

INFLUENZA VIRUS

TRANSMISSION

Abbreviations:
Sx=Symptoms
Exp=Exposure

Source:
Humans mostly
Respiratory tract secretions

Transmission:
--Large droplets
--Airborne: limited to a few feet
--Direct contact: with nasal or throat secretion
--Fomites: Article freshly soiled with nasal or throat secretion.

Attack rate
HH= 25%, moderate

Incubation Period
2-5 (1-7) days

Respiratory Tract Infection 1 week
fever, cough, sore throat, body aches, headache, chills and fatigue.

Communicability:
-1 day to End of Symptoms +1 day

Exclusions:

--Longest of onset to end of S x + 1 day or 7 days,
--Exposed : Watch for Sx , then exclude as above
--If contact with high risk (Exp + 1 to +7)

Complication:

- Viral or bacterial pneumonia
- Aggravation of chronic pulmonary, cardiac, renal, hepatic, hematologic or metabolic disorder

Close contact =
30 min within 6 feet of a symptomatic

High risk of severe illness and complications:

- aged 6 months - 4 years
- chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematological or metabolic disorders (including diabetes)
- immunosuppressed (immunosuppression caused by meds or by HIV)
- any condition (e.g., cognitive dysfunction, spinal cord injuries, seizure disorders, or other neuromuscular disorders) that compromise respiratory function or handling of respiratory secretions or that increase aspiration risk
- long-term aspirin therapy
- residents of chronic-care facilities

DIAGNOSIS

Clinical criteria:

influenza-like illness =
-fever $\geq 37.8^{\circ}\text{C}$ [100°F] & (cough or sore throat)

Or
acute respiratory illness = recent onset of at least 2 of :

- rhinorrhea or nasal congestion
- sore throat
- cough
- fever or feverishness

Or
Hospitalization for acute lower respiratory tract infection and no other cause for this infection

Epidemiologic criteria: for novel influenza not currently present in local area
Contact with a person with onset

- within 7 days of close contact with a confirmed case
- within 7 days of travel to an area with confirmed cases
- resides in a community with confirmed cases

Laboratory Criteria for Diagnosis

--positive identification by real-time RT-PCR

Collection, transportation

- Dacron swab
- Metal swab
- Inadequate: PCR inhibitor or virus inactivator: Ca-alginate and wooden shaft swab
- Transport on ice

Laboratory Testing not useful for clinical , therapeutic or preventive decisions
ONLY FOR EPIDEMIOLOGIC PURPOSES
Test results come too late to be of use for case or contact management

Serology: Not useful for dx

Method	Types	Acceptable Specimens ²	Test time
Viral cell culture	A and B	NP swab, throat swab, bronchial wash, nasal or endotracheal aspirate, sputum	3-10 days
Rapid cell culture			1-3 days
Immunofluorescence, Direct (DFA) or Indirect (IFA) Antibody Staining			1-4 hrs
RT-PCR ² (singleplex and multiplex; real-time and other RNA-based) and other molecular assays			1-6 hrs
Rapid Influenza Diagnostic Tests (antigen)			NP swab, (throat swab), nasal wash, nasal aspirate

Nasopharyngeal swab: Carefully insert a dry sterile Dacron swab through external nares to obtain access to posterior nasopharyngeal area. Vigorously rub the area and gently retrieve the swab. Break off the swab tip into a sterile vial containing 2.0 ml of M4RT viral transport medium. Screw the cap on tightly to avoid contamination and leakage.

Suspect: Any respiratory tract infection

Confirmed: Meets laboratory criteria OR Meets clinical case definition AND epidemiologically linked to a confirmed case.

Probable: Meets clinical case definition AND epidemiologically linked to a confirmed case BUT does not meet Laboratory criteria

TREATMENT, PROPHYLAXIS

Osetamivir Roche Pharmaceuticals (Tamiflu®—tablet)

- Tx dosing recommendations of osetamivir for children weighing ≤ 15 kg is 30 mg twice a day; for children weighing $>15-23$ kg, the dose is 45 mg twice a day; for children weighing $>23-40$ kg, the dose is 60 mg twice a day; for children >40 kg, the dose is 75 mg twice a day.
- Reduction in the dose of osetamivir is recommended for persons with creatinine clearance <30 mL/min.
- Chemoprophylaxis dosing recommendations of osetamivir for children weighing ≤ 15 kg is 30 mg once a day; for children weighing $>15-23$ kg, the dose is 45 mg once a day; for children weighing $>23-40$ kg, the dose is 60 mg once a day; and for children >40 kg, the dose is 75 mg once a day.

Zanamivir GlaxoSmithKline (Relenza®—inhaled powder).

Through oral inhalation by using a plastic device included in the medication package. Patients will benefit from instruction and demonstration of correct use of the device.

Not recommended for those persons with underlying airway disease.

Table 6. Recommended daily dosage of influenza antiviral medications for treatment and chemoprophylaxis—United States

Antiviral agent		Age group (yrs)				
		1-6	7-9	10-12	13-64	≥ 65
Zanamivir ^a	Treatment, influenza A and B	N/A†	10 mg (two inhalations) twice daily	10 mg (two inhalations) twice daily	10 mg (two inhalations) twice daily	10 mg (two inhalations) twice daily
	Chemoprophylaxis, influenza A and B	Ages 1-4 N/A†	Ages 5-9 10 mg (two inhalations) once daily	10 mg (two inhalations) once daily	10 mg (two inhalations) once daily	10 mg (two inhalations) once daily
Osetamivir	Treatment§, influenza A and B	Dose varies by child's weight¶	Dose varies by child's weight¶	Dose varies by child's weight¶	75 mg twice daily	75 mg twice daily
	Chemoprophylaxis, influenza A and B	Dose varies by child's weight**	Dose varies by child's weight**	Dose varies by child's weight**	75 mg once daily	75 mg once daily

NOTE: Zanamivir is manufactured by GlaxoSmithKline (Relenza®—inhaled powder). Osetamivir is manufactured by Roche Pharmaceuticals (Tamiflu®—tablet). This information is based on data published by the [Food and Drug Administration \(FDA\)](#).

Pregnancy

- No clinical studies regarding safety or efficacy of zanamivir or osetamivir for pregnant women.
- Because of the unknown effects, use only if potential benefit justifies potential risk to embryo or fetus.
- Osetamivir and zanamivir are both "Pregnancy Category C" medications

PREVENTION OF TRANSMISSION: INFECTION CONTROL

IC Strategy

- Routine infection control practices: use of appropriate barrier precautions during patient care, as recommended for Standard and Droplet Precautions
- Early detection of influenza cases in a facility
- Isolation of infectious patients in private rooms or cohort units
- Vaccination of patients and healthcare personnel
- Use of antivirals to treat severely ill persons and, if recommended, as prophylaxis
- Restricting visitors,
- Education of patients and staff
- Cohorting healthcare workers assigned to an outbreak unit.

Prevent emission

- Respiratory hygiene**
- Cough etiquette**
- Cover cough, sneeze
- Use tissues, dispose safely
- Wear mask
- Spatial separation 3 ft
- Early triage to institute Respiratory hygiene**

Modified Droplet = Personal respirator /N95 instead of surgical mask

Usually Modified Droplet* & Contact Precautions

High risk of airborne transmission:

- Aerosol producing procedures:
- bronchoscopy **USE AIRBORNE PRECAUTIONS**
 - intubation **Personal Resp N95**
 - nebulization **Neg pressure room**
 - suction **≥ 12 air exchange**

No No's

- Touching eyes, nose or mouth with contaminated hands (gloved or ungloved).
- Making adjustments to the PPE during patient care or removal. Careful placement of PPE before patient contact will help avoid the need to and risk self-contamination during use.
- Touching contaminating environmental surfaces that are not directly related to patient care (e.g., door knobs, light switches)
- Touching pen, glasses and other personal items during patient care

Restrict Hospitalization

- Hospital is NOT**
- for quarantine**
- for diagnostics**
- Hospitals provide care for acutely ill**

Standard precautions: Anyone may be infectious

- 1-Wash /Touch /Wash
- 2-If red, wet or dirty: Wash /Glove /Touch /Unglove /Wash
- 3-Up your face: Face shield or goggle, mask
- 4-Know what is clean, what is contaminated, keep them apart

- Transmission based precautions**
- Droplet precautions:** wear mask when closer than 3 feet
- Contact precautions:** wear gloves at all times; gowns prn
- Airborne precautions:** 1-Negative pressure room; 2-At least 6 Air Exchanges /hour; 3-Wear N95 masks

Patient Placement /Movement

- Private room preferred
- Cohorting: at first only confirmed cases, later all URTI /LRTI
- HCW do not float
- Restrict movements; RHyg/CE during transport