Mount Sinai

MSHS Recommendations for Diagnosis and Treatment of Influenza 2024-2025

While seasonal influenza (flu) can be detected year-round, flu viruses are most commonly encountered during the fall and winter. The timing and duration of flu seasons varies; however, flu activity often begins to increase in October. *Co-infection with other respiratory viruses is possible.*

Encourage your colleagues, family, and patients to receive the influenza vaccine. Annual influenzavaccination is recommended for all persons ≥ 6 months of age in the absence of contraindications.[1]

Who to test for flu[2]:

- Testing for influenza is encouraged especially for patients at high risk for complications (i.e., patients with underlying cardiac orpulmonary diseases and the immunocompromised).
- Testing for flu, SARS-CoV-2, and RSV should also be performed in patients requiring admission for acute respiratory illnesses (ARI) including pneumonia, hospitalized patients with ARI, and ambulatory patients for whom testing will affect clinical management.
- During flu season, acute exacerbations of chronic medical conditions like asthma, COPD, andheart failure may be due to flu and testing should be considered even if the patient does not present with a fever.

Treatment recommendations[2]:

- Most individuals without underlying medical conditions will have a self-limited respiratory illness and recover with supportive care. **They are encouraged to remain out of work or school until symptoms have resolved. Employees are encouraged to discuss return to work with Employee Health.**
- All hospitalized, severely ill, and high-risk patients with suspected or confirmed influenza should receive antiviral treatment.
- In inpatients, if there is a suspicion of influenza, droplet precautions and treatment should be initiated immediately pending test results. Ideally, treatment should be initiated within 48 hours of symptoms. However, treatment benefit has been demonstrated when initiated after 48 hours in some patients.
- When treatment is indicated, monotherapy with oseltamivir (Tamiflu®) or inhaled zanamivir(Relenza®) is sufficient. Antiviral resistance to these medications is rare.

Patients at high risk for influenza complications include:

- Children ≤ 5 years old
- Adults ≥ 50 years of age
- Pregnant persons and persons up to 2 weeks postpartum (including following pregnancy loss)
- Persons ≤ 19 years who are receiving long-term aspirin therapy
- American Indians/Alaska Natives
- Obesity (BMI ≥ 40)
- Residents of nursing homes and other chronic-care facilities
- Persons with the following conditions:
  - Chronic pulmonary (including asthma), cardiovascular (except isolated hypertension), renal, hepatic, hematological (including sickle cell disease), metabolic disorders (including diabetesmellitus) or 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)
  - Immunosuppression, including that caused by medications, HIV, or solid organ or stem celltransplantation

Antiviral Dosing for Treatment and Chemoprophylaxis

Oseltamivir (Tamiflu®)		
ADULTS[3]		
Renal Function (mL/min)	**Treatment (5 days)**	**Chemoprophylaxis (7 days)**
Creatinine Clearance > 60	75 mg twice a day for 5 days	75 mg once daily for 7 days
Creatinine Clearance >30 – 60	30 mg twice a day for 5 days	30 mg once daily for 7 days
Creatinine Clearance 10 – 30	30 mg once a day for 5 days	30 mg every other day for 7 days
Creatinine Clearance <10*, NOT on hemodialysis	30 mg every other day for 5 days	Insufficient data for dosing recommendation*
Hemodialysis	30 mg x1, then 30 mg after every hemodialysis cycle for 5 days	30 mg x1, then 30 mg after alternate hemodialysis cycles for 7 days
Peritoneal Dialysis	30 mg x1 (1 dose total)	30 mg x1 (1 dose total) If needs > 7 days, then 30 mg once weeklyimmediately after dialysis exchange for the recommended duration of prophylaxis
CVVH[4]	75 mg twice daily for 5 days	75 mg once daily for 7 days
CHILDREN† ≥ 12 months		
≤ 15 kg	30 mg twice a day for 5 days	30 mg once daily for 10 days
16-23 kg	45 mg twice a day for 5 days	45 mg once daily for 10 days
24-40 kg	60 mg twice a day for 5 days	60 mg once daily for 10 days
> 40 kg	75 mg twice a day for 5 days	75 mg once daily for 10 days
INFANTS[5] < 12 months		
9-11 months	3.5 mg/kg/dose twice a day for 5 days	3.5 mg/kg/dose once a day for 10 days
Term infants aged 0-8 months	3 mg/kg/dose twice a day for 5days	≥ 3-8 months: 3 mg/kg/dose once a dayfor 10 days
		< 3 months: not recommended
Preterm infants	See footnote‡	

*Currently there are no treatment and/or prophylaxis data available for patients who are not on renal replacement therapy with a creatinine clearance ≤10.Please monitor for potential side effects.
† Renal dosing of oseltamivir is not published for pediatric patients.
‡ Current weight-based dosing recommendations are not appropriate for premature infants. Limited data from National Institute of Allergy and Infectious Diseases Collaborative Antiviral Study group provides the basis for dosing preterm infants using postmenstrual age (gestational age + chronological age)[4]:

- < 38 weeks postmenstrual age: 1 mg/kg per dose orally twice daily
- 38 through 40 weeks post menstrual age: 1.5 mg/kg per dose orally twice daily
- > 40 weeks post menstrual age: 3 mg/kg per dose orally twice daily
- Extremely preterm infants (< 28 weeks), consult a pediatric infectious diseases physician

- Oseltamivir can be given via gastric tube; however gastric stasis or bleeding can reduce its absorption.
- Oseltamivir is available as 30 mg, 45 mg and 75 mg capsules and liquid for oral administration and is usuallyrecommended to take with food to minimize nausea/vomiting.

Zanamivir (Relenza®)[3]		
ADULTS		
	Treatment (5 days)	**Chemoprophylaxis**
	10 mg (two 5 mg inhalations)twice a day	10 mg (two 5 mg inhalations) once a dayfor 7 days
CHILDREN[5]		
	≥ 7 years old for treatment	≥ 5 years old for prophylaxis
	10 mg (two 5 mg inhalations) twice a day	10 mg (two 5 mg inhalations) once a dayfor 10 days

Please note that the oral inhalation formulation of zanamivir cannot be administered by nebulization.It is also not recommended for patients with underlying airway disease (asthma, COPD). There are insufficient data demonstrating benefit in severe disease.

- Intravenous peramivir (Rapivab®) is non-formulary but is FDA-approved for the treatment of acute uncomplicated influenza in patients 6 months and older. Please discuss with Infectious Diseases or the Antibiotic Stewardship Program if peramivir is indicated. Peramivir was shown to not provide benefit in patients with serious influenza requiring hospitalization.

- Oral baloxavir (Xofluza®) is non-formulary but is FDA-approved for the treatment of acute, uncomplicated influenza in the ambulatory setting for children aged 5 years to less than 12 years who do not have chronic medical conditions, and for all people aged 12 years and older. It should not be used in pregnant or breastfeeding people, complicated or progressive illness, or severely immunocompromised people. There are no available data on the use of baloxavir for the treatment of influenza more than 2 days after symptom onset and there are insufficient clinical data showing benefit for oral baloxavir in patients with severe disease.

Chemoprophylaxis

Post-exposure chemoprophylaxis can be considered for individuals with the following risks:

- Persons at higher risk for complications from influenza.
- Healthcare workers exposed to influenza (within 3 feet providing direct care or for a prolongedperiod) without adequate personal protective equipment (mask).

Chemoprophylaxis is generally **not** recommended for healthy individuals, if > 48hrs have passed since lastcontact with the infectious person, or for persons who have received the influenza vaccine > 14 days priorto the exposure.

However, in the setting of an outbreak or a high rate of vaccine breakthrough influenza,chemoprophylaxis may be offered irrespective of vaccination status.

Pregnancy[6]

Pregnant persons are at increased risk for severe illness from influenza compared to non-pregnant persons of reproductive age. ACOG recommends that antiviral treatment should be initiated as early as possible. Oseltamivir is the preferred antiviral agent, but zanamivir may be considered due to its limited systemic absorption.

Adverse Effects (AE)

Drugs	Most Common Adverse Effects
Oseltamivir	Nausea and/or vomiting (in up to 10%)
Zanamivir	Nasal signs and symptoms, cough, throat pain

Drug Interactions

Co-administration of oseltamivir with probenecid resulted in reduced clearance of oseltamivir by 50%.Co-administration of oseltamivir with warfarin can increase the risk of bleeding.

References:

1. Grohskopf LA, Ferdinands JM, Blanton LH, Broder KR, Loehr J. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2024–25 Influenza Season. MMWR Recomm Rep 2024;73(No. RR-5):1–25.
2. Uyeki TM *et al.* Clinical Practice Guidelines by the IDSA: 2018 Update on Diagnosis, Treatment, Chemoprophylaxis, and Institutional Outbreak Management of Seasonal Influenza. *Clin Infect Dis.* 2019; 68(6): e1-47.
3. Influenza Antiviral Medications: Summary for Clinicians: https://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm updated Sept 9, 2022
4. Eschenauer, G.A. & Lam, S.W. Intensive Care Med (2011) 37: 371.
5. AAP Committee on Infectious Diseases. Recommendations for Prevention and Control of Influenza in Children, 2024–2025. Pediatrics October 2024; 154(4):e2024068507 DOI: https://doi.org/10.1542/peds.2024-068507

6. ACOG Committee Statement 7: Influenza in Pregnancy: Prevention and Treatment 2023;143:e1-7.