



INFLUENZA (Select Individual Cases and Outbreaks)

(also see [Respiratory Disease Outbreaks](#))

Note: Suspected influenza outbreaks should be initially reported as respiratory outbreaks (unknown) until laboratory testing confirms influenza as the etiology.

1. **Agent:** Influenza viruses. Only influenza A and B are of public health concern since they are responsible for epidemics.

2. **Identification:**

- a. **Symptoms: Influenza-Like Illness (ILI)/Acute Febrile Respiratory Illness (AFRI) refers to:** Fever ($\geq 100^{\circ}\text{F}$ or 37.8°C) **plus** cough and/or sore throat. Other influenza symptoms include shortness of breath, chills, headache, myalgia, and malaise. Influenza can sometimes cause gastrointestinal (GI) symptoms. Duration of influenza illness is 2-4 days in uncomplicated cases, with recovery usually in 5-7 days. Infection with non-human strains of influenza such as avian influenza viruses theoretically may cause other illness, such as conjunctivitis, gastroenteritis or hepatitis.

Note: Illness may present differently in young children, the elderly, and immunocompromised individuals. Therefore, absence of ILI symptoms does not effectively rule out influenza and high clinical suspicion must be maintained during the flu season.

- a. **Differential Diagnosis:** Other agents that cause febrile respiratory illnesses or community acquired pneumonia including, but not limited to *Mycoplasma pneumoniae*, adenovirus, respiratory syncytial virus, rhinovirus, parainfluenza viruses, *Legionella* spp, and coronavirus.
- b. **Diagnosis:** Confirmed by viral isolation, PCR, rapid antigen test, or a DFA/IFA test, and compatible symptoms.
3. **Incubation:** 1-4 days; average 2 days.
4. **Reservoir:** Humans, swine, and migratory birds.

5. **Source:** Nasal and pharyngeal secretions.
6. **Transmission:** Large droplets spread by cough or sneeze from infective persons. Sometimes contaminated fomites. Airborne spread possible, but unlikely.
7. **Communicability:** People infected with flu shed virus and may be able to infect others from 1 day before getting sick to 5 to 7 days after. This can be longer in some people, particularly those with weakened immune systems.
8. **Specific Treatment:** Supportive care (e.g., rest, antipyretics, fluids, etc.). Antiviral medications can reduce the severity and duration of influenza illness. Antiviral medications are most effective if administered within 48 hours of onset. These medications should be initiated for hospitalized and immunocompromised persons with suspected influenza without waiting for confirmation.

As of 2010, there are two FDA approved oral drugs for the prevention and treatment of influenza A and B: **oseltamivir** (available as a generic version and under the trade name Tamiflu®) and **zanamivir** (trade name Relenza®). Amantadine and rimantadine are NOT recommended due to high levels of antiviral resistance among the currently circulating influenza viruses.

Additional information on the use of antiviral medications for influenza treatment and prophylaxis are available on the CDC influenza antiviral website:
<http://www.cdc.gov/flu/antivirals/index.htm>

Streptococcal and staphylococcal pneumonias are the most common secondary complications and should be treated with appropriate antibiotics.

Children, adults aged ≥ 65 years, and immunocompromised adults should receive the 13-valent pneumococcal conjugate vaccine according to ACIP guidelines:
<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6337a4.htm>



<https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6225a3.htm>
<https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5911a1.htm>

9. **Immunity:** Permanent for a specific strain.

REPORTING PROCEDURES

1. Outbreak Definitions:

Under Title 17, Section 2500, *California Code of Regulations* all suspected outbreaks are reportable.

Healthcare-associated institutions

associated with long term health care (i.e. skilled nursing facilities, intermediate care facility, and intermediate care for developmentally disabled): A sudden increase of acute febrile respiratory illness cases over the normal background rate; OR at least **one case** of laboratory-confirmed influenza in the setting of a cluster (≥ 2 cases) of **ILI** within a 72-hour period.

Non healthcare-associated institutions

defined as prison, jail, university dormitory and overnight camps: At least two cases of ILI within 48-72 hour period; OR at least one case of ILI with laboratory confirmation for influenza in the setting of a cluster (≥ 2 cases) of ILI.

Congregate Settings

defined as schools and day camps: At least 10% of average daily attendance absent with ILI sustained over a 3-day period; OR 20% of an epidemiologically-linked group (such as a single classroom, sports team, or after-school group) ill with similar symptoms, with a minimum of 5 ill, sustained over a 3-day period.

2. Single cases reportable.

- a. Under Title 17, Section 2500, California Code of Regulations, all cases due to "novel" influenza A (for example due to avian or swine influenza) are reportable immediately.

Avian flu (H5N1 or H7N9) refers to the disease caused by infection with avian (bird) influenza (flu) Type A viruses. These viruses occur naturally among wild aquatic birds worldwide and can infect domestic poultry and other bird and animal species.

Avian flu viruses do not normally infect humans, however, sporadic human infections with avian flu viruses, have occurred. Can also be identified as highly pathogenic avian influenza (HPAI).

For more information about avian influenza, visit:

<http://www.cdc.gov/flu/avianflu>

Swine flu (H3N2v, H1N1v, H1N2v) refers to the disease caused by infection with swine (pig) influenza (flu) Type A viruses. These viruses occur naturally among domesticated swine. Swine flu viruses do not normally infect humans but secondary human infections may occur from time to time. When it occurs, the strain of influenza is called "variant" to identify that it is not a "normal" human virus. However, pigs can be infected with swine, avian, and human viruses at the same time. When this occurs, genes may be swapped between the different types of viruses resulting in the development of a new viral strain that is easily transmitted between humans. This occurred in 2009 with the development of the 2009 pandemic H1N1.

For more information about swine influenza see

<http://www.cdc.gov/flu/swineflu/>

- b. In Los Angeles County, **influenza associated deaths of any age** are reportable. Influenza-associated deaths must have had: 1) confirmed influenza by laboratory testing; 2) a clinical syndrome consistent with influenza or complications of influenza and 3) There should be no period of complete recovery between illness and death. These Los Angeles County specific reporting requirements may change as circumstances change.

3. Report Forms: SEE TABLE 1

- a. Use the following forms for outbreaks at various settings:

i. **Non healthcare-associated institution**

**INITIAL ASSESSMENT OF
RESPIRATORY OUTBREAK REPORT**

(Working form, not required to submit)



Line List-Non-Healthcare Facility for Students, Staff, or Residents ([PDF EXCEL](#)) *Required

[ACUTE RESPIRATORY ILLNESS OUTBREAK REPORT FORM \(CDPH 9003 08/16\)](#) *Required

ii. **Healthcare-associated institution**

For initial and final reports of influenza outbreaks:

[CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY \(H-1164-SubAcute, fillable\)](#)

Line List - Respiratory Outbreak for Residents and Staff ([PDF EXCEL](#)) *Required

[ACUTE RESPIRATORY ILLNESS OUTBREAK REPORT FORM \(CDPH 9003 08/16\)](#) *Required

- b. Use the following form to report a single case of fatal influenza:

[INFLUENZA FATALITY CASE REPORT FORM \(acdc-influ 2/14\)](#)

4. **Epidemiologic Data for Outbreaks:**

- a. Establish a case definition (i.e., fever [measured or reported] and either cough, sore throat, or stuffy nose): include pertinent clinical symptoms and laboratory data (if appropriate).
- b. Confirm etiology of outbreak using laboratory data (rapid test, culture, or PCR). **At least 1 patient must have tested positive for influenza in the setting of a cluster (≥2 cases) of ILI within a 72-hour period to call it an “influenza” outbreak.** Otherwise call it a “respiratory outbreak of unknown origin.”
- c. Create a line list that could include:
- names of cases
 - dates of onset
 - symptoms
 - age
 - hospitalization status
 - results of laboratory tests
 - prior immunization history

- epi links to other cases (room #s, grades in school, etc.)
- avian or swine exposure, if relevant

- Maintain surveillance for new cases until no new cases for at least 1 week.
- Create an epi-curve, by date of onset. Only put those that meet the case definition on the epi-curve. (Optional)

CONTROL OF CASE, CONTACTS & CARRIERS

CASE:

Precautions: Advise symptomatic patients to stay away from work, schools, camps, and mass gatherings for at least 24 hours after resolution of fever. Limit exposure to others, especially those at high risk for complications.

Advise cases who work in health care settings not to return to work until 7 days after symptom onset or 24 hours after resolution of symptoms, whichever is longer.

CONTACTS: No restrictions.

Prophylaxis with appropriate antiviral medication during outbreaks is advised for high-risk patients who have not been vaccinated or when the vaccine is of questionable efficacy.

CARRIERS: Not applicable.

GENERAL CONTROL RECOMMENDATIONS FOR OUTBREAKS

- Reinforce good hand hygiene among all (including residents/patients, visitors, staff, and residents/students).
- Emphasize respiratory etiquette (cover cough and sneezes, dispose of tissues properly).
- Sick persons (e.g., visitors, students, and staff) should be restricted from entering the facility.
- Emphasize importance of early detection of cases and removing them from contact with others.
- Encourage standard environmental cleaning with EPA registered disinfectant appropriate for influenza viruses.
- Consider using influenza vaccine to control situation.



7. Consider prophylaxis with antiviral medications for contacts with potential exposure to case/patients.
8. Provide educational materials to facility—including posters, handouts, etc. For influenza and respiratory virus health education materials see: <http://publichealth.lacounty.gov/acd/HealthEdFlu.htm>

Consider the additional recommendations for health care institution, especially with high risk patients:

1. Close facility or affected areas to new admissions until 1 week after last case.
In general, residents hospitalized from a facility with an outbreak may return to the same facility after discharge. If possible, residents/patients who were hospitalized for a reason other than influenza and returning to a long-term care facility (LTCF) should be placed in a unit without cases of influenza or ILI. Hospitalized patients with influenza can be discharged to a LTCF when clinically appropriate and should be continued on droplet precautions for 7 days after symptom onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer.
2. Residents/patients who leave a facility for emergent/urgent/outpatient healthcare consultations/procedures and do not require hospitalization can return to the same facility and unit.
3. Implement the following precautions for any resident/patient with suspected or confirmed influenza for 7 days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer.
 - Place ill residents in a private room. If a private room is not available, place ill residents with one another (cohort).
 - If symptomatic residents are cohorted, maintain a spatial separation of at least 3 feet between residents and draw a curtain between resident beds.
 - Ensure standard and droplet precautions for symptomatic residents.
4. If multiple residents/patients become symptomatic, cancel group activities and serve all meals in resident/patient rooms.
5. Suspend group activities until 1 week after last case.

6. If possible, separate staff that cares for sick from staff that cares for well residents/patients.
7. Initiate antiviral treatment (i.e. Tamiflu, oseltamivir) as soon as possible for all residents/patients with suspected or confirmed influenza, regardless of vaccination history. Treatment should not wait for results of influenza testing.
8. Initiate antiviral chemoprophylaxis (i.e. Tamiflu, oseltamivir) for all non-ill residents/patients and staff who have had contact with influenza or suspect cases. Continue chemoprophylaxis for a minimum of 2 weeks and until 7 days after last known case is identified.
9. For additional resources: Refer to [Los Angeles County Department of Public Health Influenza Outbreak Prevention and Control Guidelines for Skilled Nursing Facilities \(6/2015\)](#) or [California Department of Public Health Recommendations For The Prevention And Control Of Influenza California Long-Term Care Facilities \(Revised October 2016, updated on January 4, 2018\)](#) or [Centers for Disease Control and Prevention \(CDC\) Interim Guidance for Influenza Outbreak Management in Long-Term Care Facilities | Health Professionals | Seasonal Influenza \(Flu\) \(10/05/16\)](#)

DIAGNOSTIC PROCEDURES

Clinical and epidemiologic histories are required to aid in laboratory test selection.

Nasopharyngeal (NP) or nasal swab, and nasal wash or aspirate. PHL recommends Dacron or Nylon flocced swabs, do NOT use wooden swabs. NP swabs are preferred because the specimens can be tested for influenza and a variety of other respiratory pathogens using PCR based technology. All other specimens can only be tested for influenza. Samples should be collected within the first 4 days of illness. Collect specimens from **at least 2 separate symptomatic individuals** and up to 5 symptomatic individuals for any community-based outbreak and select those individuals with the most recent onset for specimen collection.

1. Diagnostic tests available for influenza include viral culture, serology, rapid antigen testing, polymerase chain reaction (PCR), and immunofluorescence assays



2. **NOTE:** Culture should not be attempted when avian influenza is suspected. Contact Public Health Laboratory (PHL) or ACDC for instructions.

Container: Viral Culturette with M4 viral transport medium.

Laboratory Form: [Public Health Laboratory Test Requisition Form](#) or online request if electronically linked to the PHL.

Examination: Influenza PCR and/or Respiratory Pathogen PCR Panel. Testing algorithm is determined by the PHL.

Material: Nasopharyngeal swab preferred; nasal swab can be used if necessary. See: [MD/ND Policy 117 Nasopharyngeal Specimen Collection](#).

Storage: Keep refrigerated and upright. Deliver to PHL as soon as possible. Additional specimen and storage information can be found here: [LA County Department of Public Health - Public Health Laboratory](#)

PREVENTION/EDUCATION

1. All persons >6 months are recommended to receive an annual influenza vaccine.
2. Practice good personal hygiene, avoid symptomatic persons during outbreaks, and do not go to work or school when ill with a respiratory disease.
3. Do not give aspirin to children with influenza and other viral illnesses.
4. Postpone elective hospital admissions during epidemic periods, as beds may be needed for the ill.



TABLE 1. RESPIRATORY DISEASE OUTBREAK FORMS

NON HEALTHCARE-ASSOCIATED INSTITUTIONS	INITIAL REPORT	FINAL REPORT
<ul style="list-style-type: none"> ○ Congregate Settings- Schools and day camps ○ Non healthcare-associated institutions (i.e. jail, juvenile hall, camps, university dormitory, and overnight camps) 	<p><u>INITIAL ASSESSMENT OF RESPIRATORY OUTBREAK REPORT</u> (Working form, not required to submit))</p>	<p><u>ACUTE RESPIRATORY ILLNESS OUTBREAK REPORT FORM (CDPH 9003 08/16)*Required</u></p> <p>Line List-Non-Healthcare Facility for Students, Staff, or Residents (<u>PDF EXCEL</u>) *Required</p>
HEALTHCARE – ASSOCIATED INSTITUTION	INITIAL REPORT	FINAL REPORT
<ul style="list-style-type: none"> ○ Skilled nursing facility ○ Intermediate care facility ○ Intermediate care for developmentally disabled 	<p><u>CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY (H-1164-SubAcute, fillable) (<u>instructions</u>)</u></p>	<p><u>CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY (H-1164-SubAcute, fillable)</u></p> <p>Line List - Respiratory Outbreak for Residents and Staff (<u>PDF EXCEL</u>) *Required</p> <p><u>ACUTE RESPIRATORY ILLNESS OUTBREAK REPORT FORM (CDPH 9003 08/16)*Required</u></p>