AVIAN (BIRD) INFLUENZA

Causative Agent

Avian flu is caused by the H5N1 virus, an influenza A virus subtype that occurs naturally and is carried in the intestinal system of wild birds. Although this
influenza does not normally make wild birds sick, it is highly contagious among birds and can infect, sicken, and kill domesticated birds. It is not common, but it can also be transmitted from birds to humans. The fear is that H5N1 could mutate and have the ability to be spread person-to-person, causing a worldwide pandemic.

<table>
<thead>
<tr>
<th>Body Systems Affected</th>
<th>Avian influenza primarily affects the respiratory and gastrointestinal systems.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Susceptibility</td>
<td>Those most susceptible to avian influenza include international travelers to visit areas where outbreaks have occurred and those who regularly come in contact with birds.</td>
</tr>
<tr>
<td>Routes of Transmission</td>
<td>Bird-to-human transmission is typically airborne.</td>
</tr>
<tr>
<td>Signs and Symptoms</td>
<td>Typical flu-like symptoms are expected, including muscle aches, fever, cough, and sore throat. However, H5N1 may also cause more severe complications, including pneumonia or acute respiratory distress.</td>
</tr>
<tr>
<td>Patient Treatment</td>
<td>Antiviral medications may be effective against H5N1, although some have proven ineffective against H5N1 strains that caused human death in Asia.</td>
</tr>
<tr>
<td>Protective Measures</td>
<td>Standard precautions and droplet precautions are indicated when caring for patients with any type of influenza virus. However, if a patient who has traveled to a country with avian influenza activity within the past 10 days presents with flu-like symptoms, precautions identical to those needed for severe acute respiratory syndrome (SARS) should be observed, including:</td>
</tr>
<tr>
<td></td>
<td>- Standard precautions, including thorough hand washing;</td>
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<td>- Droplet precautions, including wearing gown and gloves for all contact;</td>
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<td>- Airborne precautions, including using a NIOSH-approved N95 respirator; and</td>
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<td></td>
<td>- Eye protection, worn anytime the caregiver is within 3 feet of the patient.</td>
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</table>

<p>| Immunizations         | There is currently no vaccine to protect against H5N1. |</p>
<table>
<thead>
<tr>
<th><strong>Incubation Period</strong></th>
<th>There are a number of opinions regarding the incubation period in avian influenza. The expected period is 2 to 7 days.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Health Care Providers</strong></td>
<td>Health care providers should be alert to any trends related to unusual flu-like activity. Early recognition, surveillance, and prevention are key to reduce the chance of a flu pandemic.</td>
</tr>
</tbody>
</table>
**LEGIONELLOSIS**

**Causative Agent**
Legionellosis is caused by the *Legionella pneumophila*. This particular bacteria was named after an outbreak among people attending an American Legion convention in 1976.

**Body Systems Affected**
Since legionellosis typically causes a bacterial pneumonia, the respiratory system is the primary system affected.

**Susceptibility**
Although susceptibility is general, the disease most often affects middle-aged or older men, especially those who drink alcohol or smoke heavily, and persons with preexisting medical conditions.

**Routes of Transmission**
Since *Legionella* bacteria grow best in warm water, people usually become infected when they breathe mist or vapor that has been contaminated with the bacteria. Examples of this type of transmission include breathing the steam from a whirlpool spa or inhaling aerosol from sources such as air-handling systems of large buildings and water used for drinking and bathing. There is no evidence that person-to-person transmission occurs.

**Signs and Symptoms**
Patients typically exhibit flu-like symptoms including muscle aches, headache, fever, chills, and diarrhea.

**Patient Treatment**
Immediate care is supportive. Antibiotics may be helpful in treating the disease.

**Protective Measures**
Since there is no evidence to support the belief that legionellosis can be spread person to person, standard precautions are all that is recommended. *Legionella* may be found in institutional water systems, ponds and creeks, and in the water in air-conditioning units.

**Immunizations**
There is currently no vaccine for legionellosis.

**Incubation Period**
Signs and symptoms typically occur within 5 to 6 days, although a range of 2 to 10 days has been recorded.

**Health Care Providers**
Since legionellosis is not transmitted person-to-person, standard precautions should be adequate protection. This disease occurs sporadically and in outbreaks.
MEASLES (RUBEOLA, HARD MEASLES)

Causative Agent
Measles is caused by the measles virus, of the genus *Morbilli*.

Body Systems Affected
Measles affects the respiratory, integumentary, and central nervous systems, as well as the eyes.

Susceptibility
Although measles is considered a childhood disease, susceptibility is general.

Routes of Transmission
Measles may be spread by direct contact with nasal or throat secretions of infected persons. It can also be transmitted by airborne transmission.

Signs and Symptoms
Symptoms of measles typically appear in two stages. During the first stage, the patient may have a slight fever, runny nose, conjunctivitis, photophobia, malaise, and cough. A day or two before the generalized rash so commonly associated with measles appears, Koplik’s spots may develop inside the mouth. The generalized rash is red, slightly bumpy, and spreads from the head and face to the lower extremities within about 3 days and disappears.
within about 6 days. Pneumonia, eye damage, and myocarditis develop in some patients.

There is no specific treatment for measles. Care is aimed at minimizing symptoms.

Health care providers should observe standard precautions, airborne precautions, and good hand washing techniques.

An immunization against measles is available.

Symptoms usually appear within 10 to 12 days of exposure, although a range of 8 to 13 days is possible.

Since measles is one of the most highly contagious infectious diseases, health care providers should ensure their immunity. In general, one may be considered immune if he/she meets one or more of the following criteria:

• has received at least one dose of live measles vaccine after first birthday
• has documentation of prior physician-diagnosed measles
• has had laboratory testing that indicates immunity
• was born before 1957
PNEUMONIA

Causative Agent

Over 3 million cases of pneumonia are reported each year in the United States. Up to one third of these patients are hospitalized, which accounts for 10% of adult acute care hospital admissions in the United States. Pneumonia may be bacterial, viral, or fungal. Viral pneumonia is rare in adults except during outbreaks. Bacterial sources of pneumonia include Streptococcus pneumoniae, Mycoplasma pneumoniae, Staphylococcus aureus, Haemophilus influenzae, Klebsiella pneumoniae, Moraxella catarrhalis, and Legionella (Figure A-5).

Body Systems Affected

Pneumonia affects the respiratory and central nervous system. It may also affect the ears, nose, and throat.
**FIGURE A-5** Bacterial sources of pneumonia. Pneumonia may be caused by one of many possible sources.

- *Streptococcus pneumoniae*
- *Mycoplasma pneumoniae*
- *Staphylococcus aureus*
- *Haemophilus influenzae*
- *Klebsiella pneumoniae*
- *Moraxella catarrhalis*
- *Legionella*

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**Susceptibility**

Anyone exposed to the disease can catch pneumonia, although certain groups may be considered more susceptible because of decreased resistance to the disease. These groups include those who are elderly, have significant preexisting illness, or are immunocompromised.

**Routes of Transmission**

Pneumonia is spread through respiratory exposure to droplets from a sneeze or cough, or direct contact with objects contaminated with respiratory secretions of those who have pneumonia.

**Signs and Symptoms**

Persons who have pneumonia report sudden onset of chills, fever, chest discomfort, and shortness of breath. Coughs may be productive, with yellow-green phlegm. In children, be alert to high fever, tachycardia, and chest retractions, which are ominous signs.

**Patient Treatment**

Initial care is primarily supportive. Antibiotics, including erythromycin, doxycycline, augmentin, cephalosporin, and vacomycin may be used.

**Protective Measures**

Standard, airborne, and droplet precautions should be taken and hand washing after patient contact should be thorough.
A vaccine that protects against some causes of pneumonia is currently available. Although it will not protect against pneumonia of every cause, it will protect against approximately 88% of pneumococcal bacteria that cause pneumonia. Immunity is better for younger people, and the immunity lasts up to 10 years for most people.

Most experts agree that the incubation period for pneumonia may be as short as 1 to 3 days.

Since health care providers are often called on to treat patients with pneumococcal disease, they should consider taking the vaccine. Standard and droplet precautions should be taken.
SEVERE ACUTE RESPIRATORY SYNDROME (SARS)

Causative Agent
The causative agent of SARS is a SARS-associated coronavirus (SARS-CoV).

Body Systems Affected
SARS, as its name would imply, primarily affects the respiratory system.

Susceptibility
Those most susceptible to SARS are those who have been in close contact with an infected person.

Routes of Transmission
SARS is spread primarily through respiratory droplets and may be spread when a person touches an object contaminated with infected droplets.
<table>
<thead>
<tr>
<th>Signs and Symptoms</th>
<th>then touches the mucous membranes in the mouth, nose, or around the eyes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Treatment</td>
<td>Signs and symptoms of SARS include fever, body aches, headache, and respiratory symptoms, developing into pneumonia.</td>
</tr>
<tr>
<td>Protective Measures.</td>
<td>Antiviral medications are sometimes effective in treating SARS.</td>
</tr>
<tr>
<td></td>
<td>Protective measures should include:</td>
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</tr>
<tr>
<td>Immunizations</td>
<td>A vaccine for SARS is in the research phase.</td>
</tr>
<tr>
<td>Incubation Period</td>
<td>The incubation period for SARS is 2 to 7 days.</td>
</tr>
<tr>
<td>Health Care Providers</td>
<td>If a person who has recently traveled from a country in which SARS has been reported presents with flu-like symptoms, the local health department should be contacted. Early recognition, surveillance, and prevention activities significantly reduce the chances of an outbreak.</td>
</tr>
</tbody>
</table>