POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics
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Recommendations for Prevention and Control of Influenza in Children, 2021–2022

COMMITTEE ON INFECTIOUS DISEASES

American Academy of Pediatrics, Itasca, Illinois

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This statement updates the recommendations of the American Academy of Pediatrics for the routine use of influenza vaccine and antiviral medications in the prevention and treatment of influenza in children during the 2021–2022 influenza season. A detailed review of the evidence supporting these recommendations is published in the accompanying technical report.[1] The American Academy of Pediatrics recommends annual influenza immunization of all children without medical contraindications, starting at 6 months of age. Influenza vaccination is an important intervention to protect vulnerable populations and reduce the burden of respiratory illnesses during circulation of severe acute respiratory syndrome coronavirus 2, which is expected to continue during the 2021–2022 influenza season. Any licensed, recommended, age-appropriate vaccine available can be administered, without preference for one product or formulation over another. Antiviral treatment of influenza with any licensed, recommended, age-appropriate influenza antiviral medication is recommended for children with suspected or confirmed influenza who are hospitalized, have severe or progressive disease, or have underlying conditions that increase their risk of complications of influenza. Antiviral treatment may be considered for any previously healthy, symptomatic outpatient not at high risk for influenza complications, in whom an influenza diagnosis is confirmed or suspected, if treatment can be initiated within 48 hours of illness onset and for children whose siblings or household contacts either are younger than 6 months or have a high-risk condition that predisposes them to complications of influenza.

INTRODUCTION

Children consistently have the highest attack rates of influenza in the community during seasonal influenza epidemics. Children play a pivotal role in the transmission of influenza virus infection to household and other close contacts and can experience substantial morbidity, including severe or fatal complications from influenza infection.[2] Children younger than 5

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years, especially those younger than 2 years, and children with certain underlying medical conditions are at increased risk of hospitalization and complications attributable to influenza (Table 1).[2] School-aged children bear a large influenza disease burden and are more likely to seek influenza-related medical care compared with healthy adults.[2,3] Reducing influenza virus transmission among children decreases the burden of childhood influenza and transmission of influenza virus to household contacts and community members of all ages.[2,3] Influenza vaccination is particularly important during the severe acute respiratory syndrome coronavirus 2 pandemic to reduce the burden of respiratory illnesses and hospitalizations and preserve the capacity of the health care infrastructure. The American Academy of Pediatrics (AAP) recommends routine influenza vaccination and antiviral agents for the prevention and treatment of influenza in children, respectively. This policy statement summarizes updates and recommendations for the 2021–2022 influenza season. An accompanying technical report provides further detail regarding recent influenza seasons, influenza vaccine effectiveness (VE), detailed updates of inactivated influenza vaccines (IIVs) and live attenuated influenza vaccines (LAIVs), influenza vaccination coverage, vaccine implementation, and timing of vaccination and duration of protection.[1]

UPDATES FOR THE 2021–2022 INFLUENZA SEASON

1. All pediatric and adult seasonal influenza vaccines are quadrivalent. Trivalent vaccines are no longer expected to be available in the United States.
2. The composition of the influenza vaccines for 2021–2022 has been updated. The recommended influenza A(H1N1)pdm09 and A(H3N2) components of the vaccine are new for this season. The influenza B components are unchanged from the previous season.
3. The vaccine formulations available for children 6 through 35 months of age are unchanged from last season (Table 2). Afluria Quadrivalent is the only vaccine for children 6 through 35 months of age available in a dosing volume of 0.25-mL prefilled syringe. Fluzone Quadrivalent, which was previously available in a 0.25-mL and a 0.5-mL prefilled syringe, is only available in a 0.5-mL presentation for this age group. However, a 0.25-mL dose is still an approved option if drawn from a multidose vial. The presentation and approved dose for the 2 other vaccines available for this age group, Fluarix and FluLaval, is 0.5 mL.
4. The age indication for the cell culture–based IVV, Flucelvax Quadrivalent, has been extended to ages 2 years and older (previously indicated for 4 years and older), providing one more option for young children.
5. Any licensed, recommended, age-appropriate vaccine available can be administered, without preference for one product or formulation over another.
6. Children 6 months through 8 years of age who are receiving influenza vaccine for the first time, who have received only 1 dose ever before July 1, 2021, or whose

TABLE 1 People at High Risk of Influenza Complications

Children aged <5 y, and especially those aged <2 y,[a] regardless of the presence of underlying medical conditions
Adults aged ≥50 y, and especially those aged ≥65 y
Children and adults with chronic pulmonary (including asthma and cystic fibrosis), hemodynamically significant cardiovascular disease (except hypertension alone), or renal, hepatic, hematologic (including sickle cell disease and other hemoglobinopathies), or metabolic disorders (including diabetes mellitus)
Children and adults with immunosuppression attributable to any cause, including that caused by medications or by HIV infection
Children and adults with neurologic and neurodevelopment conditions (including disorders of the brain, spinal cord, peripheral nerve, and muscle, such as cerebral palsy, epilepsy, stroke, intellectual disability, moderate to severe developmental delay, muscular dystrophy, or spinal cord injury)
Children and adults with conditions that compromise respiratory function or handling of secretions (including tracheostomy and mechanical ventilation)[6]
Women who are pregnant or postpartum during the influenza season
Children and adolescents aged <19 y who are receiving long-term aspirin therapy or salicylate-containing medications (including those with Kawasaki disease and rheumatologic conditions) because of increased risk of Reye syndrome
American Indian and Alaska Native people[b]
Children and adults with obesity (ie, BMI ≥40 for adults and based on age for children)
Residents of chronic care facilities and nursing homes

Adapted from the Centers for Disease Control and Prevention. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices—United States, 2021–22 influenza season. *MMWR Recomm Rep.* 2021, In press.

[a] The Centers for Disease Control and Prevention recommendations state: Although all children younger than 5 years old are considered at higher risk for complications from influenza, the highest risk is for those younger than 2 years old, with the highest hospitalization and death rates among infants younger than 6 months old.

[b] American Indian and Alaska Native (AI and AN) children have a higher rate of influenza complications.[7–10] Most at-risk AI and AN children will also qualify in other high-risk categories to receive appropriate antiviral treatment. In the setting of a shortage, AI and AN children should be prioritized to receive influenza vaccine or antiviral medications, according to local public health guidelines.

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TABLE 2 Recommended Seasonal Influenza Vaccines for Different Age Groups: United States, 2021–2022 Influenza Season

Vaccine	Trade Name (Manufacturer)	Age Group	Presentation and Hemagglutinin Antigen Content (IIVs and RIV4) or Virus Count (LAIV4) per Dose for Each Antigen	Thimerosal Mercury Content (mg Hg/0.5-mL Dose)	CPT Code
Quadrivalent standard dose: egg-based vaccines					
IIV4	Afluria Quadrivalent (Seqirus)	6–35 mo	0.25-mL prefilled syringe (7.5 μg/0.25 mL)	0	90685
	Afluria Quadrivalent (Seqirus)	≥36 mo	0.5-mL prefilled syringe (15 μg/0.5 mL)	0	90686
	Afluria Quadrivalent (Seqirus)	≥6 mo	5.0-mL multidose vial[a] (15 μg/0.5 mL)	24.5	90687
	Fluarix Quadrivalent (GlaxoSmithKline)	≥6 mo	0.5-mL prefilled syringe (15 μg/0.5 mL)	0	90686
	FluLaval Quadrivalent (GlaxoSmithKline)	≥6 mo	0.5-mL prefilled syringe (15 μg/0.5 mL)	0	90686
	Fluzone Quadrivalent (Sanofi Pasteur)	≥6 mo	0.5-mL prefilled syringe (15 μg/0.5 mL) (0.25 mL no longer available)	0	90686
	Fluzone Quadrivalent (Sanofi Pasteur)	≥6 mo	0.5-mL single-dose vial (15 μg/0.5 mL)	0	90686
	Fluzone Quadrivalent (Sanofi Pasteur)	≥6 mo	5.0-mL multidose vial[a] (15 μg/0.5 mL)	25	90687
Quadrivalent standard dose: cell culture–based vaccines					
ccIIV4	Flucelvax Quadrivalent (Seqirus)	≥2 y	0.5-mL prefilled syringe (15 μg/0.5 mL)	0	90674
	Flucelvax Quadrivalent (Seqirus)	≥2 y	5.0-mL multidose vial[a] (15 μg/0.5 mL)	25	90756
Quadrivalent standard dose: egg-based with adjuvant vaccines					
aIIV4 MF-59 adjuvanted	Fluad Quadrivalent (Seqirus)	≥65 y	0.5-mL prefilled syringe ((15 μg/0.5 mL)	0	90653
Quadrivalent high dose: egg-based vaccine					
IIV4	Fluzone High Dose (Sanofi Pasteur)	≥65 y	0.7-mL prefilled syringe (60 μg/0.7 mL)	0	90662
Recombinant vaccine					
RIV4	Flublok Quadrivalent (Sanofi Pasteur)	≥18 y	0.5-mL prefilled syringe (45 μg/0.5 mL)	0	90682
Live attenuated vaccine					
LAIV4	FluMist Quadrivalent (AstraZeneca)	2–49 y	0.2-mL prefilled intranasal sprayer (Virus dose: 10 6.5–7.5 FFU/0.2 mL)	0	90672

Adapted from the Centers for Disease Control and Prevention. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP)—United States, 2021–2022 influenza season. *MMWR Recomm Rep.* 2021. In press. Table has been reformatted and updated. Implementation guidance on supply, pricing, payment, CPT coding, and liability issues can be found at www.aapredbook.org/implementation. aIIV4, quadrivalent adjuvanted inactivated influenza vaccine; ccIIV4, quadrivalent cell culture–based inactivated influenza vaccine; CPT, *Current Procedural Terminology*; FFU, fluorescent focus unit; LAIV4, quadrivalent live attenuated influenza vaccine; RIV4, quadrivalent recombinant influenza vaccine.

[a] For vaccines that include a multidose-vial presentation, a maximum of 10 doses can be drawn from a multidose vial.

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vaccination status is unknown should be offered vaccination as soon as influenza vaccines become available and should receive 2 doses of vaccine 4 weeks apart, ideally by the end of October (Fig 1). Children needing only 1 dose of influenza vaccine, regardless of age, should also receive vaccination ideally by the end of October. Data available to date on waning immunity do not support delaying vaccination in children.

7. Influenza vaccine may be administered simultaneously with or any time before or after administration of the currently available novel coronavirus disease 2019 (COVID-19) vaccines. Given that it is unknown whether reactogenicity of COVID-19 vaccines will be increased with coadministration of influenza vaccine, the reactogenicity profile of the vaccines should be considered, and providers should consult the most current Advisory Committee on Immunization Practices (ACIP)/AAP guidance regarding coadministration of COVID-19 vaccines with influenza vaccines.
8. Children with acute moderate or severe COVID-19 should not receive influenza vaccine until they have recovered; children with mild illness may be vaccinated.
9. The language on contraindications for IIV and LAIV has been updated to harmonize with recommendations of the ACIP and package inserts. A documented previous severe reaction to any IIV or LAIV is a contraindication to vaccination with IIV or LAIV.
10. The importance of influenza vaccination during the severe acute respiratory syndrome coronavirus 2 pandemic is emphasized.

HIGH-RISK GROUPS IN PEDIATRICS

Children and adolescents with certain underlying medical conditions have a high risk of complications from influenza (Table 1). Although universal influenza vaccination is recommended for everyone starting at 6 months of age, emphasis should be placed in ensuring that high-risk and vulnerable children and their household contacts and caregivers receive annual influenza vaccine.

SEASONAL INFLUENZA VACCINES

The seasonal influenza vaccines licensed for children and adults for the 2021–2022 season are shown in Table 2. More than one product may be appropriate for a given patient, and vaccination should not be delayed to obtain a specific product.

All 2021–2022 seasonal influenza vaccines will be quadrivalent and contain the same influenza strains as recommended by the World Health Organization and the US Food and Drug Administration Vaccines and Related Biological Products Advisory Committee for the Northern Hemisphere.[4,5] Both influenza A(H1N1) and A(H3N2) components are different in this

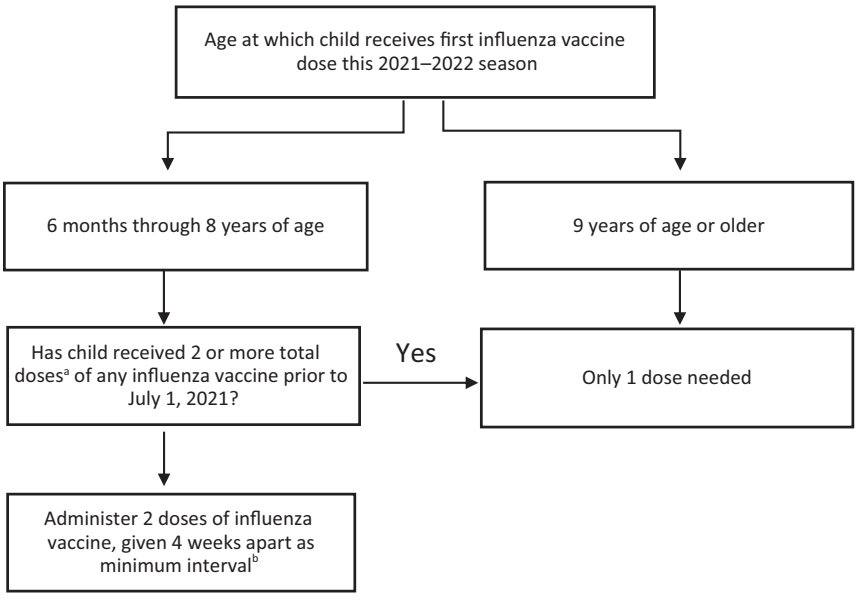

FIGURE 1 Number of 2021–2022 seasonal influenza vaccine doses for children based on age and previous vaccination history. [a] The 2 doses need not have been received during the same season or consecutive seasons. [b] Administer 2 doses based on age at receipt of the first dose of influenza vaccine during the season. Children who receive the first dose before their ninth birthday should receive 2 doses, even if they turn 9 years old during the same season.

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season's vaccine. The B components are unchanged. The influenza A strains may be different for egg-based versus cell- or recombinant-based vaccines on the basis of their optimal characteristics for each platform, but all are matched to the strains expected to circulate in the 2021–2022 season.

1. Quadrivalent vaccines contain:
   a. influenza A(H1N1) component:
      i. egg-based vaccines: A/Victoria/2570/2019 (H1N1) pdm09-like virus (new this season);
      ii. cell- or recombinant-based vaccines: A/Wisconsin/588/2019 (H1N1) pdm09-like virus (new this season).
   b. Influenza A(H3N2) component:
      i. egg-based vaccines: A/Cambodia/e0826360/2020 (H3N2)-like virus (new this season);
      ii. cell- or recombinant-based vaccines: A/Cambodia/e0826360/2020 (H3N2)-like virus (new this season).
   c. B/Victoria component:
      i. all vaccines: B/Washington/02/2019-like virus (B/Victoria/2/87 lineage) (unchanged).
   d. B/Yamagata component:
      i. all vaccines: B/Phuket/3073/2013-like virus (B/Yamagata/16/88 lineage) (unchanged).
2. Trivalent vaccines do not include the B/Yamagata component (not available in United States).

INFLUENZA VACCINE RECOMMENDATIONS

1. The AAP recommends annual influenza vaccination for everyone 6 months and older, including children and adolescents, during the 2021–2022 influenza season.
2. For the 2021–2022 influenza season, the AAP recommends that any licensed influenza vaccine appropriate for age and health status can be used for influenza vaccination in children. IIV and LAIV are options for children for whom these vaccines are appropriate. This recommendation is based on review of current available data on LAIV and IIV VE. The AAP will continue to review VE data as they become available and update these recommendations if necessary.
3. The AAP does not have a preference for any influenza vaccine product over another for children who have no contraindication to influenza vaccination and for whom more than one licensed product appropriate for age and health status is available. Pediatricians should administer whichever formulation is available in their communities to achieve the highest possible coverage this influenza season.
4. Children 6 through 35 months of age may receive any licensed, age-appropriate IIV available this season, at the dose indicated for the vaccine. No product is preferred over another for this age group. Children 36 months (3 years) and older should receive a 0.5-mL dose of any available, licensed, age-appropriate vaccine.
5. The number of seasonal influenza vaccine doses recommended to be administered to children in the 2021–2022 influenza season remains unchanged and depends on the child's age at the time of the first administered dose and vaccine history (Fig 1).
6. Children 6 months through 8 years of age who are receiving influenza vaccine for the first time or who have received only 1 dose before July 1, 2021, or whose vaccination status is unknown, should receive 2 doses of influenza vaccine 4 weeks apart, ideally by the end of October, and vaccines should be offered as soon as they become available. Children needing only 1 dose of influenza vaccine, regardless of age, should also receive vaccination ideally by the end of October.
7. Influenza vaccine may be administered simultaneously with or any time before or after administration of the currently available COVID-19 vaccines. Given that it is unknown whether reactogenicity of COVID-19 vaccines will be increased with coadministration of influenza vaccine, the reactogenicity profile of the vaccines should be considered, and providers should consult the most current ACIP/AAP guidance regarding coadministration of COVID-19 vaccines with influenza vaccines.
8. Children with acute moderate or severe COVID-19 should not receive influenza vaccine until they have recovered; children with mild illness may be vaccinated.
9. Efforts should be made to ensure vaccination for children in high-risk groups (Table 1) and their contacts, unless contraindicated.
10. Product-specific contraindications must be considered when selecting the type of vaccine to administer. Children who have had an allergic reaction after a previous dose of any influenza vaccine should be evaluated by an allergist to determine if future receipt of the vaccine is appropriate.
11. Children with egg allergy can receive influenza vaccine (IIV or LAIV) without any additional precautions beyond those recommended for all vaccines.

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12. Pregnant women should receive IIV at any time during pregnancy, to protect themselves and their infants, who benefit from the transplacental transfer of antibodies. Women in the postpartum period who did not receive vaccination during pregnancy should receive influenza vaccine before discharge from the hospital. Influenza vaccination during breastfeeding is safe for mothers and their infants.
13. The AAP supports mandatory vaccination of health care personnel (HCP) as a crucial element in preventing influenza and reducing health care–associated influenza infections because HCP often care for individuals at high risk for influenza-related complications.

INFLUENZA VACCINE CONTRAINDICATIONS AND PRECAUTIONS

The contraindications and precautions for the use of IIV and LAIV are described in Table 3, and further details are provided in the technical report.[1] Anaphylactic and severe allergic reactions to any influenza vaccine are contraindications to vaccination. The AAP recommends that children who have had an allergic reaction after a previous dose of any influenza vaccine should be evaluated by an allergist to determine if future receipt of the vaccine is appropriate.

INFLUENZA TREATMENT RECOMMENDATIONS

Antivirals available for the treatment and prophylaxis of influenza in children are described in Table 4.

1. Antiviral medications are important in the control of influenza but are not a substitute for influenza vaccination. Pediatricians should promptly identify patients suspected of having influenza infection for timely initiation of antiviral treatment, when indicated and based on shared decision-making between the pediatrician and child's caregiver, to reduce morbidity and mortality. Although best results are observed when the child is treated within 48 hours of symptom onset, antiviral therapy should still be considered beyond 48 hours of symptom onset in children with severe disease or those at high risk of complications.
2. Antiviral treatment should be offered as early as possible to the following individuals, regardless of influenza vaccination status:
   - Any hospitalized child with suspected or confirmed influenza disease, regardless of duration of symptoms.
   - Any child, inpatient or outpatient, with severe, complicated, or progressive illness attributable to influenza, regardless of duration of symptoms.
   - Children with influenza infection of any severity if they are at high risk of complications of influenza infection (Table 1), regardless of duration of symptoms.
3. Treatment may be considered for the following individuals:
   - Any previously healthy, symptomatic outpatient not at high risk for influenza complications, in whom influenza is confirmed or suspected on the basis of clinical judgment, if treatment can be initiated within 48 hours of illness onset.
   - Children with suspected or confirmed influenza disease whose siblings or household contacts either are younger than 6 months or have a high-risk condition that predisposes them to complications of influenza (Table 1).

INFLUENZA CHEMOPROPHYLAXIS RECOMMENDATIONS

Antiviral chemoprophylaxis is recommended after known or suspected influenza exposure in the following situations:

- For children at high risk of complications from influenza for whom influenza vaccine is contraindicated.
- For children at high risk of complications during the 2 weeks after influenza vaccination, before optimal immunity is achieved.
- For family members or HCP who are unvaccinated and are likely to have ongoing, close exposure to
  - unvaccinated children at high risk or
  - unvaccinated infants and toddlers who are younger than 24 months.
- For control of influenza outbreaks for unvaccinated staff and children in a closed institutional setting with children at high risk (eg, extended-care facilities).
- As a supplement to vaccination among children at high risk, including children who are immunocompromised and may not respond with sufficient protective immune responses after influenza vaccination.
- As postexposure antiviral chemoprophylaxis for family members and close contacts of an infected person if those people are at high risk of complications from influenza.
- For children at high risk of complications and their family members and close contacts, as well as HCP, when circulating strains of

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TABLE 3 Influenza Vaccines Contraindications and Precautions

Vaccine	Contraindication	Precaution	Provider Discretion	Not Contraindications
IIV	• Anaphylaxis or severe allergic reaction to previous influenza vaccination	• History of GBS within 6 wk of previous influenza vaccination	• Defer to resolution of illness for moderate to severe febrile illness, including COVID-19	• Minor illness, with or without fever • Egg allergy
LAIV	• Anaphylaxis or severe allergic reaction to previous influenza vaccination	• History of GBS within 6 wk of previous influenza vaccination	• Defer to resolution of illness for moderate to severe febrile illness, including COVID-19	• Minor illness, with or without fever
	• Age <2 y	• Diagnosis of asthma and aged >5 y with certain chronic underlying conditions (metabolic disease, diabetes mellitus, chronic pulmonary and/or cardiac disease, renal dysfunction, or hemoglobinopathies)	• Defer to resolution of symptoms or use IIV if a patient has nasal congestion that could impede vaccine delivery	• Egg allergy
	• Age 2–4 y with asthma or history of wheezing • Cochlear implants • Active CSF leaks • Primary or acquired immunodeficiency • On immunosuppressive or immunomodulatory therapy • Anatomic or functional asplenia (including sickle cell disease) • Close contacts or caregivers of severely immunocompromised individuals • On aspirin or salicylate-containing medications • Immunization with a live-virus vaccine within the previous 4 wk, except if given the same day • Taking or have recently taken influenza antiviral medications[a] • Currently pregnant			

CSF, cerebrospinal fluid; GBS, Guillain-Barré syndrome.

[a] Until 48 h (oseltamivir, zanamivir), 5 d (peramivir), and up to 2 wk (baloxavir) after stopping the influenza antiviral therapy.

influenza virus in the community are not well matched by seasonal influenza vaccine virus strains on the basis of current data from the Centers for Disease Control and Prevention and state or local health departments.

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TABLE 4 Recommended Dosage and Schedule of Influenza Antiviral Medications for Treatment and Chemoprophylaxis in Children for the 2021–2022 Influenza Season: United States

Medication	Treatment	Chemoprophylaxis[a]
Oseltamivir[b]		
Adults	75 mg, twice daily for 5 d	75 mg, once daily for 10 d
Children ≥12 mo (based on body wt)	Duration in all groups is 5 d	Duration in all groups is 10 d
≤15 kg (≤33 lb)	30 mg, twice daily	30 mg, once daily
>15 kg–23 kg (>33 lb–51 lb)	45 mg, twice daily	45 mg, once daily
>23 kg–40 kg (>51 lb–88 lb)	60 mg, twice daily	60 mg, once daily
>40 kg (>88 lb)	75 mg, twice daily	75 mg, once daily
Infants 9–11 mo[c]	3.5 mg/kg per dose, twice daily	3.5 mg/kg per dose, once daily
Term infants 0–8 mo[c]	3 mg/kg per dose, twice daily	3 mg/kg per dose, once daily for infants 3–8 mo. Not recommended for infants aged <3 mo because of limited safety and efficacy data in this age group
Preterm infants[d]		
<38 wk postmenstrual age	1.0 mg/kg per dose, twice daily	—
38 through 40 wk postmenstrual age	1.5 mg/kg per dose, twice daily	—
>40 wk postmenstrual age	3.0 mg/kg per dose, twice daily	—
Zanamivir[e]		
Adults	10 mg (two 5-mg inhalations), twice daily for 5 d	10 mg (two 5-mg inhalations), once daily for 10 d
Children		
≥7 y for treatment	10 mg (two 5-mg inhalations), twice daily for 5 d	10 mg (two 5-mg inhalations), twice daily for 10 d
≥5 y for chemoprophylaxis	10 mg (two 5-mg inhalations), twice daily for 5 d	10 mg (two 5-mg inhalations), twice daily for 10 d
Peramivir		
Adults	One 600-mg intravenous infusion, given over 15–30 min	Not recommended
Children (2–12 y)	One 12-mg/kg dose, up to 600-mg maximum, via intravenous infusion for 15–30 min	Not recommended
Children (13–17 y)	One 600-mg dose, via intravenous infusion for 15–30 min	Not recommended
Baloxavir		
People aged ≥12 y who weigh >40 kg	40–80 kg: one 40-mg dose, orally ≥80 kg: one 80-mg dose, orally	40–80 kg: one 40-mg dose, orally ≥80 kg: one 80-mg dose, orally

Adapted from the 2018 Infectious Diseases Society of America guidelines[11] and https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm. —, not applicable.

[a] Centers for Disease Control and Prevent recommends routine chemoprophylaxis with oseltamivir or zanamivir for 7 days, 10 days only if part of institutional outbreak (https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm).

[b] The duration of treatment with oseltamivir is 5 days. Oseltamivir is administered orally without regard to meals, although administration with meals may improve gastrointestinal tolerability. Oseltamivir is available as Tamiflu in 30-mg, 45-mg, and 75-mg capsules and as a powder for oral suspension that is reconstituted to provide a final concentration of 6 mg/mL. For the 6-mg/mL suspension, a 30-mg dose is given with 5 mL of oral suspension, a 45-mg dose is given with 7.5 mL oral suspension, a 60-mg dose is given with 10 mL oral suspension, and a 75-mg dose is given with 12.5 mL oral suspension. If the commercially manufactured oral suspension is not available, a suspension can be compounded by retail pharmacies (final concentration also 6 mg/mL), based on instructions contained in the package label. In patients with renal insufficiency, the dose should be adjusted on the basis of creatinine clearance. For treatment of patients with creatinine clearance 10–30 mL/min: 75 mg, once daily for 5 days. For chemoprophylaxis of patients with creatinine clearance 10–30 mL/min: 30 mg, once daily for 10 days after exposure or 75 mg, once every other day for 10 days after exposure (5 doses). See https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm and Infectious Diseases Society of America guidelines.[11]

[c] Approved by the US Food and Drug Administration for children as young as 2 weeks of age. Given preliminary pharmacokinetic data and limited safety data, oseltamivir can be used to treat influenza in both term and preterm infants from birth because benefits of therapy are likely to outweigh possible risks of treatment. Of note, the Center for Disease Control and Prevention recommends a 3 mg/kg/dose, twice daily, for all infants <12 months old; the Infectious Diseases Society of America guidelines[11] include both AAP and Center for Disease Control and Prevention recommendations.

[d] Oseltamivir dosing for preterm infants. The weight-based dosing recommendation for preterm infants is lower than that for term infants. Preterm infants may have lower clearance of oseltamivir because of immature renal function, and doses recommended for term infants may lead to high drug concentrations in this age group. Limited data from the National Institute of Allergy and Infectious Diseases Collaborative Antiviral Study Group provide the basis for dosing preterm infants by using their postmenstrual age (gestational age + chronological age). For extremely preterm infants (aged <28 wks), please consult a pediatric infectious disease physician.

[e] The duration of treatment with zanamivir is 5 days. Zanamivir is administered by inhalation by using a proprietary "Diskhaler" device distributed together with the medication. Zanamivir is a dry powder, not an aerosol, and should not be administered by using nebulizers, ventilators, or other devices typically used for administering medications in aerosolized solutions. Zanamivir is not recommended for people with chronic respiratory diseases, such as asthma or chronic obstructive pulmonary disease, which increase the risk of bronchospasm.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
ACIP: Advisory Committee on Immunization Practices
COVID-19: novel coronavirus disease 2019
HCP: health care personnel
IIV: inactivated influenza vaccine
LAIV: live attenuated influenza vaccine
VE: vaccine effectiveness

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