**COMMON RESPIRATORY INFECTIONS**  
(Not to be Confused with INFLUENZA A and B)

**Haemophilus influenzae Infections**

*H. influenzae*, including Hib, can cause many different kinds of infections. These infections can range from mild ear infections to severe diseases, like bloodstream infections.

When the bacteria invade parts of the body that are normally free from germs, like spinal fluid or blood, this is known as "invasive disease." Invasive disease is usually severe and can sometimes result in death.

The most common types of invasive disease caused by *H. influenzae* are:

- Pneumonia* (lung infection)
- Bacteremia (blood infection)
- Meningitis (infection of the covering of the brain and spinal cord)
- Epiglottitis (swelling of the windpipe that can cause breathing trouble)
- Cellulitis (skin infection)
- Infectious arthritis (inflammation of the joint)

These bacteria live in the nose and throat, and usually cause no harm. However, the bacteria can sometimes move to other parts of the body and cause infection. Some of these infections are considered “invasive” and can be very serious and sometimes even deadly.

The **incubation period** (time between exposure and first symptoms) of *H. influenzae* disease is not certain, but could be as short as a few days.

**Transmission**

*H. influenzae*, including Hib:

- Person-to-person by direct contact or through respiratory droplets that are created when people cough or sneeze.

- Person-to-person through respiratory droplets that occur when someone who has the bacteria in their nose or throat coughs or sneezes. Most of the time, *H. influenzae* are spread by people who have the bacteria in their noses and throats but who are not ill (asymptomatic).

- *H. influenzae* spread to other people who have had close or lengthy contact with a person sick with *H. influenzae* disease.

**People at Increased Risk**

- *H. influenzae*, including Hib, disease occurs mostly in babies and children younger than five years old. Adults 65 years or older, American Indians, and Alaska Natives are also at increased risk for getting sick with invasive *H. influenzae* disease.

- People with certain medical conditions are also at increased risk for developing *H. influenzae* disease.
Signs and Symptoms

*Haemophilus influenzae*, including Hib, disease causes different symptoms depending on which part of the body is affected. The most common severe types of *H. influenzae* disease are:

- **Pneumonia (lung infection):** Fever, headache, stiff neck, nausea with or without vomiting, increased sensitivity to light (photophobia), altered mental status (confusion)
- **Bacteremia (bloodstream infection):** Fever and chills, excessive tiredness, pain in the belly, nausea with or without vomiting, diarrhea, anxiety, shortness of breath or difficulty breathing, altered mental status (confusion)
- **Meningitis (infection of the covering of the brain and spinal cord):** Fever, headache, stiff neck, nausea with or without vomiting, increased sensitivity to light (photophobia), altered mental status (confusion)

Diagnosis

*Haemophilus influenzae*, including Hib, disease is usually diagnosed with one or more laboratory tests using a sample of body fluid, such as blood or spinal fluid.

Prevention and Treatment

There's a **vaccine** that can prevent *Haemophilus influenzae* type b (Hib) disease, the most common type (“strain”) of *Haemophilus influenzae* bacteria. However, this vaccine does not prevent disease caused by the other types of *H. influenzae*.

Hib vaccine is recommended for all children younger than 5 years old in the United States and is usually given to babies starting at 2 months old. In certain situations, people at increased for getting invasive Hib disease (when bacteria invade parts of the body that are normally free from germs) who are fully vaccinated may need additional doses of Hib vaccine. Unimmunized older children, teens, and adults with certain medical conditions should also receive Hib vaccine.

Sometimes Hib is spread to people who have had close or lengthy contact with someone who has or had Hib disease. In certain cases, people in close contact with someone who is sick with Hib should receive **antibiotics** to prevent them from getting the disease. This is known as prophylaxis. The most important to prevent spread is using **Respiratory Etiquette**.

REFERENCE:

Guideline for Isolation Precautions

https://www.cdc.gov/hi-disease/about/types-infection.html

*Human Metapneumovirus (HMPV)*

Human metapneumovirus (HMPV) can cause upper and lower respiratory disease in people of all ages, especially among young children, older adults, and people with weakened immune systems.
Transmission

HMPV is most likely spread from an infected person to others through secretions from coughing and sneezing, close personal contact, such as touching or shaking hands, and touching objects or surfaces that have the viruses on them then touching the mouth, nose, or eyes.

In the U.S., HMPV circulates in distinct annual seasons. HMPV circulation begins in winter and lasts until or through spring. HMPV, RSV, and influenza can circulate simultaneously during the respiratory virus season.

People at Increased Risk

Patients with asthma may develop a subsequent asthma flare-up after infection. The elderly and people with weakened immune systems are at an increased risk for developing pneumonia, which can be severe. However, HMPV infection is usually to be less serious than other respiratory infections, including adenovirus and influenza.

Signs and Symptoms

Symptoms commonly associated with HMPV include cough, fever, nasal congestion, and shortness of breath. Clinical symptoms of HMPV infection may progress to bronchiolitis or pneumonia and are similar to other viruses that cause upper and lower respiratory infections. The incubation period is estimated to be 3 to 6 days, and the median duration of illness can vary depending upon severity but is similar to other respiratory infections caused by viruses. Children under 1 year old, transplantation and long term steroid use are also at increased risk.

Laboratory Diagnosis

In some cases, your doctor may test you for influenza. This test involves a nasal swab. In very few severe hospitalized cases, you may undergo a bronchoscopy. This is only reserved for more severe cases, and the goal of this testing is to detect influenza as treatment can be stopped (or started) based on the results.

Prevention and Treatment

Practice Respiratory Etiquette to prevent the spread of the Respiratory Virus. There is no specific antiviral therapy for HMPV. Medical care is supportive.

REFERENCES:

https://www.cdc.gov/surveillance/nrevss/hmpv/clinical.html

Human Parainfluenza Viruses (HPIVs)

Human parainfluenza viruses (HPIVs) commonly cause upper and lower respiratory illnesses in infants and young children, but anyone can get infected. After you get infected, it takes about 2 to 7 days before you develop symptoms
Transmission

HPIVs usually spread from an infected person to others through—
- the air by coughing and sneezing, and
- close personal contact, such as touching or shaking hands, and
- touching objects or surfaces that have the viruses on them then touching the mouth, nose, or eyes.
- HPIVs can remain infectious in airborne droplets for over an hour and on surfaces for a few hours depending on environmental conditions.
- People are most contagious during the early stage of illness.
- People usually get HPIV infection in the spring, summer, and fall. However, it is possible to get infected at any time of the year.

People at Increased Risk

Young children are more likely to have severe illness, but older adults and people with weakened immune systems are also at risk.

Signs and Symptoms

Symptoms of upper respiratory illness may include—
- fever,
- runny nose, and
- Cough.
Symptoms of severe lower respiratory illness may include—
- croup [an infection of the vocal cords (larynx), windpipe (trachea) and bronchial tubes (bronchi)],
- bronchitis (swelling of the main air passages that connect the windpipe to the lungs),
- bronchiolitis (swelling in the smallest air passages in the lungs), or
- Pneumonia (an infection of the lungs).
Other symptoms of HPIV illness may include—
- sore throat,
- sneezing,
- wheezing,
- ear pain,
- irritability, and
- Decreased appetite.
- You can have multiple HPIV illnesses in your lifetime.

There are four types:
- HPIV-1 and HPIV-2 are most often associated with croup. HPIV-1 often causes croup in children, whereas HPIV-2 is less frequently detected. Both types can cause upper and lower respiratory tract illnesses. People with upper respiratory tract illness may have cold-like symptoms.
- HPIV-3 is more often associated with bronchiolitis, bronchitis, and pneumonia.
- HPIV-4 is not recognized as often, but may cause mild to severe respiratory tract illnesses.
Laboratory Diagnosis
In addition to a complete medical history, physical exam of your child, and knowledge of regional outbreaks, other diagnostic tests for HPIV may include:

- Blood work
- Nasal swab of respiratory secretions
- Chest X-ray (a test that produces images of internal tissues, bones, and organs)

Prevention and Treatment
Currently, there is no vaccine to protect you against human parainfluenza virus (HPIV) infection. However, researchers are trying to develop vaccines.

You may be able to reduce your risk of HPIV and other respiratory viral infections by using Respiratory Etiquette:

There is no specific antiviral treatment for HPIV illness. Most people with HPIV illness will recover on their own. However, some things can be done to relieve symptoms, such as—

- taking acetaminophen, ibuprofen, and other over-the-counter medications for pain and fever (Caution: Aspirin should not be given to children.) and
- using a room humidifier or taking a hot shower to help ease a sore throat and cough.

People who are sick should be encouraged to—

- drink plenty of liquids and
- stay home and rest.

REFERENCE:
https://www.cdc.gov/parainfluenza/hcp/clinical.html
https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=90&ContentID=P02522

Adenoviruses
Adenoviruses most commonly cause respiratory illness. The illnesses can range from the common cold to pneumonia, croup, and bronchitis. Depending on the type, adenoviruses can cause other illnesses such as gastroenteritis, conjunctivitis, cystitis, and, less commonly, neurological disease.

Transmission
Adenoviruses are usually spread from an infected person to others through:

- close personal contact, such as touching or shaking hands
- the air by coughing and sneezing
- touching an object or surface with adenoviruses on it, then touching your mouth, nose, or eyes before washing your hands
Some adenoviruses can spread through an infected person’s stool, for example, during diaper changing. Adenovirus can also spread through the water, such as swimming pools, but this is less common. Sometimes the virus can be shed for months or longer after a person recovers from an adenovirus infection. This “virus shedding” usually occurs without any symptoms, even though the person can still spread adenovirus to other people.

People at Increased Risk

Infants and people with weakened immune systems are at high risk for developing severe illness caused by adenovirus infection. Also, adenoviruses commonly cause acute respiratory illness in military recruits, although the frequency has significantly decreased since the reinstitution in March 2011 of the adenovirus vaccine administration. Some people infected with adenoviruses, especially those who have weakened immune systems, can have ongoing infections in their tonsils, adenoids, and intestines that do not cause symptoms.

Signs and Symptoms

Adenoviruses can cause a wide range of illnesses such as

- Common cold
- Sore throat (pharyngitis)
- Bronchitis
- Pneumonia
- Diarrhea
- Pink eye (conjunctivitis)
- Fever
- Bladder inflammation or infection (cystitis)
- Inflammation of stomach and intestines (gastroenteritis)
- Neurologic disease

Adenoviruses rarely cause serious illness or death. However, infants and people with weakened immune systems, or existing respiratory or cardiac disease, are at higher risk of developing severe illness from an adenovirus infection.

Laboratory Diagnosis

Physician can take a sample of secretions from the throat, eyes, and other body regions for laboratory testing to identify the presence of adenoviruses. Tests can also be conducted on stool, blood, or urine samples.

Prevention and Treatment

There is currently no adenovirus vaccine available to the general public. A vaccine against adenovirus types 4 and 7 was approved by the U.S. Food and Drug Administration in March 2011, for U.S. military personnel only. You can protect yourself and others from adenoviruses and other respiratory illnesses by following Respiratory Etiquette. Adenoviruses are resistant to many common disinfectant products and can remain infections for long periods on surfaces, objects, and in water of swimming pools and small lakes. It is important to keep adequate levels of chlorine in swimming pools to prevent outbreaks of conjunctivitis caused by adenoviruses.
There is no specific treatment for people with adenovirus infection. Most adenovirus infections are mild and may require only care to help relieve symptoms.

References:
https://www.cdc.gov/adenovirus/about/transmission.html
https://www.cdc.gov/adenovirus/hcp/clinical-overview.html

RESPIRATORY ETIQUETTE

There are steps that can be taken to help prevent the spread of Respiratory illnesses specifically, people who have cold-like symptoms should

- Cover their coughs and sneezes
- Wash their hands frequently and correctly (with soap and water for 20 seconds)
- Avoid sharing their cups and eating utensils with others
- Keep a safe distance between residents (3 feet or more)
- Employees with upper respiratory infection should wear a mask when in direct contact with the residents. However, they are encouraged to use prudent judgment as to when to refrain from work.

In addition, cleaning possible contaminated surfaces (such as doorknobs, shared toys) may potentially help stop the spread of Infection

Guideline for Isolation Precautions

<table>
<thead>
<tr>
<th>Clinical Syndrome or Condition</th>
<th>Potential Pathogens</th>
<th>Empiric Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respiratory infections, particularly bronchiolitis and pneumonia, in infants and young children</td>
<td>Respiratory syncytial virus, parainfluenza virus, adenovirus, influenza virus, Human metapneumovirus</td>
<td>Contact plus Droplet, Precautions, Droplet Precautions may be discontinued when adenovirus and Influenza have been ruled out</td>
</tr>
</tbody>
</table>

REFERENCE:
1. This vaccine is limited to a certain population
   a. H. influenzae
   b. Human parainfluenza viruses
   c. Adenoviruses
   d. Human metapneumovirus

2. This virus along with RSV, and influenza can circulate simultaneously during the respiratory virus season.
   a. H. influenzae
   b. Human parainfluenza viruses
   c. Adenoviruses
   d. Human metapneumovirus

3. This virus can remain infectious in airborne droplets for over an hour and on surfaces for a few hours depending on environmental conditions
   a. H. influenzae
   b. Human parainfluenza viruses
   c. Adenoviruses
   d. Human metapneumovirus

4. This virus has a Vaccine only for the most common type (“strain”) of virus but this vaccine does not prevent disease caused by the other types or “strains”
   a. H. influenzae
   b. Human parainfluenza viruses
   c. Adenovirus
   d. Human metapneumovirus

5. Respiratory Etiquette play the most important role in preventing the spread of these viruses.
   a. True
   b. False