COMMONWEALTH of VIRGINIA

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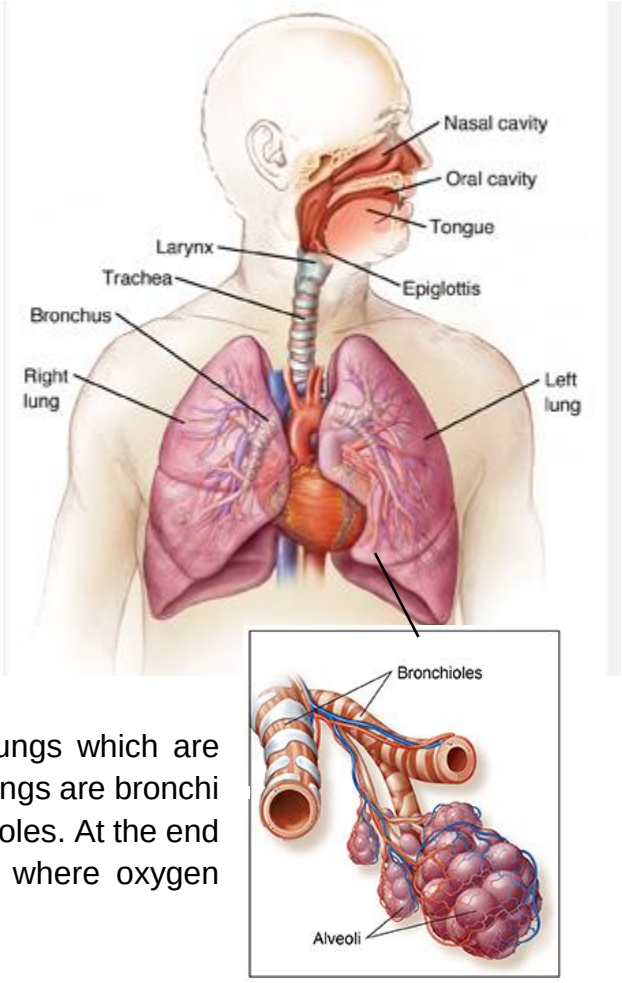
Office of Integrated Health
Health & Safety Alert/Information
Respiratory Infections Overview
Health & Safety Alert

Introduction

The respiratory system contains organs and tissues which enable a person to:

- Talk.
- Smell.
- Breathe air.
- Supply the body with oxygen.
- Remove carbon dioxide from the body.
- Transport food to the digestive system.

The respiratory system is divided into the upper and lower respiratory tracts (7) (26).



The Upper Respiratory Tract

The nose, nasal cavity or sinuses, the mouth, and the pharynx (throat), larynx (voice box), and trachea (windpipe) make up the upper respiratory tract (7) (26).

The Lower Respiratory Tract

The trachea (windpipe) leads down into the lungs which are considered the lower respiratory tract. In both lungs are bronchi that branch out into smaller and smaller bronchioles. At the end of the bronchioles are air sacs called alveoli where oxygen exchange happens (3).

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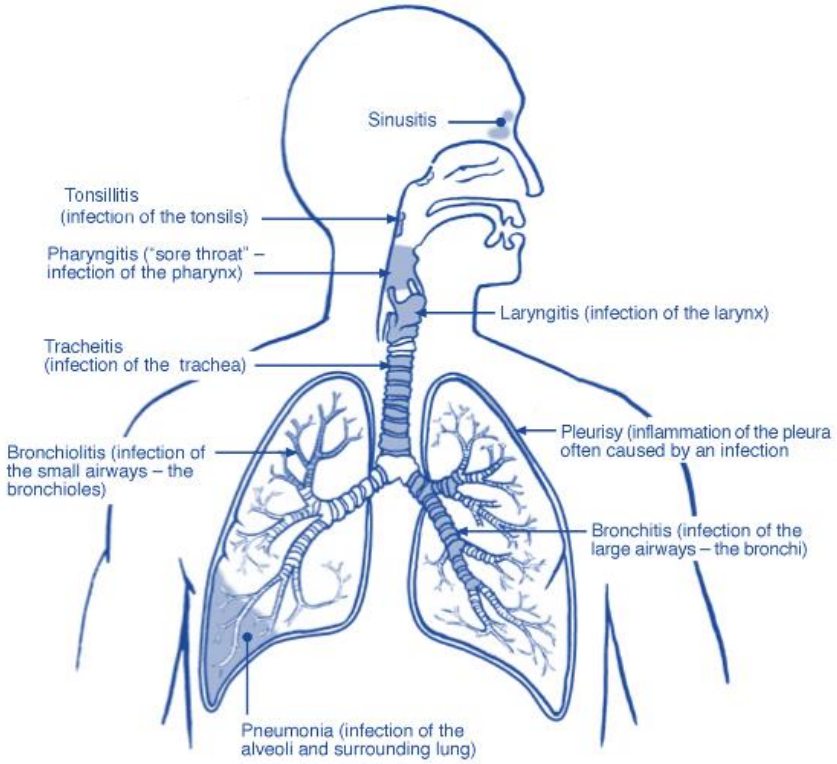
The Cause of Most Respiratory Infections

Respiratory infections occur when a virus or bacteria finds its way into the respiratory tract, causing swelling, pain, and drainage. There are many kinds of viruses and bacteria which can cause a respiratory infection (26).

Upper Respiratory Infections

Common upper respiratory infections include:

- Nasopharyngitis - the common cold.
- Sinusitis – inflamed/swollen nasal passages.
- Tonsillitis – inflamed/swollen tonsils.
- Pharyngitis – inflamed/swollen sore throat.
- Laryngitis – inflamed/swollen voice box.
- Epiglottitis – inflammation/swelling in the cartilage which covers the voice box (7) (26).



Lower Respiratory Infections

Some common lower respiratory infections include:

- COVID-19 - is a respiratory illness caused by SARS-CoV-2.
- Pneumonia - infection which inflames the air sacs in one or both lungs.
- Flu/Influenza - infection of the nose, throat, and lungs.
- Tracheitis – infection of the trachea.
- Bronchitis - inflammation of the lining of the bronchial tubes.
- Bronchiolitis - inflammation and congestion in the small airways (bronchioles) of the lung (18) (19) (20) (14) (4).

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Signs and Symptoms of a Respiratory Infection

Respiratory infection symptoms can range between mild to life-threatening, depending on the type of virus or bacteria which initially starts the infection and its impact on the body's ability to breathe (26).

After a person is exposed to a virus or bacteria, it may take one to four days for any symptoms to appear. However, symptoms of the common cold have been known to show up as soon as 10 to 12 hours after exposure (26).

Common symptoms of respiratory infections are (13) (7) (26).

- Coughing.
- Sore throat.
- Runny nose.
- Nasal congestion.
- Headache.
- Low-grade fever.
- Chills.
- Spike in fever.
- Facial pressure.
- Sneezing.
- Feeling run-down, fatigue.
- Muscle aches, body aches.
- Shortness of breath.
- Tightness in chest.
- Dizziness.

Length of Respiratory Infections

Respiratory infections usually last 7 to 14 days. If symptoms persist for more than two weeks, it is important for an individual to follow up with their primary care provider (PCP) for additional treatment, even if they have been initially seen and/or have been prescribed medication (13) (7) (26).

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Risk Factors for Respiratory Infections

Everyone is at risk for developing a respiratory infection. However, there are certain risk factors which increase an individual's chances of developing a respiratory infection and for the initial infection to develop into something more serious (7) (16).

Risk factors include:

- Children and babies who attend daycare. (Being in close contact with numerous people in a small space.)
- Older adults and individuals who cannot move independently without assistance. (Poor positioning raises risk for aspiration.)
- Individuals with chronic respiratory conditions such as asthma, allergies, chronic sinus infections, etc. (The inflammation caused by those conditions, restricts flow of mucous and creates the perfect environment for bacteria to replicate.)
- Individuals with lowered/poor immune systems do not have the capability to fight infections as well as others with healthy immune systems.
- The following conditions negatively affect immune system function:
  - Cancer.
  - Cystic fibrosis.
  - Genetically linked conditions, such as Down syndrome, Phelan McDermid syndrome, DiGeorge syndrome, Trisomy 13, etc.
  - Human immunodeficiency virus (HIV).
  - Chronic conditions, such as diabetes, obesity, lupus, etc.
  - Organ transplants.
  - Recent surgeries or hospitalizations.
  - Physical and/or mental stress.
  - Insomnia (not getting the recommended 8 hours of sleep a night).
- Smoking. This includes both active smokers and those who live with someone who smokes. Smoking causes inflammation and mucous build-up and negatively affects the body's ability to oxygenate itself.
- Anatomical/physical imperfections such as facial malformations or nasal growths (polyps) may restrict or impede mucous drainage.
- Poor hand hygiene (Increases exposure to bacteria and viruses and helps spread the illness) (7) (16) (26).

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Respiratory Infections and Individuals with Intellectual and Developmental Disabilities (DD)

- Respiratory infections are one of the most common causes of death for individuals with intellectual and developmental disability. The rate of respiratory related deaths is higher in the DD population than in the general population (2) (27).
- Individuals with DD are at increased risk for exposure to respiratory infections because many of them spend time in congregate settings such as group homes and day programs where viruses are easily spread through the air and surface contact (30).
- Many individuals with DD have direct physical contact with numerous caregivers who assist them throughout their day (bus drivers, direct care providers, day program workers, teachers, housemates, etc.) (30).
- Individuals with DD are at increased risk based on the severity of their intellectual disability, their age, and their other co-occurring physical and mental health diagnoses (27) (30).
- Individuals with mild DD, who are more independent, are exposed to respiratory infections while interacting with others in their community and may forget to wash their hands as often as they should throughout their day (27).
- Individuals with severe or profound DD are typically reliant on others for daily care needs and may not be able to move around independently. Those who lack trunk control, and those who have dysphagia (difficulty swallowing) may be unable to reposition themselves, cough and/or deep breathe effectively, which allows excessive mucous to settle into their respiratory tracts, putting them at higher risk for a bacterial infection (27).
- Individuals diagnosed with Down Syndrome struggle with muscle weakness, and tend to produce thicker mucous secretions, which may also make it difficult for them to cough and deep breathe effectively to clear their airway. They typically have a lowered immune system, experience a faster aging process, and have physical irregularities which make them more vulnerable to respiratory infections overall (17) (9).
- Being older in age and having numerous secondary medical diagnoses such as cystic fibrosis, cerebral palsy, heart disease, and asthma, puts individuals with DD at increased risk for contracting a respiratory infection (27) (30).
- Individuals with DD should receive seasonal vaccinations, stay up to date on required vaccinations, and should have regular annual physical or wellness visits (27).

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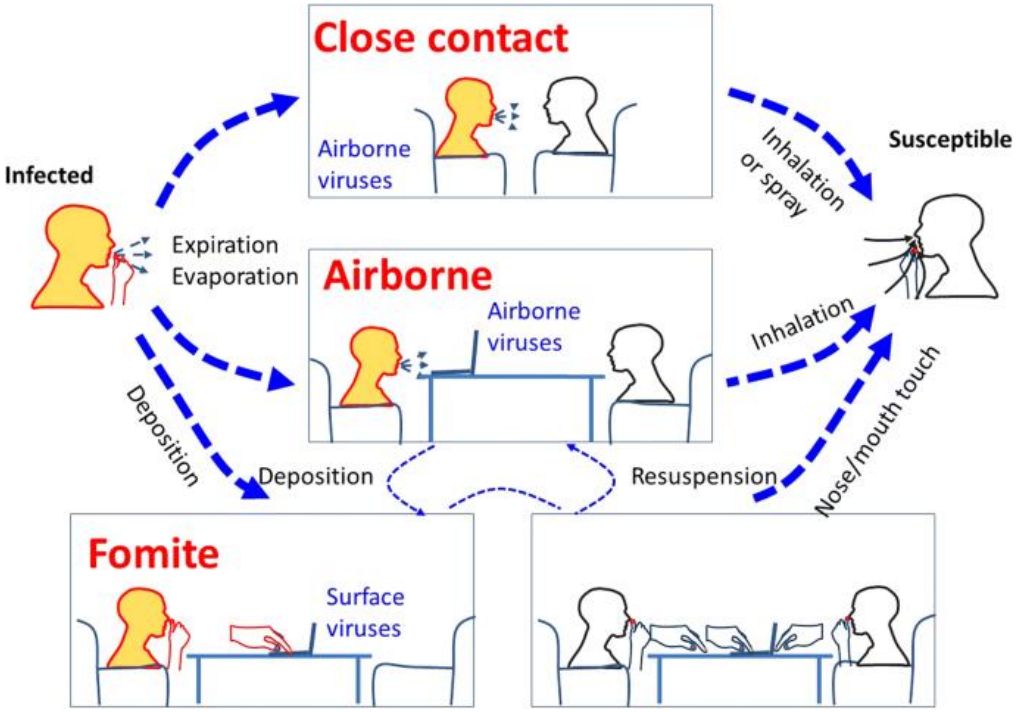
How Respiratory Infections are Spread

Most people spend more time inside and in closer contact during colder months of the year which increases the spread of respiratory infections both through airborne transmission, close contact, and through surface (fomite) transmission (24).

- Airborne transmission.
  - When a person with a respiratory infection is coughing, sneezing, or talking, infectious droplets are sprayed into the air. Then other people breathe the virus into their respiratory tract (13) (29).
- Close contact transmission.
  - Normal talking and breathing can produce droplets small enough to remain airborne presenting a risk of infection when in close contact with others (13) (29).
- Surface (fomite) transmission.
  - People with the virus touch their nose or mouth, and then touch objects or surfaces which deposits the virus onto them.
  - People with the virus cough and spray droplets into the air. The droplets then land on surfaces or objects, which deposits the virus onto them.
  - Virus droplets can survive outside of the body for days, sometimes weeks and help the virus spread to anyone touching them.
  - People with virus contaminated hands, then spread the virus to another surface or to their own face, nose, mouth, and respiratory tract, and the process repeats itself (13) (1) (29).



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How to Reduce the Spread

Individuals with disabilities may not know how to wash their hands correctly or understand how frequently hands need or should be washed (5) (11) (21).

Coughing and sneezing into the hands, then touching objects in the environment has been shown to spread germs (21) (29). Many individuals can be taught to cover their coughs and sneezes with their elbow through repeated demonstration. Demonstrate the technique to individuals and have them practice it with you when they are well. Remind them to use the technique when they are ill.

- Encourage/teach proper handwashing techniques.
- Encourage frequent handwashing with soap and water.
- Schedule specific times for hand washing throughout the day.
- Discourage individuals from touching their nose, mouth, or eyes
- Teach and encourage sneezing into the elbow (5) (21). .

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Respiratory Infection Complications

Respiratory infections are the most common reason for adults to be admitted to the hospital (8). Largely symptoms of respiratory illness are mild to moderate, serious complications occur when a viral respiratory infection progresses into a secondary bacterial infection (23).

- Examples of viral infections which advance into bacterial infections would be:
  - Flu evolving into bacterial pneumonia.
  - The common cold growing into a sinus infection (Sinusitis).
  - COVID-19 progressing into bacterial pneumonia (8) (23).
- Difficulty breathing can cause respiratory failure, which is a serious medical emergency, requiring an individual to receive immediate medical care at the nearest hospital (8) (22).
- An individual who is having trouble breathing may need oxygen therapy temporarily until they can breathe on their own again (23).
- An individual experiencing serious respiratory failure may be admitted to the hospital and placed in the intensive care unit (ICU) on a ventilator machine to assist them with breathing (23).
- Due to the increased administration of antibiotics to treat a respiratory infections an individual is at risk for acquiring an antibiotic resistant organism such as Clostridioides difficile (C.diff), Methicillin-Resistant Staphylococcus Aureus (MRSA), or Vancomycin-resistant Enterococcus (VRE) (8).
- Untreated respiratory infections can lead to sepsis and death (12).

Caregiver Recommendations

- Caregivers should be empowered to call 911 if/when an individual's symptoms worsen. Take individuals to the hospital emergency room (ER) or call 911 immediately if any of the following symptoms are present:
  - Loss of consciousness.
  - High fever (higher than 103°).
  - Breathing difficulties (shallow, rapid, painful, or ***any*** trouble breathing).
  - Changes in breath sounds from normal to wheezing, rattling, crackling, or snoring.
  - Severe coughing, which may cause the individual to vomit or spit up blood.

- If you are not sure it is an emergency, it is always better to err on the side of caution and call 911.
- In licensed DBHDS agencies it is **NOT** best practice to call a supervisor before calling 911.
- If the individual has a change in their condition which doesn't require a call to 911, but does require a visit to their PCP, caregivers should schedule a PCP appointment for the individual as soon as possible.
- If an individual is ill and their PCP's office is closed, (holidays, weekends, etc.) take the individual to an urgent care or to the hospital.
- It is the caregiver's responsibility to make the appointment and communicate to the PCPs office why the individual needs to be seen by the doctor, and what changes in their health have been observed (25).
- In licensed DBHDS agencies, it is best practice for DSPs to notify their supervisor when a PCP appointment is made for the individual and why. (Be sure to document the symptoms the individual is experiencing, any changes you observe related to the illness, the call to the PCP, and what day/time the appointment is scheduled).
- All staff members and caregivers should receive infection control education during orientation (prior to working with individuals with DD) (25).
- Visual aids are helpful to remind and prompt individuals to wash their hands after toileting, before eating, and after coughing or sneezing into their hands (7).
- Encourage employees and individuals to stay home when they are showing symptoms of respiratory infections, or do not feel well (7).
- Administer PRN medications (Acetaminophen (Tylenol), ibuprofen (Motrin), cough syrup, antihistamines, expectorants (Guaifenesin), as prescribed to reduce symptoms (7).
- Take frequent vital signs during illnesses to ensure worsening symptoms are noticed early, reported to the PCP, and are treated.
- If an individual is prescribed antibiotics for an infection and there is no improvement in symptoms within 24 to 48 hours, call and schedule another appointment with the individual's PCP for further evaluation (7).
- If symptoms worsen, after the individual has been taking an antibiotics, act quickly, and call 911 or take the individual to the ER. Infections which worsen can lead to sepsis and death very quickly (12).

- For helpful hints review the OIH-HSN Health & Safety alert on Recognizing changing health and medical emergencies .
- Ensure individuals are getting the suggested amount of sleep and rest daily (7).
- Ensure individuals are up to date on vaccines (7).
- Ensure disposable tissues and trash cans are within reach of the individual so they can throw away used tissues immediately and do not leave them on tables or counters.
- Social distancing of at least 6 feet is effective at reducing the spread of many airborne respiratory viruses (15) (29).
- Help individuals to remember to social distancing from others to decrease the chance of exposure to respiratory droplets and spread to someone else (15).
- Clean surfaces frequently with approved cleaners. The CDC has recommendations for cleaning on a regular basis and when someone is sick (5).
- Check with the EPA to ensure cleaners are registered. Follow cleaner directions for best results. Not all products are effective cleaning agents (28).

Resources

- The Virginia Department of Behavioral Health and Developmental Services (DBHDS) Website: http://www.dbhds.virginia.gov/
- The Office of Integrated Health – Health Supports Network (OIH – HSN) website: https://dbhds.virginia.gov/office-of-integrated-health#
- OIH-HSN Mobile Rehab Engineering (MRE) Team Email Contact: mreteam@dbhds.virginia.gov
- OIH-HSN Dental Team: dentalteam@dbhds.virginia.gov
- OIH-HSN Nursing Team: nursing@dbhds.virginia.gov
- For any provider licensing questions, please contact the DBHDS Office of Licensing at: https://dbhdsdev.virginia.gov/quality-management/office-of-licensing/
- Provider Regulations (Chapter 105. Rules and Regulations for Licensing Providers by the Department of Behavioral Health and Developmental Services) can be found at the following link: https://law.lis.virginia.gov/admincode/title12/agency35/chapter105/
- Provider Development resources can be found at this link: https://dbhds.virginia.gov/developmental-services/provider-development/

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