INFLUENZA
(Outbreaks, severe pediatric cases, and deaths)

1. **Agent**: Influenza viruses A, B, and C. Only influenza A and B are of public health concern since they are responsible for epidemics. Type C is associated with sporadic cases and minor localized outbreaks.

2. **Identification**:
   a. **Symptoms**: Acute onset of fever to 101-102°F, non-productive cough, sore throat, chills, headache, myalgia, malaise, and photophobia. GI symptoms such as nausea, vomiting or diarrhea are less common. Illness can be mild to severe and can cause death. Mild cases may recover in 5-7 days. On average, 5-20% of the population gets seasonal influenza each year. Infection with non-human strains of influenza such as avian influenza viruses theoretically may cause other symptoms such as gastroenteritis or hepatitis.
   b. **Differential Diagnosis**: Other agents that cause febrile respiratory illnesses including but not limited to *Mycoplasma pneumoniae*, adenovirus, respiratory syncytial virus, rhinovirus, parainfluenza viruses, *Legionella* spp., and Severe Acute Respiratory Syndrome (SARS) coronavirus.
   c. **Diagnosis**: Clinical syndrome associated with community outbreaks, confirmed by viral isolation, rapid antigen test, and demonstrated rise in antibodies from paired sera.

3. **Incubation**: 1-4 days; average 2 days.

4. **Reservoir**: Humans, swine, and migratory birds.

5. **Source**: Nasal and pharyngeal secretions.

6. **Transmission**: Respiratory droplet spread; direct contact with aerosolized droplets or contaminated fomites through hand to mouth or nose.

7. **Communicability**: 1 day prior to and 5 days after the onset of clinical symptoms; up to 7 days or more in children and immunocompromised persons.

8. **Specific Treatment**: Supportive care, e.g., rest, antipyretics, fluids, etc. Antiviral medications may reduce the severity and duration of influenza illness if administered within 48 hours of onset. These same medications are especially useful if case was unvaccinated or if vaccine does not cover circulating strain.

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

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

**REPORTING PROCEDURES**

1. **Outbreaks reportable immediately by phone**. (Title 17, Section 2500, *California Code of Regulations*). Outbreaks commonly occur in institutional settings (e.g., nursing homes, hospitals, schools, day care centers, jails and juvenile correction facilities). An outbreak is a sudden increase of influenza-like illness (ILI) cases over the normal background rate or when any resident tests positive for influenza. One case of confirmed influenza by any testing method in a long-term care facility resident is an outbreak. ILI is defined as any illness with a fever equal to or greater than 100°F accompanied by a cough or a sore throat in the absence of a known cause.

2. **Severe Pediatric Influenza and Deaths**. Cases of pediatric influenza-associated deaths are reportable within 1 week on a Confidential Morbidity Report (CMR). Surveillance is also conducted for pediatric patients admitted to an intensive care unit; it is requested that these be reported to Public Health Services as well. Case must be 0-17 years old, either have died or is
critically ill (hospitalized in the ICU), and have either 1) confirmed influenza by laboratory testing; or 2) a clinical syndrome consistent with influenza or complications of influenza (pneumonia, ARDS, apnea, cardio-pulmonary arrest, myocarditis, Reye syndrome or acute CNS symptoms (e.g., seizures, encephalitis). Send respiratory specimens to the San Joaquin County Public Health Laboratory for viral testing.

3. Human cases of avian influenza reportable immediately by phone. Possible human cases of avian influenza must be reported immediately. Typical risks will include exposure to sick birds in regions of the world with confirmed avian influenza in birds or a history of contact with a known or suspected human case of avian influenza within 10 days of symptom onset. Check the web sites of the World Health Organization [www.who.int/csr/disease/avian_influenza/en] or Centers for Disease Control & Prevention [www.cdc.gov/flu/avian/gen-info/avian-flu-humans.htm] for current countries at risk. See the case definition for avian influenza for more information.

4. Epidemiologic Data:
   a. Exposure to confirmed or suspected cases.
   b. Prior immunization status.
   c. Date of onset of the first case and, if the outbreak appears to be over, the date of onset of the last case.
   d. Number of persons with ILI, approximate age range of ill persons and extent of influenza activity in community, school, place of employment or other groups.
   e. Travel history.
   f. (For avian influenza) exposure to domestic or wild birds or their products and/or exposure to a known or suspected human case of avian influenza within 10 days of symptom onset.

CONTROL OF CASE, CONTACTS & CARRIERS

CASE:

Precautions: Respiratory precautions. Advise patients to stay away from work or school for 5 days following onset of illness. Limit exposure to others, especially those at high risk for complications. Antiviral medications are available for prophylaxis, however, only zanamivir and oseltamivir have been shown to be effective for type B viruses and recently strains of influenza A have become resistant to amantadine and rimantadine so use of these drugs is not recommended. See Table 1 for the recommended age for treatment and prevention among the available drugs.

For additional information about the use of antivirals for treatment and prophylaxis:

   • General Information:
     www.cdc.gov/flu/protect/antiviral/

CONTACTS: No restrictions.

Prophylaxis with appropriate antiviral medication (Table 1) during outbreaks is advised for high-risk patients who have not been vaccinated or when the vaccine is of questionable efficacy.

DIAGNOSTIC PROCEDURES:

Respiratory viral testing is available at the San Joaquin County Public Health Laboratory. Refer to the Laboratory Services Manual in Section 2, Disease Reporting.

PREVENTION-EDUCATION

1. Immunize high-risk persons and their close contacts (e.g., family members, health-care staff) with current seasonal influenza vaccine. To be effective, vaccine should be given in the fall before influenza season begins, but can be given anytime during the influenza season.

2. Practice good personal hygiene, avoid symptomatic persons during outbreaks, and do not work or go to school when ill with a respiratory disease.
3. Do not give aspirin to children with influenza and other viral illnesses.

4. At all health facilities, restrict the movement of staff and visitors with respiratory infections. For more information, see Recommendations for the Prevention, Detection, and Control of Influenza in California Long-term Care Facilities, 2007-2008. Available at: http://www.dhs.ca.gov/ps/dcdc/disb/disbindex.htm

5. Consider the following recommendations during outbreaks in facilities with high-risk individuals (elderly and chronically ill):
   a. Confirm strain of virus through rapid test, viral isolation, and/or serology.
   b. Close facility or affected areas to new admissions until 1 week after last case.
   c. Suspend group activities until 1 week after last case.
   d. Provide prophylaxis for residents and staff until outbreak terminated. See Table 1 for antiviral information.
   e. Reinforce good hand washing practices among staff, visitors, and patients/residents.
   f. If possible, separate staff caring for sick from staff caring for well patients.
   g. Maintain surveillance for new cases.

<table>
<thead>
<tr>
<th>Drug</th>
<th>Trade Name</th>
<th>Influenza Viral Type</th>
<th>Treatment Age</th>
<th>Prevention Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>amantadine**</td>
<td>Symmetrel®</td>
<td>A</td>
<td>≥ 1 year</td>
<td>≥ 1 year</td>
</tr>
<tr>
<td>rimantadine**</td>
<td>Flumadine®</td>
<td>A</td>
<td>≥ 13 years</td>
<td>≥ 1 year</td>
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<tr>
<td>zanamivir</td>
<td>Relenza®</td>
<td>A and B</td>
<td>≥ 7 year</td>
<td>≥ 1 year</td>
</tr>
<tr>
<td>oseltamivir</td>
<td>Tamiflu®</td>
<td>A and B</td>
<td>≥ 1 year</td>
<td>≥ 1 year</td>
</tr>
</tbody>
</table>

*Adapted from www.cdc.gov/flu/professionals/antiviralback.htm#table1. For more information about antivirals, visit www.cdc.gov/flu/protect/antiviral.

**Note:** Due to a high degree of drug resistance in circulating influenza A viruses, the CDC recommends that neither amantadine or rimantadine be used at this time.
**AVIAN INFLUENZA – Case Definition**

For suspected cases meeting the criteria below, contact San Joaquin County Public Health Services immediately at (209) 468-3822 or after hours at (209) 468-6000.

California Department of Public Health (CDPH) Surveillance Criteria for Influenza A (H5N1) Infection:

**I. Testing for avian influenza A (H5N1) is RECOMMENDED:**

A patient who has an illness that requires hospitalization or is fatal: AND has a documented fever >38°C (100.4°F); AND has radiographically-confirmed pneumonia, acute respiratory distress syndrome (ARDS) or other respiratory illness with no alternate diagnosis established; AND has at least one of the following exposures within 10 days of symptom onset:

A. Travel to an area with documented avian (H5N1) influenza in poultry, wild birds and/or humans with at least one of the following:
   - Direct contact with (e.g. touching) sick or dead domestic poultry; OR
   - Direct contact with surfaces contaminated with poultry feces; OR
   - Consumption of raw or incompletely cooked poultry or poultry products; OR
   - Direct contact with sick or dead wild birds suspected or confirmed to have influenza H5N1; OR
   - Close contact (within 1 meter or 3 feet) of a person who was hospitalized or died due to unexplained respiratory illness.

OR

B. Close contact (within 1 meter) of an ill patient who was confirmed or suspected to have H5N1;

OR

C. Worked with live influenza H5N1 virus in a laboratory.

**II. TESTING ON A CASE-BY-CASE BASIS IN CONSULTATION WITH THE LOCAL HEALTH DEPARTMENT SHOULD BE CONSIDERED:**

- A hospitalized or ambulatory patient with mild or atypical disease (e.g., diarrhea or encephalitis without respiratory disease) with one of the above exposures (A, B, or C)

OR

- A patient with severe or fatal respiratory disease whose epidemiological information is uncertain, unavailable or suspicious, but does not meet criteria listed above (e.g., returned traveler from an affected country with unclear exposure, or with contact with well-appearing poultry)

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1 For a list of affected countries, visit the Web site of the World Organization of Animal Health (OIE) at: http://www.oie.int/downld/AVIAN%20INFLUENZA/A_AI-Asia.htm

2 The definition of poultry is: domestic fowls, such as chickens, turkeys, ducks, or geese, raised for meat or eggs.