



## Complete Summary

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### GUIDELINE TITLE

Prevention of influenza: recommendations for influenza immunization of children, 2008-2009.

### BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatrics Committee on Infectious Diseases. Prevention of influenza: recommendations for influenza immunization of children, 2008-2009. Pediatrics 2008 Nov;122(5):1135-41. [PubMed](#)

### GUIDELINE STATUS

This is the current release of the guideline.

All policy statements from the American Academy of Pediatrics automatically expire 5 years after publication unless reaffirmed, revised, or retired at or before that time.

## COMPLETE SUMMARY CONTENT

SCOPE  
METHODOLOGY - including Rating Scheme and Cost Analysis  
RECOMMENDATIONS  
EVIDENCE SUPPORTING THE RECOMMENDATIONS  
BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS  
CONTRAINDICATIONS  
IMPLEMENTATION OF THE GUIDELINE  
INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES  
IDENTIFYING INFORMATION AND AVAILABILITY  
DISCLAIMER

## SCOPE

### DISEASE/CONDITION(S)

Influenza

### GUIDELINE CATEGORY

Prevention

### CLINICAL SPECIALTY

Family Practice  
Infectious Diseases  
Pediatrics  
Preventive Medicine

### **INTENDED USERS**

Advanced Practice Nurses  
Nurses  
Physician Assistants  
Physicians  
Public Health Departments

### **GUIDELINE OBJECTIVE(S)**

To update the current recommendations for routine use of influenza vaccine in children and adolescents

### **TARGET POPULATION**

- All children, both healthy and with high-risk conditions, aged 6 months through 18 years
- Household contacts and out-of-home care providers of:
  - Children with high-risk conditions
  - Healthy children younger than 5 years of age
- Any female who will be pregnant during influenza season
- Health care professionals or volunteers
- Healthy contacts and caregivers of other children or adults at high risk of complications from influenza infection
- Close contacts of immunosuppressed people

### **INTERVENTIONS AND PRACTICES CONSIDERED**

Immunization with trivalent inactivated influenza vaccine or live-attenuated influenza vaccine, based on specified criteria

### **MAJOR OUTCOMES CONSIDERED**

- Incidence and prevalence of influenza virus infection in children and adolescents
- Incidence and prevalence of hospitalization from influenza virus in children and adolescents
- Incidence and prevalence of influenza-related death in children and adolescents
- Adverse effects associated with influenza vaccine

## **METHODOLOGY**

### **METHODS USED TO COLLECT/SELECT EVIDENCE**

Searches of Electronic Databases

**DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE**

Not stated

**NUMBER OF SOURCE DOCUMENTS**

Not stated

**METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE**

Not stated

**RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE**

Not applicable

**METHODS USED TO ANALYZE THE EVIDENCE**

Review

**DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE**

Not stated

**METHODS USED TO FORMULATE THE RECOMMENDATIONS**

Expert Consensus

**DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS**

This American Academy of Pediatrics (AAP) policy statement was prepared in parallel with Centers for Disease Control (CDC) recommendations and reports. Much of this statement is based on literature reviews, analyses of unpublished data, and deliberations of CDC staff in collaboration with the Advisory Committee on Immunization Practices Influenza Working Group, with liaison from the AAP.

**RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS**

Not applicable

**COST ANALYSIS**

A formal cost analysis was not performed and published cost analyses were not reviewed.

**METHOD OF GUIDELINE VALIDATION**

Not stated

## DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

## RECOMMENDATIONS

### MAJOR RECOMMENDATIONS

#### Introduction

The American Academy of Pediatrics (AAP) recommends annual influenza immunization for the following groups:

1. All children, both healthy and with high-risk conditions, aged 6 months through 18 years
2. Household contacts and out-of-home care providers of:
  - Children with high-risk conditions
  - Healthy children younger than 5 years of age
3. Any female who will be pregnant during influenza season
4. Health care professionals

#### Key Points Relevant for the 2008–2009 Influenza Season

1. The recommended age range of children for annual influenza immunization has been expanded to include all children 6 months through 18 years of age, which means vaccinating:
  - All children at higher risk for influenza complications (e.g., those with chronic medical conditions or immunosuppression)
  - All healthy children 6 through 59 months of age
  - All children 5 through 18 years of age, if feasible, in the 2008–2009 influenza season, but it should be routine no later than the 2009–2010 season

This expansion targets all school-aged children, the population that bears the greatest disease burden and is at significantly higher risk of needing influenza-related medical care compared with healthy adults. In addition, reducing influenza transmission among school-aged children will, in turn, reduce transmission of influenza to household contacts and community members.

2. Household members and out-of-home care providers of all children at high risk and adolescents and of all healthy children younger than 5 years also should receive influenza vaccine each year. Immunization of the close contacts of children at high risk is intended to reduce the risk of exposure to influenza for these young children, who are at serious risk of influenza infection, hospitalization, and complications. The risk of influenza-associated hospitalization in healthy children younger than 24 months has been shown to be equal to or greater than the risk in previously recognized high-risk groups. Children 24 through 59 months of age experience increased morbidity as a

- result of influenza illness, with increased rates of outpatient visits and antibiotic use. Infants younger than 6 months are too young to be immunized. Influenza vaccine has not been approved for use in infants younger than 6 months.
3. All children 6 months through 18 years of age, especially those at high risk of complications from influenza, should be identified, and their parents should be informed, when possible, that annual influenza immunization is due.
  4. On the basis of global surveillance of circulating influenza strains, all 3 strains in the 2008–2009 influenza vaccines are different from last year's strains.
  5. The number of influenza vaccine dose(s) to be administered is age dependent (see Figure 1 in the original guideline document):
    - Children 9 years and older who have not received the influenza vaccine previously need only 1 dose in their first season of immunization.
    - In contrast, any child younger than 9 years receiving an influenza vaccine for the first time should receive a second dose at least 4 weeks after the first.
    - Children younger than 9 years who received only 1 dose of influenza vaccine in the first season they were vaccinated should receive 2 doses of influenza vaccine the following season. This recommendation applies only to the influenza season that follows the first year that a child younger than 9 years receives influenza vaccine.
  6. The antiviral medications recommended for chemoprophylaxis or treatment (ie, oseltamivir or zanamivir) have not changed for the 2008–2009 influenza season. Health care professionals should not prescribe amantadine or rimantadine for influenza treatment or chemoprophylaxis because of widespread resistance to these antiviral medications that continues to exist among some circulating influenza A virus strains. Amantadine and rimantadine are not effective against influenza B strains. Although oseltamivir resistance has been reported, it is still very limited; therefore, current antiviral treatment recommendations have not changed.
  7. Influenza vaccine should be offered to all children as soon as vaccine is available. Immunization efforts should continue throughout the entire influenza season, even after influenza activity has been documented in a community. Influenza season often extends well into March and beyond (see Figure 2 in the original guideline document), and there may be more than 1 peak of activity in the same season. Thus, immunization through May 1 can still protect recipients during that particular season and also provide ample opportunity to administer a second dose of vaccine to children who require 2 doses in that season.
  8. Health care professionals, influenza campaign organizers, and public health agencies should cooperate to develop plans for expanding outreach and infrastructure to achieve the target immunization of all children 6 months through 18 years of age, beginning no later than the 2009–2010 influenza season. Concerted effort among the aforementioned groups, plus vaccine manufacturers, distributors, and payers, also is necessary to appropriately prioritize administration of influenza vaccine whenever vaccine supplies are delayed or limited.

## **Current Recommendations**

Influenza immunization is recommended for all children 6 months through 18 years of age. Healthy children aged 2 through 18 years can receive either trivalent inactivated influenza vaccine (TIV) or live-attenuated influenza vaccine (LAIV). Immunization efforts should continue to focus on (see Figure 1 in the original guideline document):

1. Use of TIV (not LAIV) for all children and adolescents with underlying medical conditions, including:
  - Asthma or other chronic pulmonary diseases, including cystic fibrosis
  - Hemodynamically significant cardiac disease
  - Immunosuppressive disorders or therapy
  - Human immunodeficiency virus (HIV) infection
  - Sickle cell anemia and other hemoglobinopathies
  - Diseases requiring long-term aspirin therapy, including juvenile idiopathic arthritis or Kawasaki disease
  - Chronic renal dysfunction
  - Chronic metabolic disease, including diabetes mellitus
  - Any condition that can compromise respiratory function or handling of secretions or can increase the risk for aspiration, such as cognitive dysfunction, spinal cord injuries, seizure disorders, or other neuromuscular disorders
2. Household contacts and out-of-home care providers of children younger than 5 years and at-risk children of all ages. Healthy contacts 2 through 49 years of age can receive either TIV or LAIV.
3. Any female who will be pregnant during influenza season (TIV only).
4. Health care professionals

In addition, immunization with either TIV or LAIV is recommended for the following people to prevent transmission of influenza to those at risk, unless contraindicated:

- Healthy contacts and caregivers of other children or adults at high risk of complications from influenza infection
- Close contacts of immunosuppressed people
- Health care professionals or volunteers

### **CLINICAL ALGORITHM(S)**

A clinical algorithm, "Influenza algorithm for determining recommended 2008–2009 influenza immunization actions for children," is provided in the original guideline document.

## **EVIDENCE SUPPORTING THE RECOMMENDATIONS**

### **TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS**

The type of evidence supporting the recommendations is not specifically stated. Much of this statement is based on literature reviews, analyses of unpublished data, and deliberations of Centers for Disease Control and Prevention (CDC) staff

in collaboration with the Advisory Committee on Immunization Practices Influenza Working Group, with liaison from the American Academy of Pediatrics.

## **BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS**

### **POTENTIAL BENEFITS**

- Appropriate use of the influenza vaccine in children for the 2008-2009 influenza season
- Reduction of influenza transmission among school-aged children, which will, in turn, reduce transmission of influenza to household contacts and community members

### **POTENTIAL HARMS**

- The most common symptoms associated with trivalent inactivated influenza vaccine (TIV) administration are soreness at the injection site and fever. Fever usually occurs within 24 hours after immunization and affects approximately 10% to 35% of children younger than 2 years; the frequency of fever after TIV injection is much lower in older children and adults. Mild systemic symptoms such as nausea, lethargy, headache, muscle aches, and chills also can occur with TIV injection.
- Live-attenuated influenza vaccine has the potential to produce mild signs or symptoms related to attenuated influenza virus infection, including fever.
- Concerns about the minute amounts of thimerosal in vaccines continue to be raised. There is no evidence that the incidence of autism spectrum disorders is higher among children who receive thimerosal-containing vaccines than among children who do not receive vaccines containing thimerosal. The benefits of protecting children against the known risks of influenza far outweigh the hypothetical risks associated with the minute amounts of thimerosal in some currently available forms of influenza vaccine, including the use of TIV in children at high risk with underlying central nervous system disorders.
- Live-attenuated influenza vaccine (LAIV) is not recommended for children with a history of asthma. In the 2- through 4-year-old age group, there are children who have a history of wheezing with respiratory tract illnesses felt to represent reactive airways disease, who later may have asthma diagnosed. Therefore, because of the potential for increased wheezing after immunization, children younger than 5 years with recurrent wheezing or a wheezing episode in the past 12 months should not receive LAIV.
- TIV is the influenza vaccine of choice for anyone in close contact with a person who is severely compromised (ie, in a protected environment). The preference of TIV over LAIV for these people is because of the theoretical risk of infection in an immunocompromised contact of an LAIV-immunized child. As a precautionary measure, recently vaccinated people should restrict contact with severely immunocompromised (ie, in a protected environment) patients for 7 days after LAIV immunization, although there have been no reports of LAIV transmission from a vaccinated person to an immunocompromised person. The strains of influenza in LAIV are susceptible to oseltamivir and zanamivir, although no data exist on treatment of symptomatic LAIV infections in immunocompromised hosts.

## CONTRAINDICATIONS

### CONTRAINDICATIONS

#### **Children Who Should Not Be Vaccinated With Trivalent Inactivated Influenza Vaccine**

- Those younger than 6 months
- Those who have a moderate-to-severe febrile illness
- Those who have a history of hypersensitivity, including anaphylaxis, to eggs, to any previous influenza vaccine dose, or to any of its components
- Those who have a past history of Guillain-Barré syndrome

#### **Children Who Should Not Be Vaccinated With Live-Attenuated Influenza Vaccine (LAIV)**

- Those younger than 2 years
- Those who have a moderate-to-severe febrile illness
- Those who have received other live vaccines within the last 4 weeks, although other live vaccines can be given on the same day as LAIV
- Those with asthma, reactive airways disease, or other chronic disorders of the pulmonary or cardiovascular systems
- Those with underlying medical conditions, including metabolic disease, diabetes mellitus, renal dysfunction, and hemoglobinopathies
- Those who have known or suspected immunodeficiency disease or who are receiving immunosuppressive therapies
- Those who are receiving aspirin or other salicylates
- Those who have a past history of Guillain-Barré syndrome
- Adolescents who are pregnant
- Those who have a history of hypersensitivity, including anaphylaxis, to eggs, to any previous influenza vaccine dose, or to any of its components
- Those with any condition that can compromise respiratory function or handling of secretions or can increase the risk for aspiration, such as cognitive dysfunction, spinal cord injuries, seizure disorders, or other neuromuscular disorders

## IMPLEMENTATION OF THE GUIDELINE

### DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

### IMPLEMENTATION TOOLS

Clinical Algorithm

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

## INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

### IOM CARE NEED

Staying Healthy

### IOM DOMAIN

Effectiveness

## IDENTIFYING INFORMATION AND AVAILABILITY

### BIBLIOGRAPHIC SOURCE(S)

American Academy of Pediatrics Committee on Infectious Diseases. Prevention of influenza: recommendations for influenza immunization of children, 2008-2009. *Pediatrics* 2008 Nov;122(5):1135-41. [PubMed](#)

### ADAPTATION

Not applicable: The guideline was not adapted from another source.

### DATE RELEASED

2007 Apr (revised 2008 Nov)

### GUIDELINE DEVELOPER(S)

American Academy of Pediatrics - Medical Specialty Society

### SOURCE(S) OF FUNDING

American Academy of Pediatrics

### GUIDELINE COMMITTEE

Committee on Infectious Diseases

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## **FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST**

Not stated

## **GUIDELINE STATUS**

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## **GUIDELINE AVAILABILITY**

Electronic copies: Available from the [American Academy of Pediatrics \(AAP\) Policy Web site](#).

Print copies: Available from American Academy of Pediatrics, 141 Northwest Point Blvd., P.O. Box 927, Elk Grove Village, IL 60009-0927.

## **AVAILABILITY OF COMPANION DOCUMENTS**

None available

## **PATIENT RESOURCES**

None available

## **NGC STATUS**

This NGC summary was completed by ECRI Institute on May 15, 2007. The information was verified by the guideline developer on May 23, 2007. This summary was updated by ECRI Institute on March 10, 2008 following the U.S. Food and Drug Administration (FDA) advisory on Tamiflu (oseltamivir phosphate). This summary was updated by ECRI Institute on April 9, 2008 following the U.S.

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