



# INFLUENZA (Select Individual Cases and Outbreaks)

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

## Notes:

- Suspected influenza outbreaks should be initially reported as respiratory outbreaks (unknown) until laboratory testing confirms influenza as the etiology.
- Respiratory outbreaks in non-institutional congregate settings should be reported and managed as described in the Respiratory Disease Outbreaks chapter even if some cases are diagnosed with influenza (refer to reporting procedures below for rationale).

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 refers to:** Fever ( $\geq 100^{\circ}\text{F}$  or  $37.8^{\circ}\text{C}$ ) **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: Some persons, such as elderly, children with neuromuscular disorders, and infants may have atypical clinical presentations, including the absence of fever.**

- b. **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.
- c. **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.

There are four FDA-approved antiviral drugs recommended by CDC. The brand names for these are Tamiflu® (generic name oseltamivir), Relenza® (generic name zanamivir), and Rapivab® (generic name peramivir). Tamiflu® is available as a pill or liquid and Relenza® is a powder that is inhaled. (Relenza® is not for people with breathing problems like asthma or COPD, for example.) Rapivab® is given intravenously. Baloxavir marboxil (trade name Xofluza®) is a new influenza antiviral drug approved by the U.S. Food and Drug Administration (FDA) on October 24, 2018 for the treatment of influenza; it is given as a single-dose pill.

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  $\geq 65$  years, and immunocompromised adults should receive the 13-valent pneumococcal conjugate vaccine according to ACIP guidelines:

<https://www.cdc.gov/vaccines/hcp/acip-recs/vacc-specific/pneumo.html>

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.

**Influenza Outbreak definition:** At least **one case** of laboratory-confirmed influenza in the setting of a cluster ( $\geq 2$  cases) of ILI within a 72-hour period.

**Healthcare-associated institutions** Long-term health care settings defined here as facilities licensed by the [California Department of Public Health \(CDPH\), Licensing and Certification](#)<sup>1</sup>. These include skilled nursing facility (SNF), intermediate care facility (ICF), intermediate care facility - developmentally disabled (ICF-DD), intermediate care facility-developmentally disabled habilitative (ICF-DDH), intermediate care facility-developmentally disabled nursing (ICF-DDN), congregate living health facility (CLHF) and pediatric day health and respite care facility (PDHRCF).

**Non-healthcare-associated institutions** defined as settings where people are admitted, residing, or incarcerated overnight such as independent living facility, assisted living facility, prison, jail, university dormitory, shelters, overnight camps, drug rehabilitation centers, etc.

**Note: The etiology/pathogen is usually unknown for the majority of cases in non-institutional congregate settings (e.g., school or work place). Although some persons can be diagnosed with influenza in this setting, it is possible for multiple other respiratory pathogens to coexist. Therefore, respiratory outbreaks where some cases are diagnosed with influenza should be managed as described in the [Respiratory Disease Outbreak chapter](#)<sup>2</sup>.**

2. **Single case of “novel” or “variant” influenza A is 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

<sup>1</sup> <https://www.cdph.ca.gov/programs/chcq/lcp/calhealthfind/Pages/Home.aspx>

<sup>2</sup> <http://www.publichealth.lacounty.gov/acd/procs/b73/DiseaseChapters/B73RespDisOB.pdf>



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 have been 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. **Healthcare-associated institution**

For initial and final reports of influenza outbreaks:

[CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY \(H-1164-SubAcute, Revised 9/2018, fillable\)<sup>3</sup> \(instructions\)<sup>4</sup>](#)

**Line List - Respiratory Outbreak for Residents and Staff ([PDF<sup>5</sup> EXCEL](#))**  
**\*Required**

ii. **Non-healthcare-associated institution**

[ACUTE RESPIRATORY ILLNESS OUTBREAK – NON-HEALTHCARE ASSOCIATED SETTINGS \(New Form 1/2019, fillable\)<sup>6</sup> – required](#)

Line List-Non-Healthcare Facility & congregated settings for Students, Staff, or Residents ([PDF<sup>7</sup> EXCEL](#))  
**\*Required**

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

[INFLUENZA FATALITY CASE REPORT FORM \(acdc-influ 2/14\)<sup>8</sup>](#)

### 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.**

If the etiology of the respiratory outbreak is not known or known to be a laboratory-confirmed respiratory pathogen, other than influenza, then refer to the [Respiratory Disease Outbreak chapter<sup>9</sup>](#) for further guidance.

- 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

<sup>3</sup> <http://publichealth.lacounty.gov/acd/Diseases/EpiForms/OBSubAcuteHCFacForm.pdf>

<sup>4</sup> <http://www.publichealth.lacounty.gov/acd/Diseases/EpiForms/OBSubAcuteHCFacInstruc.pdf>

<sup>5</sup> <http://publichealth.lacounty.gov/acd/Diseases/EpiForms/OBInfluRespListHealth.pdf>

<sup>6</sup> <http://publichealth.lacounty.gov/acd/Diseases/EpiForms/OBAcuteRespRepNonHealth.pdf>

<sup>7</sup> <http://publichealth.lacounty.gov/acd/Diseases/EpiForms/OBInfluRespListNonH.pdf>

<sup>8</sup> <http://publichealth.lacounty.gov/acd/Diseases/EpiForms/InfluFatalForm.pdf>

<sup>9</sup> <http://www.publichealth.lacounty.gov/acd/procs/b73/DiseaseChapters/B73RespDisOB.pdf>



- d. Maintain surveillance for new cases until no new cases for at least 1 week.
- e. 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

1. Reinforce good hand hygiene among all (including residents/patients, visitors, staff, and residents/students).
2. Emphasize respiratory etiquette (cover cough and sneezes, dispose of tissues properly).
3. Sick persons (e.g., visitors, students, and staff) should be restricted from entering the facility.
4. Emphasize importance of early detection of cases and removing them from contact with others.
5. Encourage standard environmental cleaning with EPA registered disinfectant appropriate for influenza viruses.
6. 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. However, determine the duration of closures or limiting admissions for each situation individually. Consider the effectiveness of the influenza control measures implemented within the facility. Facility-wide and prolonged closures are not necessary if transmission is controlled and there is an unaffected location available where new admission can be placed.  
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 6 feet between residents and draw a curtain between resident beds. In facilities that do not have the space for the 6 feet, separation should be as close to 6 feet as possible, but no less than 3 feet.



- 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 \(6/2015\)](#)<sup>10</sup>
    - California Department of Public Health [Recommendations for the Prevention And Control Of Influenza in California Skilled Nursing Facilities \(SNF\) -Updated October 2018](#)<sup>11</sup>
    - Centers for Disease Control and Prevention (CDC) [Interim Guidance for Influenza Outbreak Management in Long-Term Care Facilities | Health Professionals | Seasonal Influenza \(Flu\) \(10/05/16\)](#)<sup>12</sup>

## 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 flocked 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:** If specimen(s) is collected by PHN then complete [Public Health Laboratory Test Requisition Form](#)<sup>13</sup> 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](#)<sup>14</sup>.

**Storage:** Keep refrigerated and upright. If specimen(s) is collected by PHN then 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](#)<sup>15</sup>

<sup>10</sup> <http://www.ph.lacounty.gov/acd/docs/Flu/FluSNFOBGuidelines/InfluenzaGuidelines07092015.pdf>

<sup>11</sup> [https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/LTCF\\_PreventingHAI.aspx](https://www.cdph.ca.gov/Programs/CHCQ/HAI/Pages/LTCF_PreventingHAI.aspx)

<sup>12</sup> <https://www.cdc.gov/flu/professionals/infectioncontrol/ltc-facility-guidance.htm>

<sup>13</sup> <http://www.publichealth.lacounty.gov/lab/docs/H-3021%20Test%20Request%20Form.pdf>

<sup>14</sup> <http://intranet/ph/PDFs/PolicyProcedures/MD117.pdf>

<sup>15</sup> <http://www.publichealth.lacounty.gov/lab/PanFlu.htm>



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## 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. INFLUENZA OUTBREAK FORMS**

NONHEALTHCARE- ASSOCIATED INSTITUTIONS	INITIAL REPORT	FINAL REPORT
<ul style="list-style-type: none"> <li>○ <b>Non-healthcare-associated institutions:</b>                      Settings where people are admitted, residing, or incarcerated overnight such as independent living facility, assisted living facility, prison, jail, university dormitory, shelters, overnight camps, drug rehabilitation centers, etc.</li> </ul>		<p><a href="#">ACUTE RESPIRATORY ILLNESS OUTBREAK – NON-HEALTHCARE ASSOCIATED SETTINGS (fillable)</a>*Required</p> <p>Line List-Non-Healthcare Facility for Students, Staff, or Residents (<a href="#">PDF EXCEL</a>) *Required</p>
HEALTHCARE – ASSOCIATED INSTITUTION	INITIAL REPORT	FINAL REPORT
<ul style="list-style-type: none"> <li>○ <b>Healthcare-associated institutions</b>                      Long-term health care settings defined here as facilities licensed by the <a href="#">California Department of Public Health (CDPH), Licensing and Certification</a>. These include skilled nursing facility (SNF), intermediate care facility (ICF), intermediate care facility -developmentally disabled (ICF-DD), intermediate care facility-developmentally disabled habilitative (ICF-DDH), intermediate care facility-developmentally disabled nursing (ICF-DDN), congregate living health facility (CLHF) and pediatric day health and respite care facility (PDHRCF).</li> </ul>	<p><a href="#">CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY (H-1164-SubAcute, fillable)</a> (<a href="#">instructions</a>)</p>	<p><a href="#">CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY (H-1164-SubAcute, fillable)</a></p> <p>Line List - Respiratory Outbreak for Residents and Staff (<a href="#">PDF EXCEL</a>) *Required</p>

# Influenza Outbreak Investigation Process

**NOTE: All respiratory outbreaks should be open as "Outbreak Unknown-Respiratory" until lab test confirms a pathogen.**

Influenza OB (lab-confirmed influenza A or B)

Review & Follow B-73 Influenza OB Chapter (revised 1/2019)

**Influenza Outbreak Definition for Healthcare-associated and Nonhealthcare-associated institutions:**

**At least one case of laboratory-confirmed influenza in the setting of a cluster ( $\geq 2$  cases) of ILI within a 72-hour period.**

## Healthcare-associated institutions

**Long-term health care settings**-facilities licensed by the California Department of Public Health (CDPH), Licensing and Certification

- Skilled nursing facility (SNF)
- Intermediate care facility (ICF), intermediate care facility -developmentally disabled (ICF-DD), intermediate care facility-developmentally disabled habilitative (ICF-DDH), intermediate care facility-developmentally disabled nursing (ICF-DDN)
- Congregate living health facility (CLHF) and
- Pediatric day health and respite care facility (PDHRCF).

## Nonhealthcare-associated institutions

Settings where people are admitted, residing, or incarcerated overnight such as:

- Independent living facility
- Assisted living facility
- Prison, jail
- University dormitory, shelters, overnight camps, drug rehabilitation centers, etc.

## Outbreak Report Forms

- **Initial Report:** [CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY \(H-1164-SubAcute, 9/2018\) Initial Report](#)
- **Final Report:**
  - [CD OUTBREAK INVESTIGATION — SUB-ACUTE HEALTH CARE FACILITY \(H-1164-SubAcute, 9/2018\) Final Report](#)
  - [Line List - Respiratory Outbreak for Residents and Staff \(PDF/EXCEL\)](#)

## Outbreak Report Forms

- **Final Report:** [ACUTE RESPIRATORY ILLNESS OUTBREAK Non-Healthcare Associated Settings \(New Form 1/2019\) -Required](#)
- **Influenza/Respiratory Outbreak Line List for Non-Healthcare Facilities-Students, Staff, Residents (PDF/Excel)- Required**