

**STANDARD
NURSE PROTOCOLS
FOR
PREVENTION OF
SEASONAL INFLUENZA**

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DEFINITION

Seasonal Influenza is a contagious respiratory illness caused by influenza viruses. It can cause mild to severe illness, and at times can lead to death. Every year in the United States, on average:

- 5% to 20% of the population gets seasonal influenza;
- more than 200,000 people are hospitalized from influenza-related complications; and
- about 36,000 people die from influenza-related causes.

Influenza viruses cause disease among persons in all age groups. Rates of infection are highest among children, but the risks for complications, hospitalizations, and deaths from influenza are higher among persons aged 65 years and older, young children, and persons of any age who have medical conditions that place them at increased risk for complications from influenza.

ETIOLOGY

There are two main types of influenza (flu) virus: Types A and B. There is also a C type; however it causes only mild upper respiratory illness, and is not associated with flu epidemics. Influenza A and B viruses are responsible for seasonal flu epidemics each year. Influenza A viruses can be broken down into sub-types. Over the course of a flu season, different types (A & B) and subtypes of influenza A viruses can circulate and cause illness. Influenza A viruses are divided into subtypes based on two proteins on the surface of the virus: the hemagglutinin (H) and the neuraminidase (N). There are 16 different hemagglutinin subtypes and 9 different neuraminidase subtypes, Influenza A viruses can be further broken down into different strains. The current subtypes of influenza A viruses found in people are A (H1N1) and A (H3N2).

In addition, influenza viruses are constantly changing through a process called "antigenic drift." These are small changes in the virus that happen continually over time. Antigenic drift produces new virus strains that may not be recognized by the body's immune system. This process works as follows: a person infected with a particular flu virus strain develops antibody against that virus. As newer virus strains appear, the antibodies against the older strains no longer recognize the "newer" virus, and re-infection can occur. This is the primary reason that people can get the flu more than once. In most years, one or two of the three virus strains in the influenza vaccine are updated to keep up with the changes in the circulating flu viruses. Therefore, in order to be protected from flu, individuals need to have a flu shot every year.

The other type of change that occurs in influenza viruses is called "antigenic shift." Antigenic shift is an abrupt, major change in the influenza A viruses, resulting in new hemagglutinin and/or new hemagglutinin and neuraminidase proteins in those influenza viruses that infect humans. Shift results in a new influenza A subtype. When shift happens, most people have little or no protection against the new virus. While influenza viruses are changing by antigenic drift all the time, antigenic shift happens only occasionally. Type A viruses undergo both kinds of changes; influenza type B viruses change only by the more gradual process of antigenic drift.

Influenza B viruses are not divided into subtypes. Influenza B viruses also can be further broken down into different strains.

Influenza A (H1N1), A (H3N2), and influenza B strains are included in this year's influenza vaccine.

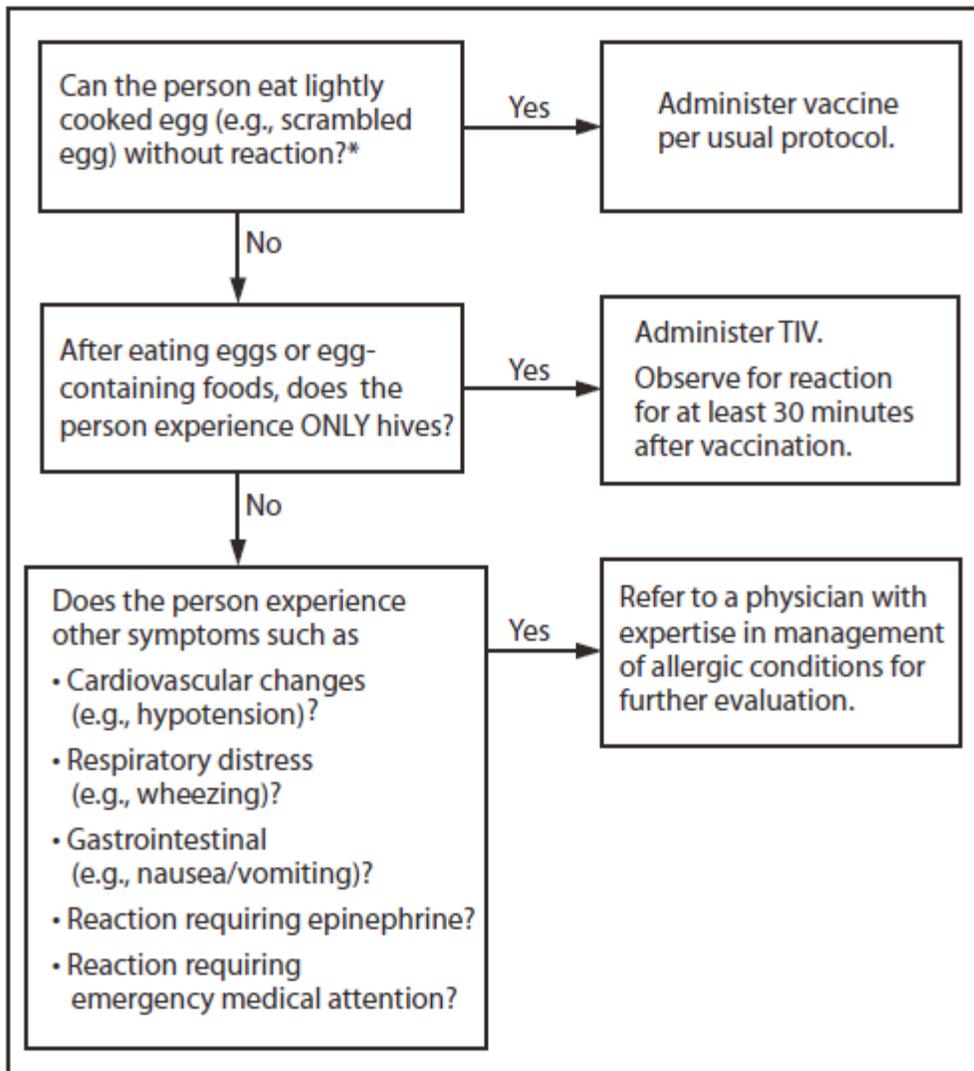
Influenza viruses are spread from person to person primarily through large-particle respiratory droplet transmission (e.g., when an infected person coughs or sneezes near a susceptible person). Transmission via large-particle droplets requires close contact between source and recipient persons, because droplets do not remain suspended in the air and generally travel only a short distance (less than or equal to 1 meter) through the air. Contact with respiratory-droplet contaminated surfaces is another possible source of transmission. Airborne transmission (via small-particle residue [less than or equal to 5µm] of evaporated droplets that might remain suspended in the air for long periods of time) also is thought to be possible, although data supporting airborne transmission are limited.

In the United States, annual epidemics of influenza typically occur during the fall or winter months, but the peak of influenza activity can occur as late as April or May.

**SUBJECTIVE/
OBJECTIVE**

1. May or may not report history of exposure to an individual known to have seasonal influenza.
2. Denies any allergies to eggs or egg products. (Refer to Figure 2).
3. Denies severe reaction to an influenza vaccination or components in vaccine such as thimerosal or any antibiotic used in the formulation.
4. Denies anaphylactic reaction to latex. Latex in some pre-filled syringes flu presentations (e.g., Fluzone, Fluzone High-Dose, Fluvirin and Fluarix).

FIGURE 2. Recommendations regarding influenza vaccination for persons who report allergy to eggs — Advisory Committee on Immunization Practices, United States, 2012–13 influenza season



Abbreviation: TIV = trivalent inactivated vaccine.

*** Persons with egg allergy might tolerate egg in baked products (e.g., bread or cake). Tolerance to egg-containing foods does not exclude the possibility of egg allergy.**

The figure above shows recommendations regarding influenza vaccination for persons who report a history of egg allergy, in the United States during the 2012-13 influenza season. Persons with a history of egg allergy who have experienced only hives after exposure to egg should receive influenza vaccine, with the use of additional safety measures.

For the 2012–13 influenza season, ACIP recommends the following:

1. Persons with a history of egg allergy who have experienced only hives after exposure to egg should receive influenza vaccine, with the following additional safety measures (Figure 2):

- a) Because studies published to date involved use of TIV, TIV rather than LAIV should be used;
- b) Vaccine should be administered by a health-care provider who is familiar with the potential manifestations of egg allergy; and
- c) Vaccine recipients should be observed for at least 30 minutes for signs of a reaction after administration of each vaccine dose.

Other measures, such as dividing and administering the vaccine by a two-step approach and skin testing with vaccine, are not necessary.

2. Persons who report having had reactions to egg involving such symptoms as angioedema, respiratory distress, lightheadedness, or recurrent emesis; or who required epinephrine or another emergency medical intervention, particularly those that occurred immediately or within a short time (minutes to hours) after egg exposure, are more likely to have a serious systemic or anaphylactic reaction upon reexposure to egg proteins. Before receipt of vaccine, such persons should be referred to a physician with expertise in the management of allergic conditions for further risk assessment (Figure 2).
3. All vaccines should be administered in settings in which personnel and equipment for rapid recognition and treatment of anaphylaxis are available. ACIP recommends that all vaccination providers should be familiar with the office emergency plan.
4. Some persons who report allergy to egg might not be egg-allergic. Those who are able to eat lightly cooked egg (e.g., scrambled egg) without reaction are unlikely to be allergic. Egg-allergic persons might tolerate egg in baked products (e.g., bread or cake). Tolerance to egg-containing foods does not exclude the possibility of egg allergy. Egg allergy can be confirmed by a consistent medical history of adverse reactions to eggs and egg-containing foods, plus skin and/ or blood testing for immunoglobulin E antibodies to egg proteins.
5. A previous severe allergic reaction to influenza vaccine, regardless of the component suspected to be responsible for the reaction, is a contraindication to future receipt of the vaccine.

CONTRAINDICATIONS/ PRECAUTIONS

Contraindications Trivalent Inactivated Influenza Vaccine (TIV)

- Moderate or severe illnesses with or without fever. Persons with moderate or severe illness should be immunized as soon as they have recovered from the acute phase of the illness. Minor illnesses (e.g., upper respiratory tract infection, allergic rhinitis) with or without fever should not contraindicate the use of influenza vaccine.

Contraindications specific to Live Attenuated Influenza Vaccine (LAIV¹)

- Persons with a history of hypersensitivity, including anaphylaxis, to any of the components of LAIV or to eggs. See Figure 2 for persons who report allergy to eggs.
- Moderate or severe illnesses with or without fever. Persons with moderate or severe illness should be immunized as soon as they have recovered from the acute phase of the illness. Minor illnesses (e.g., upper respiratory tract infection, allergic rhinitis) with or without fever should not contraindicate the use of influenza vaccine.
- Persons aged less than 2 years or those aged greater than or equal to 50 years.
- Persons with any of the underlying medical conditions that serve as an indication for routine influenza vaccination, including asthma, reactive airways disease, or other chronic disorders of the pulmonary or cardiovascular systems; other underlying medical conditions, including such metabolic diseases as diabetes, renal dysfunction, and hemoglobinopathies; or known or suspected immunodeficiency diseases or immunosuppressed states.
- Children aged 2-4 years whose parents or caregivers report that a health-care provider has told them during the preceding 12 months that their child had wheezing or asthma, or whose medical record indicates a wheezing episode has occurred during the preceding 12 months.
- Children or adolescents receiving aspirin or other salicylates (because of the association of Reye syndrome with wild-type influenza virus infection).
- Persons with a history of Guillain-Barré Syndrome (GBS) within six weeks after receiving influenza vaccination.
- Healthcare Providers, household/ close contacts of severely immunosuppressed persons requiring a protective environment.

Precautions (TIV or LAIV)

- History of GBS following influenza vaccination is a precaution for administering Trivalent Influenza Vaccine. Avoiding vaccinating persons who are known to have experienced GBS within 6 weeks after a previous influenza vaccination is prudent. Although data are limited, the established benefits of influenza vaccination might outweigh the risks for many persons who have a history of GBS and who are also at high risk for severe complications from influenza.
- Allergy to vaccine components. Anaphylactic reaction to the vaccine or a constituent of the vaccine (e.g. eggs, thimerosal, or any antibiotic used as a preservative). See package inserts for detailed list of components for each specific vaccine. See Figure 2 for persons who report allergy to eggs.
- The tip cap and rubber plunger of Fluarix, Fluzone, Fluzone High-Dose, and Fluvirin. pre-filled syringes contain dry natural latex rubber and may cause allergic reactions in latex sensitive individuals.
- Immunization should be delayed in a patient with an active neurologic disorder, but should be considered when the disease process has been stabilized.
- Centers for Disease Control and Prevention. Prevention and Control of Influenza.

¹ *Recommendations of the Advisory Committee on Immunization Practices (ACIP).*
MMWR July 31, 2009/Vol. 58, RR-08

ASSESSMENT No contraindications

Candidate for seasonal influenza vaccine.

PLAN The plan is focused on prevention of seasonal influenza.

MATERIALS NEEDED

- Needles
- Seasonal Influenza Vaccine
- Syringes
- Alcohol swabs
- Gloves
- Biohazard disposal container
- Hand hygiene supplies
- Emergency drugs, supplies and protocols
- Certified calibrated thermometer
- Cooler and cold packs
- VIS for influenza vaccine
- Patient Consent Forms
- Patient education materials

DIAGNOSTIC STUDIES

Rapid Test is not recommended. The focus should be on prevention.

THERAPEUTIC

PHARMACOLOGIC

Vaccination (Prevention)

The primary option for reducing the effect of influenza is immunoprophylaxis. Vaccinating persons at high risk for complications and their contacts each year before seasonal increases in influenza virus circulation is the most effective means of reducing effects of influenza. It is associated with reduction in influenza-related respiratory illness, hospitalization and death.

Administer seasonal influenza vaccine in accordance with the tables:

- Recommended Influenza Vaccine Schedule;
- Recommended Dosages & Intervals; and
- Recommended Dosage and Route.

Recommended Influenza Vaccine Schedule^{1, 2, 3, 4}

ACIP Routine influenza vaccination is recommended for all persons aged greater than or equal to 6 months.

¹To avoid missed opportunities for vaccination of persons at high risk for serious influenza complications, such persons should be offered vaccine beginning in September during routine health-care visits or during hospitalizations, if vaccine is available.

(Centers for Disease Control and Prevention. Prevention and Control of Influenza. Recommendations of the Advisory Committee on Immunization Practices (ACIP). MMWR, August 2, 2010/Vol. 59 No. RR-08)

² For more information on seasonal flu to <http://www.flu.gov/>.

³ If influenza antiviral medications are administered within 2 weeks after receipt of LAIV, the vaccine dose should be repeated 48 or more hours after the last dose of antiviral medication. Persons receiving antivirals within the period 2 days before to 14 days after vaccination with LAIV should be revaccinated at a later date with any approved vaccine formulation.

⁴ Pregnant and Postpartum Women

Vaccination of pregnant women protects women and newborns. The American College of Obstetricians and Gynecologists and the American Academy of Family Physicians also have previously recommended routine vaccination of all pregnant women. Women who are postpartum are also at risk for influenza complications and should be vaccinated. No preference is indicated for use of TIV that does not contain thimerosal as a preservative for any group recommended for vaccination, including pregnant and postpartum women. LAIV is not licensed for use in pregnant women, but postpartum women can receive LAIV or TIV. Pregnant and postpartum women do not need to avoid contact with persons recently vaccinated with LAIV. <http://www.cdc.gov/flu/professionals/acip/specificpopulations.htm>

* *Vaccines to Prevent Influenza*, Georgia Immunization Program Manual/Department of Public Health, Recommended Schedule and Guidelines---8/2011.

Recommended Doses & Intervals ^{6 7}					
Vaccine	Age Group	Dosage & Route	Number of Doses	Minimum Interval from dose 1 to 2	Pregnancy Category
Trivalent Inactivated Vaccine (TIV)					
Fluzone [®]	6-35 months	0.25 mL IM	1 or 2 ¹	28 days	C
	3 through 8 years	0.5 mL IM	1 or 2 ¹	28 days	
	Greater than or equal to 9 years	0.5 mL IM	1	-----	
Fluzone [®] High Dose	Greater than or equal to 65 years	0.5 mL IM	1	-----	
Fluzone Intradermal	18 through 64 years	Intradermal 0.1 mL	1	-----	B
Fluvirin ^{® 2}	4 through 8 years	0.5 mL IM	1 or 2 ¹	28 days	C
	Greater than or equal to 9 years	0.5 mL IM	1	-----	
Fluarix [®]	36 months and older	0.5 mL IM	1 or 2 ¹	28 days	B
Flulaval [®]	18 years of age and older	0.5 mL IM	1	-----	B
Afluria ^{® 3}	9 years of age and older	0.5 mL IM	1	-----	C
Live Attenuated Influenza Vaccine (LAIV)					
FluMist ^{® 4}	Greater than or equal to 24 months through 8 years	0.2 mL ⁵ Intranasal	1 or 2 ¹	28 days	Do not use in pregnancy
FluMist ^{® 4}	Greater than or equal to 9 years through 49 years of age	0.2 mL ⁵ intranasal	1	-----	

For administration instructions.

¹ **Children aged 6 months through 8 years need only 1 dose of vaccine in 2012–13 if they received a total of 2 or more doses of seasonal vaccine since July 1, 2010. Children who did not receive a total of 2 or more doses of seasonal vaccine since July 1, 2010, require 2 doses in 2012–13. See Figure 1.**

² Not licensed to be used in children less than 4 years of age.

³ The Advisory Committee on Immunization Practices recommends Afluria not be used in children aged 6 months through 8 years because of increased reports of febrile reactions in this age group.

⁴ Licensed for use only in healthy, nonpregnant persons 2 through 49 years of age. Children, 2-4 years, whose parents or caregivers report their child has had an asthma or wheezing episode noted in the medical record within the past 12 months should not receive Flumist.

⁵ Administer as 0.1 mL in each nostril.

⁶ All children ages 6 months to less than 8 years receiving the influenza vaccine for the first time and requiring 2 doses do not have to use the same type of vaccine for both doses. The first and second doses do not have to match; live or inactivated vaccine can be used for either dose. The doses should be separated by at least one month.

⁷ The ACIP does not have a preference for any influenza vaccine presentation or formula.

*See package insert on Fluzone Intradermal Influenza Vaccine at

<http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM195479.pdf>

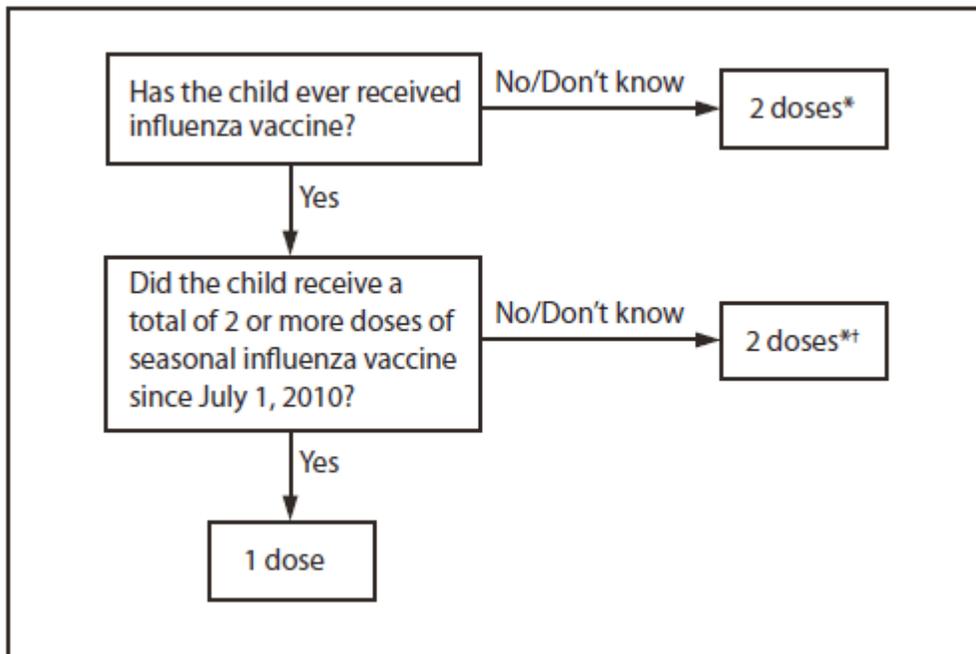
For administration instructions.

If a person reports a severe (anaphylactic) allergy to latex, vaccines supplied in vials or syringes that contain natural rubber should not be administered unless the benefit of vaccination outweighs the risk for a potential allergic reaction. The following 2012-2013 flu presentations have latex in the syringe tip cap: Fluzone, Fluzone High-Dose, Fluvirin and Fluarix.

Based on a thorough review of several recent studies, administration of both full doses and split doses of TIV have been tolerated by people with egg allergies, without serious reactions. The Advisory Committee on Immunization Practices (ACIP) now recommends that for the 2012-2013 influenza season, people who have experienced only hives from consuming eggs can receive TIV intramuscularly as long as they are treated by a health care provider who is familiar with the potential manifestations of egg allergies and can be observed by a health care professional for at least 30 minutes after receiving each dose.

Pregnancy Risk Categories	
A	Controlled studies in pregnant women fail to demonstrate a risk to the fetus in the first trimester with no evidence of risk in later trimesters. The possibility of fetal harm appears remote.
B	Either animal-reproduction studies have not demonstrated a fetal risk but there are not controlled studies in pregnant women, or animal-reproduction studies have shown an adverse effect (other than a decrease in fertility) that was not confirmed in controlled studies in women in the first trimester and there is no evidence in later trimesters.
C	Either studies in animals have revealed adverse effects on the fetus and there are no controlled studies in women, or studies in women and animals are not available. Drugs should be given only if the potential benefits justify the potential risk to the fetus.
D	There is positive evidence of human fetal risk, but the benefits from use in pregnant may be acceptable despite the risk (e.g., if the drug is needed in a life-threatening situation or for a serious disease for which safer drugs cannot be used or are ineffective).
X	Studies in animals or humans beings have demonstrated fetal abnormalities or there is evidence of fetal risk based on human experience, or both, and the risk of the use of the drug in pregnant women clearly outweighs any possible benefit. The drug is contraindicated in women who are or may become pregnant.

FIGURE 1. Influenza vaccine dosing algorithm for aged children 6 months through 8 years — Advisory Committee on Immunization Practices, United States, 2012–13 influenza season



* Doses should be administered at least 4 weeks apart.

† For simplicity, this algorithm takes into consideration only doses of seasonal influenza vaccine received since July 1, 2010. As an alternative approach in settings where vaccination history from before July 1, 2010, is available, if a child aged 6 months through 8 years is known to have received at least 2 seasonal influenza vaccines during any previous season, and at least 1 dose of a 2009(H1N1)-containing vaccine (i.e., either 2010–11 or 2011–12 seasonal vaccine or the monovalent 2009[H1N1] vaccine), then the child needs only 1 dose for 2012–13. Using this approach, children aged 6 months through 8 years need only 1 dose of vaccine in 2012–13 if they have received any of the following: 1) 2 or more doses of seasonal influenza vaccine since July 1, 2010; 2) 2 or more doses of seasonal influenza vaccine before July 1, 2010, and 1 or more doses of monovalent 2009(H1N1) vaccine; or 3) 1 or more doses of seasonal influenza vaccine before July 1, 2010, and 1 or more doses of seasonal influenza vaccine since July 1, 2010. Children for whom one of these conditions is not met require 2 doses in 2012–2013.

Recommended Dosage and Route

0.25 mL or 0.5 mL administered intramuscularly for TIV. For adults and older children, the recommended site of vaccinations is the deltoid muscle. The preferred site for infants and young children is the anterolateral aspect of the thigh. *

0.1mL administered intradermally for TIV**

0.2 mL administered intranasally for LAIV***

*Please refer to the Georgia Immunization Program Manual Chapter 13 (Quality Assurance- Attachment D) on vaccine administration recommendations for appropriate site and needle size.

**See package insert on Fluzone Intradermal Influenza Vaccine at <http://www.fda.gov/downloads/BiologicsBloodVaccines/Vaccines/ApprovedProducts/UCM195479.pdf> For administration instructions.

*** **NOTE:** Before using the nasal spray, gently blow your nose to clear the nostrils. 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 TIV should be administered instead.

Simultaneous Vaccine Administration

May be administered simultaneously with any of the following routinely recommended vaccines: DTaP, Tdap, Td, RV, MMR, Varicella, Hib, Hepatitis A, Hepatitis B, IPV, PPSV23, PCV13, HPV, Zoster, MCV4, and MPSV4

NOTE: See current ACIP statement regarding FluMist® and simultaneous administration with other vaccines. See package insert for the safety and immunogenicity of this practice.

CLIENT EDUCATION/COUNSELING

1. Provide the current Vaccine Information Sheet to the patient, guardian, or caretaker prior to immunization and answer any questions related to the vaccine prior to giving the immunization.
2. Emphasize that inactivated influenza vaccine contains noninfectious killed viruses and cannot cause influenza.
3. Coincidental respiratory disease unrelated to influenza vaccination can occur after vaccination.
4. If two doses are required to achieve immunity, arrange for information about need for second dose and stress importance of second dose of vaccine.
5. Stress the importance of hand hygiene.
6. Support staying at home if ill.

FOLLOW UP

Patients who do not have regularly scheduled visits during the fall should be reminded by mail, telephone or other means of the need for vaccination. Use the call back system on the immunization registry.

CONSULTATION/REFERRAL

1. Refer to physician for complications of influenza, and/or history of Guillain-Barré Syndrome.
2. **Refer to a physician with expertise in the management of allergic conditions for further risk assessment for persons who report having had reactions to egg involving angioedema, respiratory distress, lightheadedness, or recurrent emesis, or persons who required epinephrine or other emergency medical intervention, particularly those that occurred immediately or within minutes to hours after egg exposure are more likely to have a serious systemic or anaphylactic reaction upon re-exposure to egg proteins. Refer to Figure 2 on page 4 of protocol which shows recommendations regarding influenza vaccination for persons who report a history of egg allergy, in the United States during the 2012-13 influenza season. Persons with a history of egg allergy who have experienced only hives after exposure to egg should receive influenza vaccine, with the use of additional safety measures. (See Figure 2, pg. 4)**

REFERENCES

1. CDC, *Seasonal Influenza Information for Health Professionals*, <<http://www.cdc.gov/flu/professionals/index.htm>> (5/23/ 2011).
2. CDC, *Key Facts About Seasonal Influenza (Flu)*, <<http://www.cdc.gov/flu/keyfacts.htm>> (July 14, 2011).
3. Georgia Department of Community Health/Division of Public Health, *Georgia Immunization Program Manual, Immunization Program Guidelines - Vaccines to Prevent Influenza, Recommended Schedule and Guidelines*, June 2009 (8/27/09).
4. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*, MMWR, CDC, July 31, 2009, volume 58, No. RR-08,
5. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*, MMWR, August 6, 2010, Vol. 59. No.RR-8. < <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5908a1.htm>>
6. *Licensure of a High-Dose Inactivated Influenza Vaccine for Persons Aged ≥ 65 Years (Fluzone High-Dose) and Guidance for Use*, Weekly MMWR, April 30, 2010/ 59 (16): 485-486.
7. Intradermal Influenza (Flu) Vaccination <http://www.cdc.gov/flu/protect/vaccine/ga_intradermal-vaccine.htm>
8. *Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*, MMWR, August 18, 2011, Vol.60
9. ***“Prevention and Control of Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices (ACIP)-United States, 2012-13 Influenza Season, August 17, 2012, Vol. 61(No-32)***