For age 2 through 6 months	Give 3 doses of Menveo, 8 weeks apart, and a 4th dose at age 12–18 months. If possible vaccination should begin at age 2 months.	If primary vaccination is completed before the 7th birthday: give one booster dose 3 years after primary series, then every 5 years thereafter.[4] If primary vaccination is completed at age 7 years or older: give a booster dose every 5 years thereafter.
For age 7 through 23 months who have not initiated a series of MenACWY-CRM	Give 2 doses of Menveo.[3] Separate the 2 doses by at least 12 weeks.	
For ages 2 years and older	Give 2 doses of MenACWY (any vaccine), 8 weeks apart. If using Menactra, give dose #1 at least 4 weeks after final dose of PCV13 [4,7]	

footnotes

1. If available, use the same vaccine product for all doses in the series given to infants, including the booster doses.
2. Seek advice of local public health authorities to determine if vaccination is recommended.
3. If initiating vaccination with Menveo in a child age 7 through 23 months, dose 2 should be given no younger than age 12 months.
4. If Menactra is to be administered to a child with increased risk for meningococcal disease, it should be given either before, at the same visit, or at least 6 months after DTaP. Menveo and MenQuadfi can be given at any time before or after DTaP.
5. If child age 7 through 23 months will enter an endemic area in less than 3 months, give doses as close as 2 months apart.
6. Persistent deficiency of complement components C3, CS-C , properdin, factor D, or factor H caused by an immune system disorder or by taking a complement inhibitor (Soliris [eculizumab] or Ultomiris [ravulizumab]).
7. f the person has a history of I dose of MenACWY at the time of diagnosis with a high-risk condition for which a 2-dose primary series is recommended, give dose 2, then boost every 5 years as long as risk remains.

MMR
Measles, Mumps, Rubella

Pathophysiology	Measles: Virus Respiratory transmission Incubation 10-12 days Mumps: Virus Respiratory transmission Incubation 14-18 days Rubella: Virus Respiratory transmission Incubation 12-23 days
Vaccine Description	Live attenuated vaccine
Dose & Route **Administration Schedule**	0.5 mL reconstituted vaccine given subQ **Dose Recommended Age** 1 ..... … 12 - 15 months (see Minimum Intervals below) 2 ..... … 4 - 6 years (see Minimum Intervals below)
Special Situations	International travel - infants age 6-11 months: 1 dose before departure; revaccinate with 2 doses at 12-15 months (12 months for children in high-risk areas) and dose 2 as early as 4 weeks later Unvaccinated children age 12 months and older: 2-dose series at least 4 weeks apart before departure
Minimum Intervals	**Dose Minimum Interval and Ages** 1 …… ***MUST*** be at least 12 months of age 2* …… At least 28 days after dose #1; usually given at 4-6 years of age. *Children who have received 2 doses of MMR with dose #1 no earlier than the 1st birthday and dose #2 at least 4 weeks after dose #1 do not need an additional dose for school entry.

Combination Vaccine Administration	• *See information on MMRV / Febrile Seizures • ProQuad® (MMRV) may be used to simultaneously administer MMR and varicella vaccine to children ages 12 mos. through 12 yrs. when both vaccines are indicated. • Spacing and timing of MMRV from individual component vaccines (MMR and varicella): o At least 1 month between a dose of a measles-containing vaccine and a dose of MMRV o At least 3 months between a dose of varicella vaccine and a dose of MMRV o However, if varicella vaccine and MMRV are inadvertently given at least 28 days apart, the doses may be counted as valid.
Contraindications	• Severe allergic reaction (e.g., anaphylaxis) after a previous dose or to a vaccine component. • Known severe immunodeficiency (e.g., from hematologic and solid tumors, receipt of chemotherapy, congenital immunodeficiency, or long-term immunosuppressive therapy or patients with HIV infection who are severely immunocompromised). • Pregnancy.
Precautions	• Moderate or severe acute illness with or without fever. • Recent (within 11 months) receipt of antibody-containing blood product (specific interval depends on product). • Refer to Tables 4 & 5 on page 67 & 68 as this varies depending on the blood product • History of thrombocytopenia or thrombocytopenic purpura. • Need for tuberculin skin testing.

Special Considerations & Instructions	• Vaccine should be stored in the refrigerator.
	• *Diluent* may be stored at room temperature.
	• For corticosteroid recipients: administration of MMR should be avoided for at least 1 month after cessation of high dose therapy (see Contraindications).
	• Pregnancy should be avoided for 1 month following MMR vaccine.
	• If PPD is needed and not given the same day as MMR, PPD testing should be delayed 4-6 weeks after MMR vaccination.
	• Vaccine must be used within 8 hours of reconstitution, kept refrigerated, and protected from exposure to light.
	• Mumps protection in a non-outbreak setting
	  ○ One dose of mumps-containing vaccine for pre-school children and non-high risk adults
	  ○ 2 doses of mumps-containing vaccine for children in grades K-12 (school requirement) and adults at high risk
	  ■ Persons working in health care facilities
	  ■ International travelers
	  ■ Students attending post-high school educational institutions
	  ○ Birth prior to 1957
	  ○ Laboratory evidence of immunity
	  ○ Documentation of provider-diagnosed disease is not considered acceptable evidence of immunity for measles, mumps, or rubella.
	• Mumps protection in an outbreak setting (depending on the epidemiology of the outbreak)
	  ○ Second dose of vaccine should be considered for adults.
	  ○ Two doses of vaccine for children ages 1-4 years of age if affected by the outbreak
	  ■ 1st dose should be administered at 12 months of age
	  ■ 2nd dose should be given 28 or more days after the 1st dose
	• At this time, children K-12 must be immunized with 2 doses of a measles-containing vaccine, 2 mumps, and 1 rubella, or provide laboratory evidence of immunity to measles, mumps, and rubella. This also applies to University System of Georgia students born in 1957 or later.

MMRV
Measles, Mumps, Rubella Varicella

Pathophysiology	Measles: Virus Respiratory transmission Incubation 10-12 days Mumps: Virus Respiratory transmission Incubation 14-18 days Rubella: Virus Respiratory transmission Incubation 12-23 days Varicella Zoster Virus: Respiratory transmission Incubation 14-16 days
Vaccine Description	Live attenuated vaccine
Dose & Route	0.5 mL reconstituted vaccine given subQ
Administration Schedule Publication of ACIP recommendations for administering this vaccine is found at http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5903a1.htm?s_cid=rr5903a1_e	**Dose** **Recommended Age** 1 ..... … 12 - 15 months* 2 ..... … 4 - 6 years** 3 ..... ≥ 12 months*** *MMRV vaccine may be administered to children 12 months through 12 years of age when all components of the vaccine are needed for completion of the vaccine series or when any single component of the vaccine series is not available at the time of immunization. **Children who received 2 doses of MMR with dose #1 no earlier than the 1st birthday and dose #2 at least 4 weeks after dose #1 do not need an additional dose for school entry. ***Persons ≥ 12 months who previously received ≤ 2 doses of mumps-containing vaccine and are identified by public health authorities to be at increased risk during a mumps outbreak should receive a dose of mumps-virus containing vaccine.
Minimum Intervals	• ProQuad® (MMRV) may be used to simultaneously administer MMR and varicella vaccine to children ages 12 mos. through 12 yrs. when both vaccines are indicated. • Spacing and timing of MMRV from individual component vaccines (MMR and varicella): o At least 1 month between a dose of a measles-containing vaccine and a dose of MMRV o At least 3 months between a dose of varicella vaccine and a dose of MMRV o However, if varicella vaccine and MMRV are inadvertently given ≥28 days or more apart, the doses may be counted as valid.

Contraindications	• Anaphylactic reaction following a prior dose of MMR, Varicella or to any of its components (gelatin or neomycin) • Immunosuppression • Recent recipient of blood products (See ACIP general recommendations for correct spacing) • Persons receiving large doses of corticosteroids (>2mg/kg per day or >20mg per day of prednisone) for 14 days or more • Pregnancy • Defer vaccination in persons with moderate or severe acute illness until illness subsides • TB - untreated, active • HIV Positive Children- **MMRV should not be administered to HIV infected children. Only single antigen varicella should be considered for HIV infected children in CDC class N2, A2 or B2 with CD4+ T-lymphocyte percentages ≥ 15%.** • Personal or family history of seizures is a precaution for MMRV vaccination.
Special Considerations & Instructions **MMRV and Febrile Seizures** http://www.cdc.gov/vaccines/vpd-vac/combo-vaccines/mmrv/vacopt-factsheet-hcp.pdf	• Vaccine must be stored frozen at 5º F. or colder. • Once reconstituted, vaccine should be discarded if not used within 30 minutes. • *Diluent* may be stored at room temperature or in the refrigerator. • For corticosteroid recipients: administration of MMRV should be avoided for at least 1 month after cessation of high dose therapy (see Contraindications). • Pregnancy should be avoided for 1 month following MMRV vaccine. • If PPD is needed and not given the same day as MMRV, PPD testing should be delayed 4-6 weeks after MMRV vaccination. • May be administered simultaneously with other vaccines recommended at ages 12 mos. through 12 yrs. **Dose 1 at Ages 12 through 47 Months** Either MMR and varicella or MMRV vaccine can be used. Providers should discuss the benefits and risks of both vaccination options with the parents or caregivers. Use of MMRV vaccine results in one fewer injection but is associated with a higher risk for fever/febrile seizures 5 through 12 days after the first dose among children aged 12 through 23 months. CDC recommends that MMR vaccine and varicella vaccine should be administered as separate injections for the first dose in children 12–47 months of age. **Dose 1 at Ages 48 Months and Older and Dose 2 at any Age: U**se of MMRV vaccine generally is preferred over separate injections of its equivalent component vaccines

Varicella
Chicken Pox Vaccine

Pathophysiology	Varicella Zoster Virus Respiratory transmission Incubation 14-16 days
Vaccine Description	Live attenuated vaccine
Dose & Route	0.5 mL reconstituted vaccine given subQ
Administration Schedule	**Dose** — **Recommended Age** 1 — 12 months - 15 months **2** — 4-6 years* ***The 2nd dose can be administered at an earlier age provided the interval between the 1st and 2nd dose is at least 3 months. If the 2nd dose is inadvertently given at least 28 days after the 1st dose, the 2nd dose does not need to be repeated**.
Catch-up Vaccination	Varicella vaccination is recommended for children who are older than 15 months of age and do not have evidence of immunity.
Minimum Intervals	**Minimum Age at Dose 1** — **Minimum Interval to Dose 2** 12 months — 3 mos. if Dose 1 given at <13 yrs. of age 1 mo. if Dose 1 given at ≥13 yrs. of age
Combination Vaccine Administration	ProQuad® (MMRV) may be used to simultaneously administer MMR and varicella vaccine to children ages 12 mos. through 12 yrs. when both vaccines are indicated. • Spacing and timing of MMRV from individual component vaccines (MMR and varicella): o At least 1 month between a dose of a measles-containing vaccine and a dose of MMRV o At least 3 months between a dose of varicella vaccine and a dose of MMRV o However, if varicella vaccine and MMRV are inadvertently given ≥28 days or more apart, the doses may be counted as valid.

Contraindications	• Anaphylactic reaction following a prior dose of Varicella (Varivax™) or to any of its components (gelatin or neomycin) • Immunosuppression • Recent recipient of antibody-containing blood products (Refer to *Recommended intervals between administration of immune globulin preparations and measles- or varicella-containing vaccine table after Varicella* in VACS FACTS) • Pregnancy • Defer vaccination in persons with moderate or severe acute illness until illness subsides • TB - untreated, active • Vaccination of persons who have severe illness should be postponed until recovery
Evidence of Immunity to Varicella	Documentation of age-appropriate varicella vaccination; • Preschool-age children (i.e., age 12 months through 3 years): 1 dose • School-age children, adolescents, adults: 2 doses • Laboratory evidence of immunity or laboratory confirmation of disease • Birth in the United States before 1980 (Should not be considered evidence of immunity for health care personnel, pregnant women, and **immunocompromised persons)** • Diagnosis or verification of a history of varicella or herpes zoster by a health care provider **To verify a history of varicella, health care providers should inquire about: an epidemiologic link to another typical varicella case or to a laboratory confirmed case, or evidence of laboratory confirmation, if testing was performed at the time of acute disease. Persons who have neither an epidemiologic link nor laboratory confirmation of varicella should not be considered as having a valid history of disease. For these persons, a second dose of vaccine is recommended if they previously received only one dose. If a health care provider verifies the diagnosis based on the above criteria, then vaccination is not needed.**

Special Considerations & Instructions	• Vaccine is very fragile and must be stored frozen (+5°F or -15°C or lower). • Reconstituted product must be used within 30 minutes. • Pregnancy should be avoided for 1 month following varicella vaccination. • Diluent may be stored at room temperature. • For corticosteroid recipients: administration of varicella should be avoided for at least 1 month after cessation of high dose therapy. • Treatment with low dose (<2mg/kg/day), alternate day, topical, replacement or aerosolized steroid preparations is *not a contraindication* to varicella vaccination. • For chemotherapy recipients: administration of varicella should be avoided for at least 3 months after chemo cessation. • Counsel varicella recipients: if a rash develops following vaccination, there is a possibility for these people to infect others but this is extremely rare. • HIV infections with CD4 count ≥ 200 µL with no evidence of immunity: vaccination may be considered (2 doses administered 3 months apart); VAR contraindicated in HIV infection with CD4 count < 200 cells /µL • Asymptomatic or mildly symptomatic HIV-infected children age ≥ 12 months with ***age-specific CD4+ T lymphocyte counts ≥ 15%*** and without evidence of varicella immunity should receive 2 doses of **single antigen** varicella vaccine 3 months apart. o *PROQUAD® should not be used in HIV infected children due to the difference in antigen composition.* • All students in Georgia schools must provide documentation of vaccination or immunity • Varicella vaccine administration is recommended as post-exposure prophylaxis for susceptible persons if given within 3-5 days of exposure to varicella disease.

Recommended intervals between administration of **antibody-containing products** and **measles-** or **varicella-containing vaccine**

Product / Indication	Dose (mg IgG/kg) and route[1]	Recommended interval before measles or varicella-containing[2] vaccine administration
Blood transfusion		
- Red blood cells (RBCs), washed	10 mL/kg (negligible IgG/kg) IV	None
- RBCs, adenine-saline added	10 mL/kg (10 mg IgG/kg) IV	3 months
- Packed RBCs (hematocrit 65%)[3]	10 mL/kg (60 mg IgG/kg) IV	6 months
- Whole blood (hematocrit 35%-50%)[3]	10 mL/kg (80-100 mg IgG/kg) IV	6 months
- Plasma/platelet products	10 mL/kg (160 mg IgG/kg) IV	7 months
Botulinum Immune Globulin Intravenous (Human)	1.0 mL/kg (50 mg IgG/kg) IV	6 months
Cytomegalovirus IGIV	150 mg/kg maximum	6 months
Hepatitis A IG		
- Contact prophylaxis	0.1 mL/kg (16.5 mg IgG/kg) IM	6 months[4]
- International travel, <1 month stay	0.1 mL/kg (16.5 mg IgG/kg) IM	6 months[4]
- International travel, ≥1 month stay	0.2 mL/kg (33 mg IgG/kg) IM	6 months[4]
Hepatitis B IG (HBIG)	0.06 mL/kg (10 mg IgG/kg) IM	3 months
IGIV		
- Replacement therapy for immune deficiencies[5]	300-400 mg/kg IV	8 months
- Postexposure measles prophylaxis: immunocompromised contacts	400 mg/kg IV	8 months
- Postexposure varicella prophylaxis	400 mg/kg IV	8 months
- Immune thrombocytopenic purpura treatment	400 mg/kg IV	8 months
- Immune thrombocytopenic purpura treatment	1,000 mg/kg IV	10 months
- Kawasaki disease	2 g/kg IV	11 months
Measles prophylaxis IG - Standard (i.e., nonimmunocompromised) contact	0.50 mL/kg (80 mg IgG/kg) IM	6 months
Monoclonal antibody to respiratory syncytial virus F protein (Synagis™)[6]	15 mg/kg (IM)	None
Rabies IG (RIG)	20 IU/kg (22 mg IgG/kg) IM	4 months
Tetanus IG (TIG)	250 units (10 mg IgG/kg) IM	3 months
Varicella IG (VariZIG)	125 units/10 kg (60-200 mg IgG/kg) IM, maximum 625 units	5 months

1 This table is not intended for determining the correct indications and dosages for using antibody-containing products. Unvaccinated persons might not be protected fully against measles during the entire recommended interval, and additional doses of IG or measles vaccine might be indicated after measles exposure. Concentrations of measles antibody in an IG preparation can vary by manufacturer's lot. Rates of antibody clearance after receipt of an IG preparation also might vary. Recommended intervals are extrapolated from an estimated half-life of 30 days for passively acquired antibody and an observed interference with the immune response to measles vaccine for 5 months after a dose of 80 mg IgG/kg.

2 Does not include zoster vaccine. Zoster vaccine may be given with antibody-containing blood products.

3 Assumes a serum IgG concentration of 16 mg/mL.

4 The reason the interval is 6 months (and not 4 months) is that the quantity of 16.5 IgG/kg does not reflect the upper ceiling of the quantity of measles IgG in the product.

5 Measles vaccination is recommended for children with mild or moderate immunosuppression from HIV infection, and varicella vaccination may be considered for children with mild or moderate immunosuppression from HIV infection, but both are contraindicated for persons with severe immunosuppression from HIV or any other immunosuppressive disorder.

6 Contains antibody only to respiratory syncytial virus.

Adapted from Table 3-5, ACIP General Best Practice Guidelines

Pediarix®
DTaP / Hep B / IPV

Pathophysiology	(See DTaP, Hepatitis B, and IPV cards)
Vaccine Description	Combined diphtheria and tetanus toxoids and acellular pertussis adsorbed (DTaP), Hepatitis B recombinant (Hep B), and inactivated polio virus vaccine (IPV)
Dose & Route	0.5 ml given IM
Administration Schedule* *Pediarix may only be used in children younger than age 7 years	**Dose Recommended Age** 1 ..... 2 months 2 ..... 4 months 3 ..... 6 months **Booster Doses** Pediarix® ***cannot be used for booster doses***. The DTaP series (doses #4 and #5) and the IPV series (dose #4) must be completed with single antigen vaccines
Minimum Intervals	**Dose Minimum Interval and Ages** 1 …… 6 weeks of age 2 …… 4 weeks after dose 1 (10 weeks of age) 3 …… 8 weeks after dose 2 *and* 16 weeks after dose 1 *and* at least 24 weeks of age
Contraindications	• Anaphylactic reaction following a prior dose of Pediarix® or any of its component vaccines • Hypersensitivity to any component of the vaccine including yeast, neomycin and polymyxin B • History of encephalopathy within 7 days of a previous dose of any pertussis-containing vaccines • Progressive neurologic disorder, including infantile spasms, uncontrolled epilepsy or progressive encephalopathy • Guillain-Barre` syndrome (GBS) within 6 weeks after a previous dose of tetanus toxoid-containing vaccine
Precautions	• Defer vaccination in children with moderate or severe acute illness until illness subsides • Precautions applying to any of the component vaccines • Latex sensitivity
Special Instructions	• ACIP continues to recommend the birth dose of single antigen Hep B vaccine and has approved Pediarix™ to complete the Hep B series regardless of the mother's HBsAg status, provided the minimal age and time intervals for Hep B are observed. • It is permissible to administer 4 doses of hepatitis B vaccine when Pediarix is used following a birth dose of hepatitis B vaccine. However, a dose of Hepatitis B vaccine must be administered on or after 24 weeks of age. • Pediarix™ may be given simultaneously with any other vaccine(s) at separate sites. • Pediarix™ can be used interchangeably if necessary with single antigen components (DTaP, IPV, Hep B) as long as minimal ages and intervals are observed.

Pentacel®
DTaP / Hib / IPV

Pathophysiology	(See DTaP, Hib, and IPV cards)
Vaccine Description	Combined diphtheria and tetanus toxoids and acellular pertussis adsorbed (DTaP), *Haemophilus Influenzae* type B (Hib), and inactivated polio virus vaccine (IPV)
Dose & Route	0.5 ml given IM
Administration Schedule*	**Dose Recommended Age** 1 .....2 months 2 .....4 months 3 .....6 months **Booster Doses** 15-18 months
Minimum Intervals	**Dose Minimum Interval and Ages** 1….....6 weeks of age 24 weeks after dose 1 (10 weeks of age) 34 weeks after dose 2 (14 weeks of age) 46 months after dose 3 (12 months of age)
Contraindications	• History of severe hypersensitivity to any component of the vaccine • History of serious allergic reaction to a previous dose of vaccine for any pertussis containing vaccine including Pentacel • Encephalopathy within 7 days of a previous dose of a pertussis containing vaccine that is not attributable to another identifiable cause • Progressive neurological disorder, including infantile spasms, uncontrolled epilepsy, progressive encephalopathy • For Polio vaccine (IPV) contraindicated if there is a life-threatening allergy to neomycin, Streptomycin or POLYMYXIN B. Because of uncertainty as to which ingredient of the vaccine may be responsible for a severe allergic reaction, none of the ingredients should be administered and they should be referred to an allergist for evaluation if further immunizations are considered.

Precautions	• Carefully consider benefits and risks before administering Pentacel to persons with a history of: - fever ≥40.5°C (≥105°F), hypotonic-hyporesponsive episode (HHE) or persistent, inconsolable crying lasting ≥3 hours within 48 hours after a previous pertussis-containing vaccine. - seizures within 3 days after a previous pertussis-containing vaccine. • If Guillain-Barré syndrome occurred within 6 weeks of receipt of a prior vaccine containing tetanus toxoid, the risk for Guillain-Barré syndrome may be increased following Pentacel. • For infants and children with a history of previous seizures, an antipyretic may be administered (in the dosage recommended in its prescribing information) at the time of vaccination with Pentacel and for the next 24 hours. • Apnea following intramuscular vaccination has been observed in some infants born prematurely. The decision about when to administer an intramuscular vaccine, including Pentacel, to an infant born prematurely should be based on consideration of the individual infant's medical status and the potential benefits and possible risks of vaccination.
Special Instructions	• Either Pentacel or single antigen Hib vaccine may be used at 12 through 15 months of age for children who are at increased risk of Hib disease or who have not completed a primary Hib schedule. • If Pentacel is administered at 12-15 months of age, a dose of DTaP at 15-18 months of age is not needed.

Prevnar13™
Pneumococcal Conjugate Vaccine (PCV13)

<table>
<tr><td>Pathophysiology</td><td colspan="3">Bacteria
Common inhabitant of the respiratory tract
Respiratory transmission: direct person-to-person via droplets or autoinoculation in persons carrying the bacteria in their upper respiratory tract.
Incubation period 1-3 days</td></tr>
<tr><td>Vaccine Description</td><td colspan="3">Inactivated vaccine that contains polysaccharide from 13 pneumococcal serotypes</td></tr>
<tr><td>Dose & Route</td><td colspan="3">0.5 mL given IM
(shake vial before drawing up)</td></tr>
<tr><td>Administration Schedule</td><td colspan="3">Routine schedule:
Dose Recommended Age
1 .....2 months
2 .....4 months
3 .....6 months
4 .....12-15 months (booster)

Catch-up schedule:
1-dose for healthy children age 24-59 months with any incomplete* PCV13 series

Shared Clinical Decision-Making
Age 65 years or older (immunocompetent):
1-dose PCV13 based on shared clinical decision-making if previously not administered.
-PCV13 and PPSV23 should not be administered during the same visit
-If both PCV13 and PPSV23 are to be administered, PCV13 should be administered first
-PCV13 and PPSV23 should be administered at least 1 year apart</td></tr>
<tr><td>Minimum Intervals</td><td colspan="3">Dose Minimum Interval and Ages
1 Must be at least 6 weeks of age
2 4 weeks from dose 1
3 .....4 weeks from dose 2
4 .....8 weeks from dose 3 (booster)</td></tr>
<tr><td>Schedule for Older Infants & Children</td><td>Age @ 1st Dose</td><td>Primary Series</td><td>Booster</td></tr>
<tr><td></td><td>7-11 months</td><td>2 doses</td><td>Yes-2 months after dose 2</td></tr>
<tr><td></td><td>12-23 months</td><td>2 doses at least 8 weeks apart</td><td>No</td></tr>
<tr><td></td><td colspan="3">24-59 Months</td></tr>
<tr><td></td><td>Healthy</td><td>1 dose</td><td>No</td></tr>
<tr><td></td><td colspan="3">24-71 months</td></tr>
<tr><td></td><td>High Risk*</td><td>2 doses at least 8 weeks apart</td><td>No</td></tr>
<tr><td></td><td colspan="3">6–18 years</td></tr>
<tr><td></td><td>High Risk*</td><td>1 dose</td><td>No</td></tr>
<tr><td>Special Situations:</td><td colspan="3">A single dose of PCV13 may be administered for</td></tr>
</table>

When both PCV13 and PPSV23 are indicated, administer PCV13 first. PCV13 and PPSV23 should not be administered during the same visit. Chronic heart disease (particularly cyanotic congenital heart disease and cardiac failure); chronic lung disease (including asthma treated with high-dose, oral corticosteroids); diabetes mellitus. Sickle cell disease and other hemoglobinopathies; anatomic or functional asplenia; congenital or acquired immunodeficiency; HIV infection; chronic renal failure; nephrotic syndrome; malignant neoplasms, leukemias, lymphomas, Hodgkin disease, and other diseases associated with treatment with immunosuppressive drugs or radiation therapy; solid organ transplantation; multiple myeloma	**children 6-18 years who have not received PCV13 previously and are increased risk for invasive pneumococcal disease.** ***Incomplete series=not having received all doses in either the recommended series or an age-appropriate catch-up series; see tables 8,9, and 11 in the ACIP pneumococcal vaccine recommendations (www.cdc.gov/mmwr/pdf/rr/rr5911.pdf) for complete schedule details.**
Contraindications	• Anaphylactic reaction following a prior dose of PCV13 • Defer vaccination in children with moderate or severe acute illness until illness subsides.
Special Considerations	• PCV13 is required for children younger than 5 years attending a childcare facility. • PCV13 and PPSV23 should not be administered at the same time; at least 2 mos. (8weeks) should separate the vaccine doses. • Children at high risk who received PCV13 should also receive PPSV23 at 2 yrs. of age. • PCV13 and DTaP should be administered in separate sites.

Pneumococcal Polysaccharide Vaccine (PPSV23)

Pathophysiology	Bacteria Common inhabitant of the respiratory tract Respiratory transmission: direct person-to-person via droplets or autoinoculation in persons carrying the bacteria in their upper respiratory tract. Incubation period 1-3 days.
Vaccine Description	Inactivated vaccine that contains polysaccharide from 23 pneumococcal serotypes. PPSV23 contains 12 of the serotypes included in PCV13, plus 11 additional serotypes,
Dose & Route	0.5 mL given IM or subQ
Recommendations	Recommended for: • Adults ≥ 65 years of age • Persons ≥ 2 years of age with high-risk medical conditions* *High risk conditions: • Chronic illness (chronic cardiovascular disease, chronic pulmonary disease, diabetes mellitus, alcoholism, chronic liver disease, CSF leaks) • Functional or anatomic asplenia (Sickle cell disease, splenectomy) • Living in special environments or social settings (residents of nursing homes or long-term care facilities) • Immunocompromised persons (HIV infection, leukemia, lymphoma, Hodgkin's disease, multiple myeloma, generalized malignancy, chronic renal failure, nephrotic syndrome, organ or bone marrow transplants, immunosuppressive chemotherapy and long-term corticosteroids) • Cochlear implant recipients • Asthma or those who smoke cigarettes 19-64 years
Administration Schedule	**Routine Vaccination:** • Age 65 years or older (immunocompetent): 1-dose PPSV23 • -If PPSV23 was administered prior to age 65 years, administer 1-dose PPSV23 at least 5 years after previous dose

Re-Vaccination	• One-time revaccination 5 years after the first dose is recommended for persons aged 19 through 64 years with chronic renal failure or nephrotic syndrome; functional or anatomic asplenia (e.g., sickle cell disease or splenectomy); and for persons with immunocompromising conditions. • No further doses are needed for persons vaccinated with PPSV23 at or after age 65 years.
Contraindications	• Anaphylactic reaction following a prior dose of vaccine or vaccine component • Defer vaccination in patients with moderate or severe acute illness until illness subsides
Special Considerations	• Refer to PCV13 / PPSV23 chart on the following page in VACS FACTS

Recommendations for 13-valent pneumococcal conjugate vaccine (PCV13) and 23-valent pneumococcal polysaccharide vaccine (PPSV23) among adults aged ≥19 years — Advisory Committee on Immunization Practices, United States, November 2019

Medical indication	Medical conditions	PCV13 for persons aged ≥19 years	PPSV23* for persons aged 19-64 years	PCV13 for persons aged ≥65 years	PPSV23 for persons aged ≥65 years
None	None of the below	No recommendation	No recommendation	Based on shared clinical decision-making†	1 dose; if PCV13 has been given, then give PPSV23 ≥1 year after PCV13
Immunocompetent	Alcoholism Chronic heart disease§ Chronic liver disease Chronic lung disease¶ Cigarette smoking Diabetes mellitus Cochlear implant CSF leak	No recommendation	1 dose	Based on shared clinical decision-making†	1 dose; if PCV13 has been given, then give PPSV23 ≥1 year after PCV13 and ≥5 years after any PPSV23 at age <65 years
Immunocompromised	Congenital or acquired asplenia Sickle cell disease/other hemoglobulinopathies Chronic renal failure Congenital or acquired immunodeficiencies** Generalized malignancy HIV infection Hodgkin disease Iatrogenic immunosuppression†† Leukemia Lymphoma Multiple myeloma Nephrotic syndrome Solid organ transplant	1 dose	2 doses, 1st dose ≥8 weeks after PCV13 and 2nd dose ≥5 years after first PPSV23 dose	1 dose if no previous PCV13 vaccination	1 dose ≥8 weeks after PCV13 and ≥5 years after any PPSV23 at <65 years

Abbreviations: CSF= cerebrospinal fluid; HIV human immunodeficiency virus.

***Only refers to adults aged 19-64 years. All adults aged ≥65 years should receive 1 dose of PPSV23 ≥5 years after any previous PPSV23 dose, regardless of previous history of vaccination with pneumococcal vaccine. No additional doses of PPSV23 should be administered following the dose administered at age ≥65 years.**

†**Recommendation that changed in 2019.**

§**Includes congestive heart failure and cardiomyopathies.**

¶**Includes chronic obstructive pulmonary disease, emphysema, and asthma.**

****Includes B- (humoral) or T-lymphocyte deficiency, complement deficiencies (particularly C1, C2, C3, and C4 deficiencies), and phagocytic disorders (excluding chronic granulomatous disease).**

††**Diseases requiring treatment with immunosuppressive drugs, including long-term systemic corticosteroids and radiation therapy.**

Rotavirus Vaccine

Pathophysiology	Virus Transmitted by fecal-oral route. However, transmission by fomites and respiratory route may also occur. Incubation 2-4 days
Vaccine Description	Live, oral pentavalent vaccine
Dose & Route	RotaTeq® (RV5) Three (3) 1-ml oral doses Rotarix® (RV1) Two (2) 1-ml oral doses
Administration Schedule & Minimum Intervals Note: If an incomplete dose is administered (i.e., infant spits or regurgitates vaccine), a replacement dose is not needed. Continue the series using the recommended intervals and complete before 33 weeks of age. Infants who have had rotavirus gastroenteritis before receiving the full course of rotavirus vaccinations should still initiate or complete the 3-dose schedule because the initial infection frequently provides only partial immunity.	**Recommended Schedule for Rotavirus Vaccines** Rotavirus vaccines are not to be started after 14 weeks, 6 days, and all doses are to be completed by 8 months. RotaTeq® Rotarix® **Dose** **Age** **Age** Primary 1 2 months 2 months Primary 2 4 months 4 months Primary 3 6 months 6 months Interchangeability of Rotavirus Vaccines ACIP recommends that the rotavirus vaccine series be completed with the same product whenever possible. However, vaccination should not be deferred if the product used for previous doses is not available or is unknown. In this situation, the provider should continue or complete the series with the product available. If any dose in the series was RotaTeq® or the manufacturer is unknown for any doses in the series, a total of three doses of rotavirus vaccine should be given.
Contraindications	Demonstrated hypersensitivity to any component of the vaccine

Precautions
 	
Note: The oral applicator of Rotarix® contains latex. Use precaution with infants with a previous hypersensitivity to latex.
	• Acute gastroenteritis
	• Moderate to severe illness
	• Preexisting chronic gastrointestinal disease
	• History of intussusception
	• Altered immunocompetence due to:
	  o Blood dyscrasias
	  o Immunosuppressive therapy
	  o Primary and acquired immunodeficiency such as HIV

Special Considerations	• Shedding of virus in the stool after vaccine administration is possible. Caution is advised when considering administration of vaccine to persons with immunocompromised household contacts. • Can be administered on same visit with other routinely recommended vaccines • No restrictions on infant's consumption of food or liquid, including breast milk, before or after receiving vaccine. • If an incomplete dose is administered (i.e., infant spits or regurgitates vaccine), a replacement dose is not recommended. Continue the series using intervals as outlined above. • Rotavirus may be administered at any time before, concurrent with, or after administration of any blood product including antibody containing product.

Recombinant Zoster Vaccine (RZV)
SHINGRIX®

Pathophysiology	• A manifestation of the reactivation of varicella zoster virus which, as a primary infection, produces chickenpox (varicella). Following initial infection, the virus remains latent in the dorsal root or cranial sensory ganglia until it reactivates, producing zoster. • Zoster is characterized by a unilateral, painful, vesicular cutaneous eruption with a dermatomal distribution.
Vaccine Description	Recombinant zoster vaccine, adjuvanted
Dose & Route	• 0.5 mL single dose unit given IM • Reconstituted with the accompanying vial of $ASO1_B$ adjuvanted suspension component
Administration Schedule & Minimum Intervals	**Dose Minimum Age** **1… .....50 years and older** **2… .....2 to 6 months after dose 1** • RZV is recommended for the prevention of herpes zoster and related complications for immunocompetent adults aged ≥ 50 years. • RZV is recommended for prevention of herpes zoster and related complications for immunocompetent adults who previously received zoster vaccine live (ZVL). • RZV may be used in adults aged ≥ is preferred over ZVL for the prevention of herpes zoster and related complications. • RZV may be used in adults aged ≥ 50 years irrespective of prior receipt of varicella vaccine or ZVL and does not require screening for a history of chickenpox (varicella).

Contraindications	• History of severe allergic reaction (e.g., anaphylaxis) to any component of the vaccine or after a previous dose of SHINGRIX
Precautions	• Moderate or severe acute illness
Special Considerations	• Consider delaying RZV until after pregnancy if RZV is otherwise indicated • Sever immunocompromising conditions (including HIV infection with CD4<200 cells/mm3): recommend use of RZV under review • This vaccine is not a substitute for varicella vaccine and should never be administered to children. • Not indicated for treatment of herpes zoster (shingles) or postherpetic neuralgia • The duration of protection after vaccination is unknown. • RZV is stored in the refrigerator at 36˚F to 46˚F (2˚C to 8˚C) • After reconstitution, administer immediately or store refrigerated and use within 6 hours. Discard reconstituted vaccine if not used within 6 hours.

Zoster Vaccine Live (ZVL)
Zostavax®

Pathophysiology	• A manifestation of the reactivation of varicella zoster virus which, as a primary infection, produces chickenpox (varicella). Following initial infection, the virus remains latent in the dorsal root or cranial sensory ganglia until it reactivates, producing zoster. • Zoster is characterized by a unilateral, painful, vesicular cutaneous eruption with a dermatomal distribution.
Vaccine Description	Live, attenuated virus vaccine
Dose & Route	0.65 mL single dose unit given subQ Reconstituted, lyophilized vaccine
Administration Schedule & Minimum Intervals	**Dose** **Minimum Age** 1 dose Age 60 and older* *A single dose of zoster vaccine live (ZVL) is recommended for adults aged 60 years and older regardless of whether they report a prior episode of herpes zoster. Although the vaccine is licensed by the Food and Drug Administration (FDA) for use among and can be administered to persons aged 50 years and older by private providers, ACIP recommends that vaccination begins at age 60. Persons aged 60 years and older with chronic medical conditions may be vaccinated unless their condition constitutes a contraindication, such as pregnancy or severe immunodeficiency.
Contraindications	• History of anaphylactic reaction to gelatin, neomycin, or other vaccine components • Immunosuppression, including that due to high-dose corticosteroid or other therapy A person who has a weakened immune system because of: o HIV/AIDS or another disease that affects the immune system o cancer treatment such as radiation or chemotherapy o cancer affecting the bone marrow or lymphatic system, such as leukemia or lymphoma • Women who are or might be pregnant

Precautions	• Moderate or severe acute illness with or without fever • Receipt of specific antivirals (i.e., acyclovir, famciclovir, or valacyclovir) 24 hours before vaccination, if possible; delay resumption of these antiviral drugs for 14 days after vaccination.
Special Considerations	• This vaccine is not a substitute for varicella vaccine and should never be administered to children. • Not indicated for treatment of herpes zoster (shingles) or postherpetic neuralgia • The duration of protection after vaccination is unknown. • Must be stored frozen at a temperature of 5^0F or colder • Must be used within 30 minutes of reconstitution or discarded; may not be refrozen after reconstitution

VAXELIS®

DTaP/ IPV/Hib/Hep B

Pathophysiology	See DTaP, IPV, Hib, and Hepatitis B cards
Vaccine Description	VAXELIS is a vaccine indicated for active immunization to prevent diphtheria, tetanus, pertussis, poliomyelitis, hepatitis B, and invasive disease due to Haemophilus influenzae type b. VAXELIS is approved for use as a 3-dose series in children from 6 weeks through 4 years of age (prior to the 5th birthday).
Dose & Route	0.5 mL IM injection
Administration Schedule	**Dose Recommended Age** 1 ..... 2 months 2 ..... 4 months 3 ..... 6 months
Minimum Intervals	**Dose Minimum Interval and Ages** 1 6 weeks of age 2 4 weeks after dose 1 (10 weeks of age) 3 8 weeks after dose 2 *and* 16 weeks afterdose 1 *and* at least 24 weeks of age
Contraindications	• Severe allergic reaction (e.g., anaphylaxis) to a previous dose of VAXELIS, any ingredient of VAXELIS, or any other diphtheria toxoid, tetanus toxoid, pertussis-containing vaccine, inactivated poliovirus vaccine, hepatitis B vaccine, or Haemophilus influenzae type b vaccine. • Encephalopathy within 7 days of a previous pertussis-containing vaccine with no other identifiable cause • Progressive neurologic disorder until a treatment regimen has been established and the condition has stabilized
Precautions	• Carefully consider benefits and risks before administering VAXELIS to persons with a history of: • Fever > 40.5°C (> 105° F), hypotonic-hyporesponsive episode (HHE) or persistent, inconsolable crying lasting > 3 hours within 48 hours after a previous pertussis-containing vaccine • Seizures within 3 days after a previous pertussis-containing vaccine • If Guillain-Barre' syndrome occurred within 6 weeks of receipt of a prior vaccine containing tetanus toxoid, the risk for GBS may be increased following VAXELIS • Apnea following intramuscular vaccination has been observed in some infants born prematurely should be based on consideration of the individual infant's medical status and the potential benefits and possible risks of vaccination • Urine antigen detection may not have definitive diagnostic value in suspected H. influenzae type b disease following vaccination with VAXELIS
Special Instructions	• VAXELIS should not be used for the fourth or fifth dose for the DTaP series. However, if VAXELIS is inadvertently given for either booster dose, the dose does not need to be repeated with another DTaP-containing vaccine when the proper spacing of previous doses maintained. • VAXELIS is not indicated for the fourth dose of the IPV series. However, if VAXELIS is inadvertently given for the booster dose, the dose does not need to be repeated with another IPV-containing vaccine when the proper spacing of previous doses is maintained. • VAXELIS is not licensed for the birth dose, but can be used for doses given at age > 6 weeks to infants of HBs Ag-negative mothers, HBs Ag-positive mothers, or HBs Ag status unknown. For adequate immune response, the last dose of HepB vaccine should be given at >24 weeks; therefore, the third dose of VAXELIS is not recommended to be given before age 24 weeks. If it is given earlier, an additional dose of HepB vaccine should be given at age > 24 weeks, maintaining proper spacing with previous dose. • Monovalent PRP-OMP Hib vaccines are licensed as a 2-dose primary series at ages 2 and 4 months. VAXELIS is licensed as a 3-dose primary series. Therefore, 3 doses of a Hib conjugate-containing vaccine are needed to complete the primary series if VAXELIS is used for any doses. VAXELIS should not be used for the booster dose (after completion of the 3-dose primary series). Any Hib conjugate vaccine licensed for a booster dose can be used, but if VAXELIS is inadvertently given for the booster dose, the dose does not need to be repeated when proper spacing of previous doses is maintained.