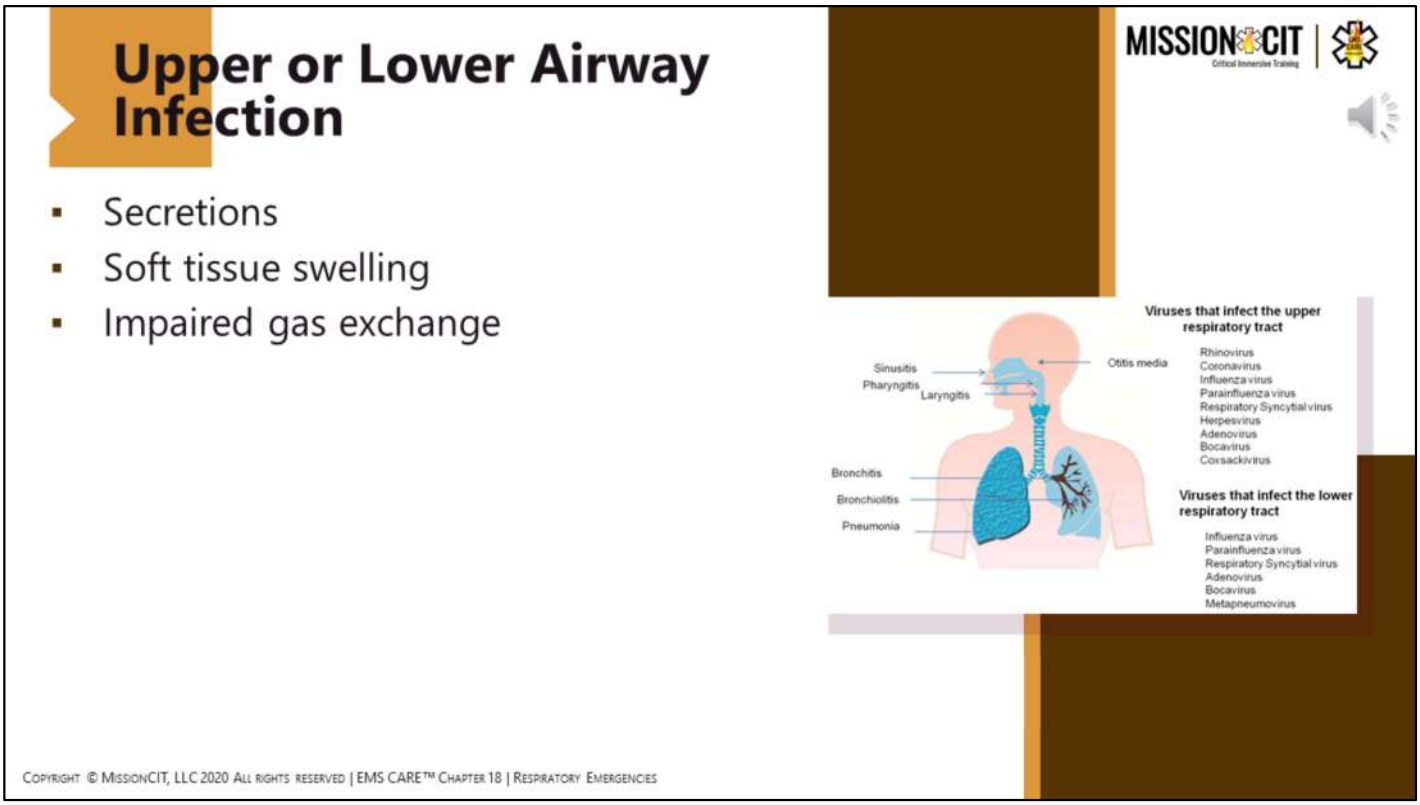


Thank you, Missah!

In this lesson, we'll talk about the different respiratory diseases and conditions that the patients may be experiencing and what you can do in each of these situations.

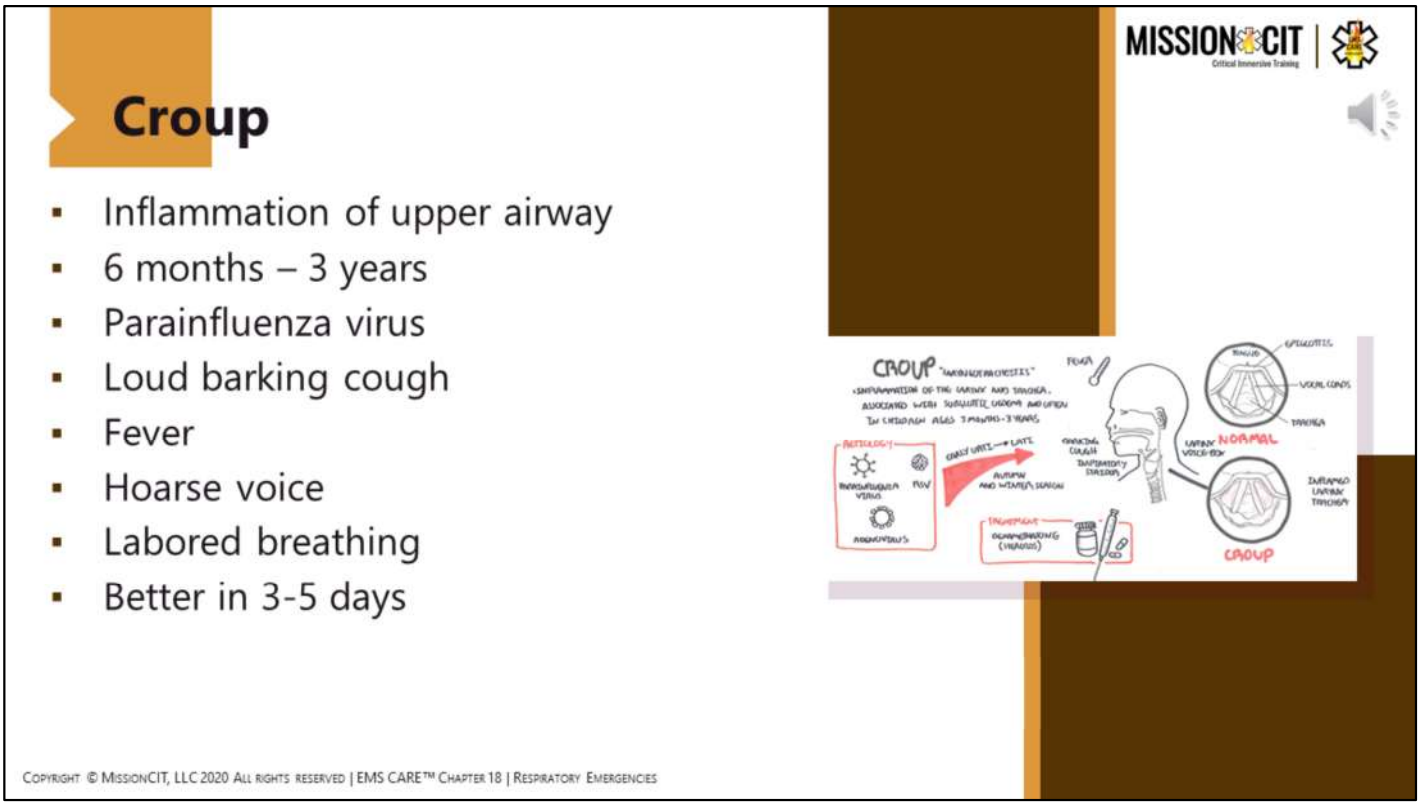
So, let's get started.



Infectious diseases can affect all parts of the airway. Some of the common causes for these diseases are:

- Mucus and other secretions can affect airflow in major passages
- The soft tissues in the upper airway can swell
- There can be an impaired exchange of gases in the alveoli

Depending on the cause of the infection, several diseases may occur. Let's look at specific diseases next.

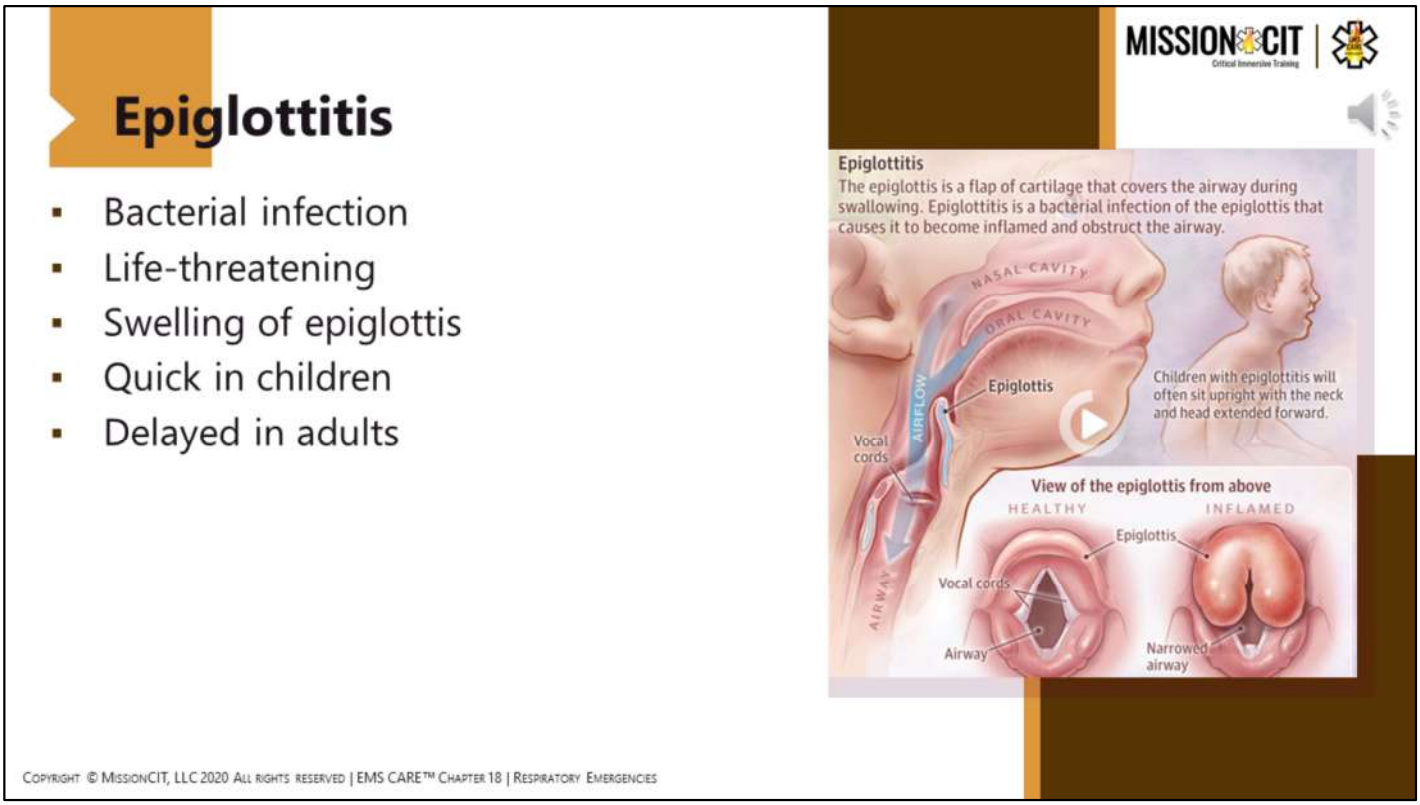


Croup is the inflammation of the pharynx, larynx, and trachea and is typically seen in children between the years of six months to three years. It is caused by a viral infection, mostly a parainfluenza virus.

The symptoms of croup are:

- A loud barking cough that's further aggravated by crying
- Anxiety and agitation can further aggravate it
- Fever
- Hoarse voice
- Noisy or labored breathing

They become worse at night and last anywhere from three to five days. Most cases of croup are mild. In a small percentage of children, the airway swells enough to interfere with breathing. Rarely, a secondary bacterial infection of the trachea can occur, resulting in trouble breathing and requiring emergency medical care.



This is a bacterial infection that causes the swelling of the epiglottis.

Epiglottitis is a potentially life-threatening condition that occurs when the epiglottis, which is a small cartilage lid that covers the windpipe, swells, thereby blocking the flow of air into the lungs.

Many factors can cause the epiglottis to swell — burns from hot liquids, direct injury to the throat, and various infections. The most common cause of epiglottitis in children in the past was infection with Haemophilus influenza type b (Hib), the same bacterium that causes pneumonia, meningitis, and infections in the bloodstream. Epiglottitis can occur at any age.

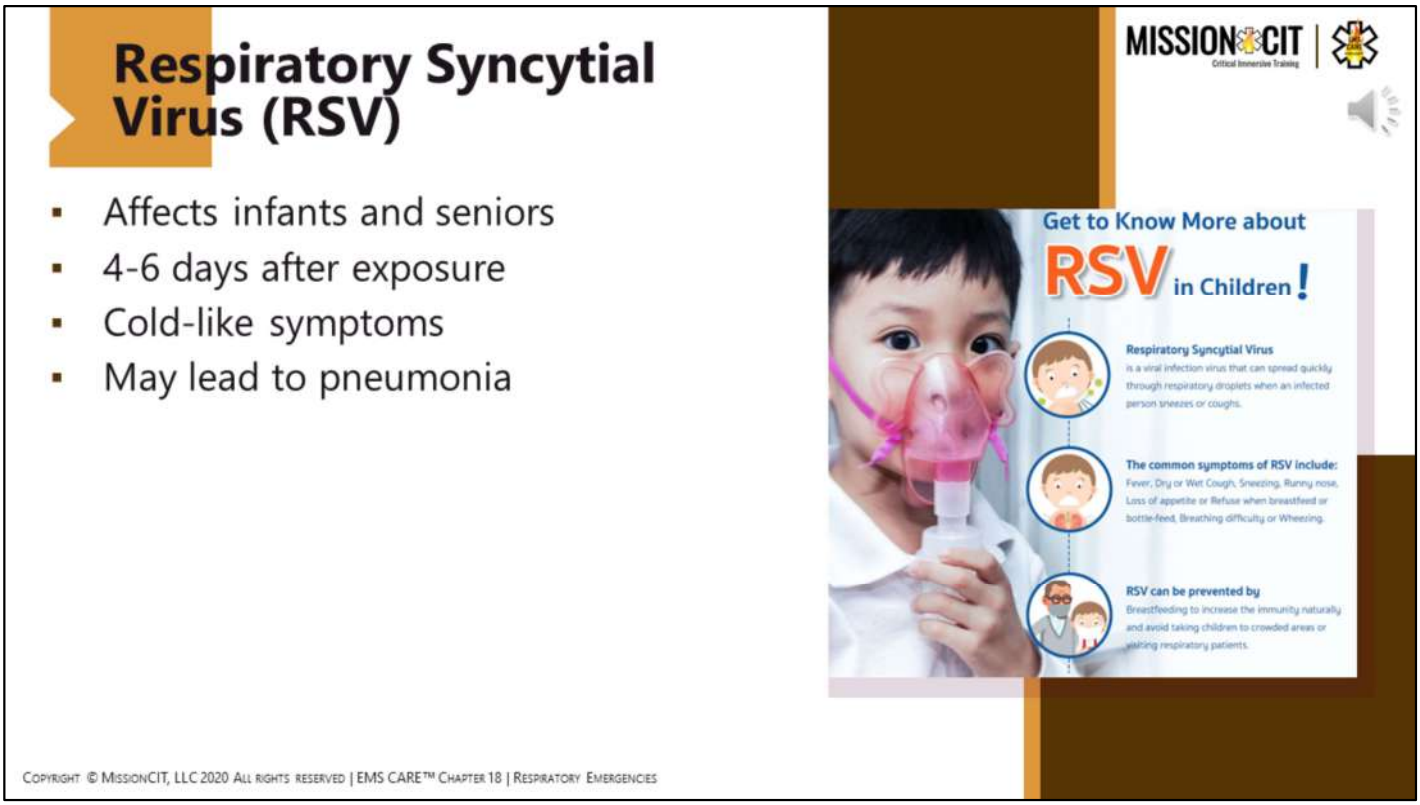
In children, signs and symptoms of epiglottitis may develop within a matter of hours, including:

- Fever
- Severe sore throat
- Abnormal, high-pitched sound when breathing in (stridor)
- Difficult and painful swallowing
- Drooling
- Anxious, restless behavior

- Feeling better when sitting up or leaning forward
- Position the patient comfortably and provide oxygen as needed

For adults, signs and symptoms may develop more slowly, over days rather than hours. Signs and symptoms may include:

- Severe sore throat
- Fever
- A muffled or hoarse voice
- Abnormal, high-pitched sound when breathing in (stridor)
- Difficulty breathing
- Difficulty swallowing
- Drooling
- Epiglottitis can cause respiratory failure



This is a common cause of illness in young children and often affects the lungs and passages. RSV can cause severe infection in some people, including babies 12 months and younger (infants), especially premature infants, older adults, people with heart and lung disease, or anyone with a weak immune system.

Signs and symptoms of respiratory syncytial virus infection most commonly appear about four to six days after exposure to the virus. In adults and older children, RSV usually causes mild cold-like signs and symptoms. These may include:

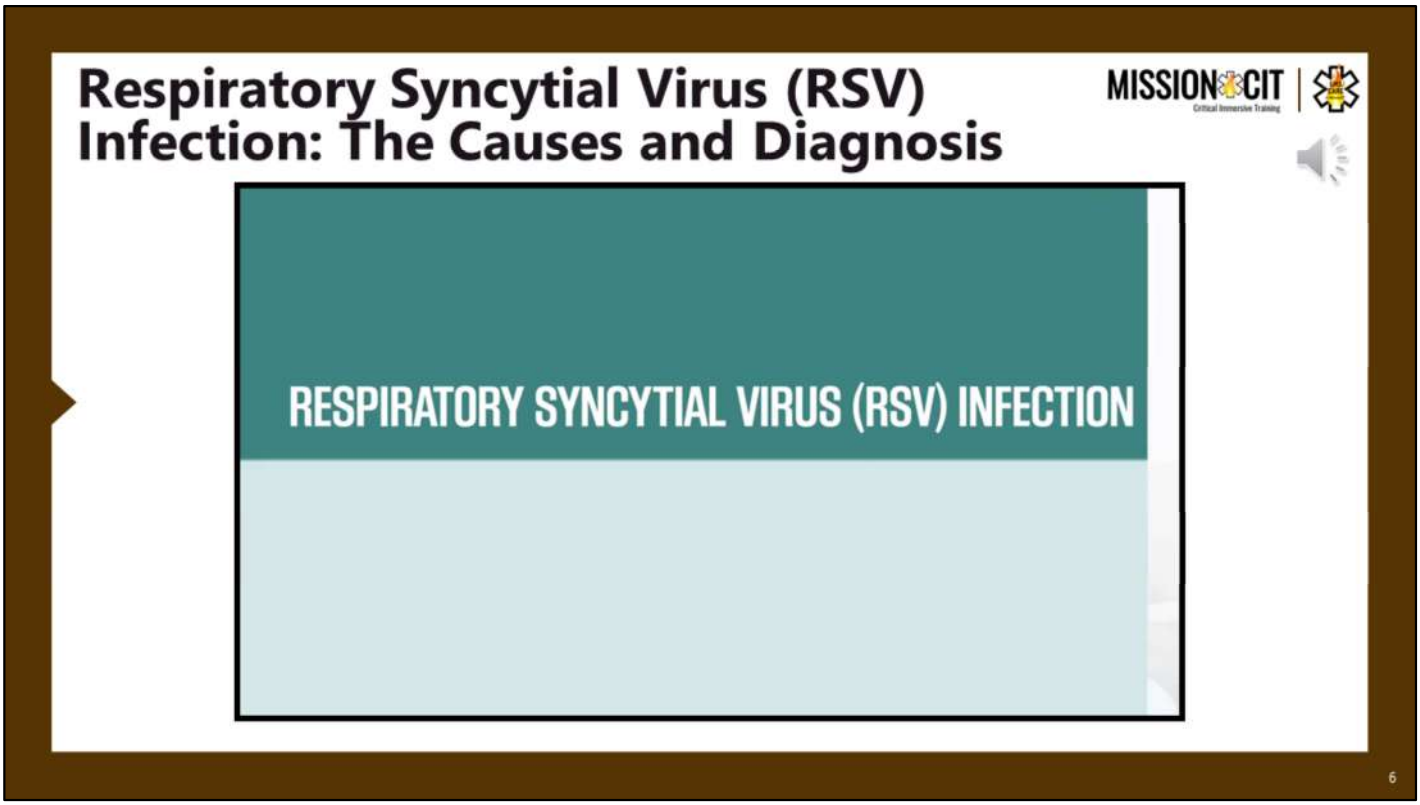
- Congested or runny nose
- Dry cough
- Low-grade fever
- Sore throat
- Sneezing, and
- Headache

RSV infection can spread to the lower respiratory tract, causing pneumonia or bronchiolitis, which is the inflammation of the small airway passages entering the lungs. Signs and symptoms may include:

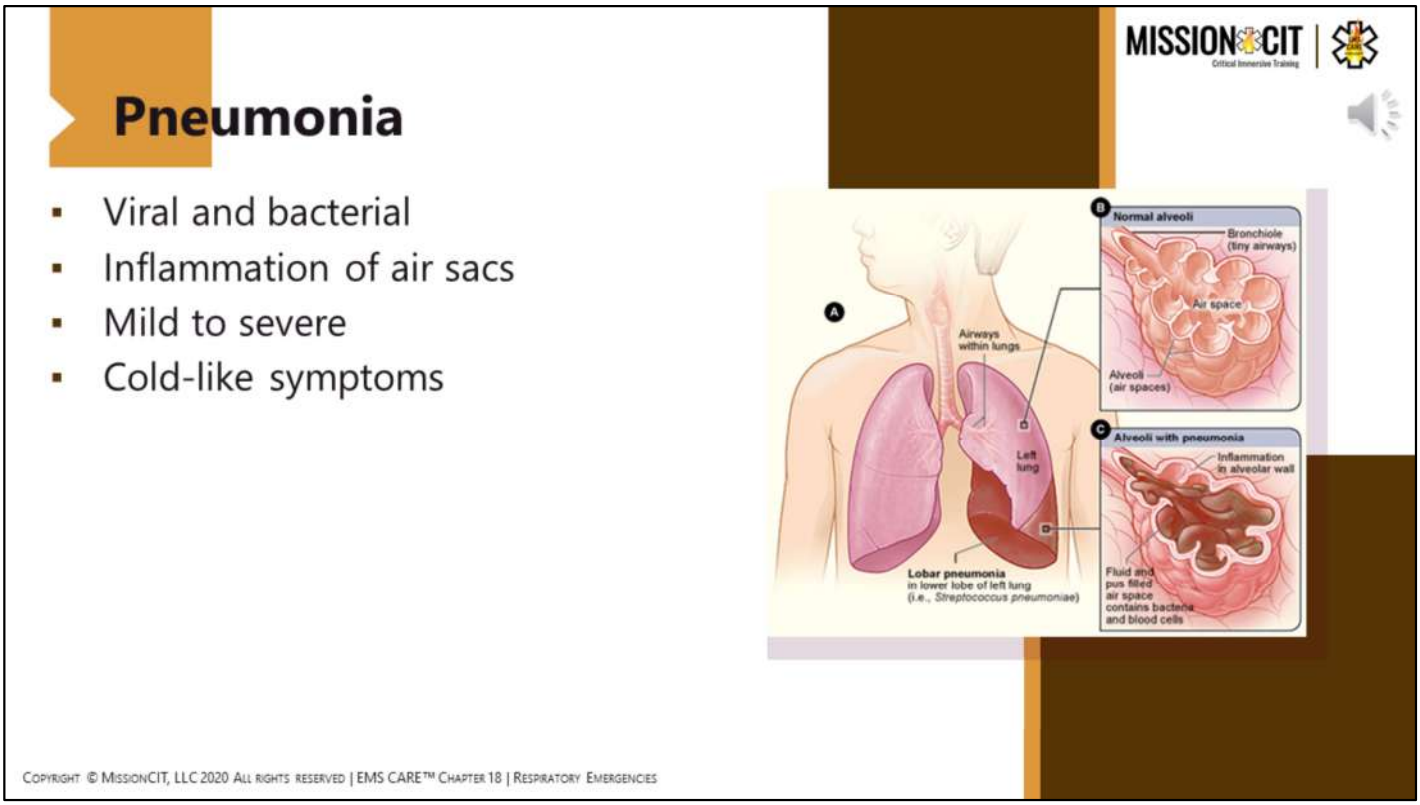
- Fever
- Severe cough
- Wheezing
- Rapid breathing or difficulty breathing where the person may prefer to sit up rather than lie down
- Bluish color of the skin due to lack of oxygen

Infants are most severely affected by RSV. Signs and symptoms of severe RSV infection in infants include:

- Short, shallow, and rapid breathing
- Struggling to breathe — chest muscles and skin pulling inward with each breath
- Cough
- Poor feeding
- Unusual tiredness (lethargy), and
- Irritability



Respiratory syncytial virus (RSV) is a very common cause of respiratory tract infection, particularly in children. Nearly all children have been infected by age 4 years, many in the first year of life. Watch this video by Merck Manuals for the quick facts on RSV.



Pneumonia can be caused by both viruses and bacteria. Viral pneumonia will present itself gradually and Is less severe when compared to bacterial pneumonia that will come on quickly and will result in a high fever.

It inflames the air sacs in one or both lungs. The air sacs may fill with fluid or pus, causing cough with phlegm or pus, fever, chills, and difficulty breathing. A variety of organisms, including bacteria, viruses, and fungi, can cause pneumonia. Pneumonia can range in seriousness from mild to life-threatening. It is most serious for infants and young children, people older than age 65, and people with health problems or weakened immune systems.

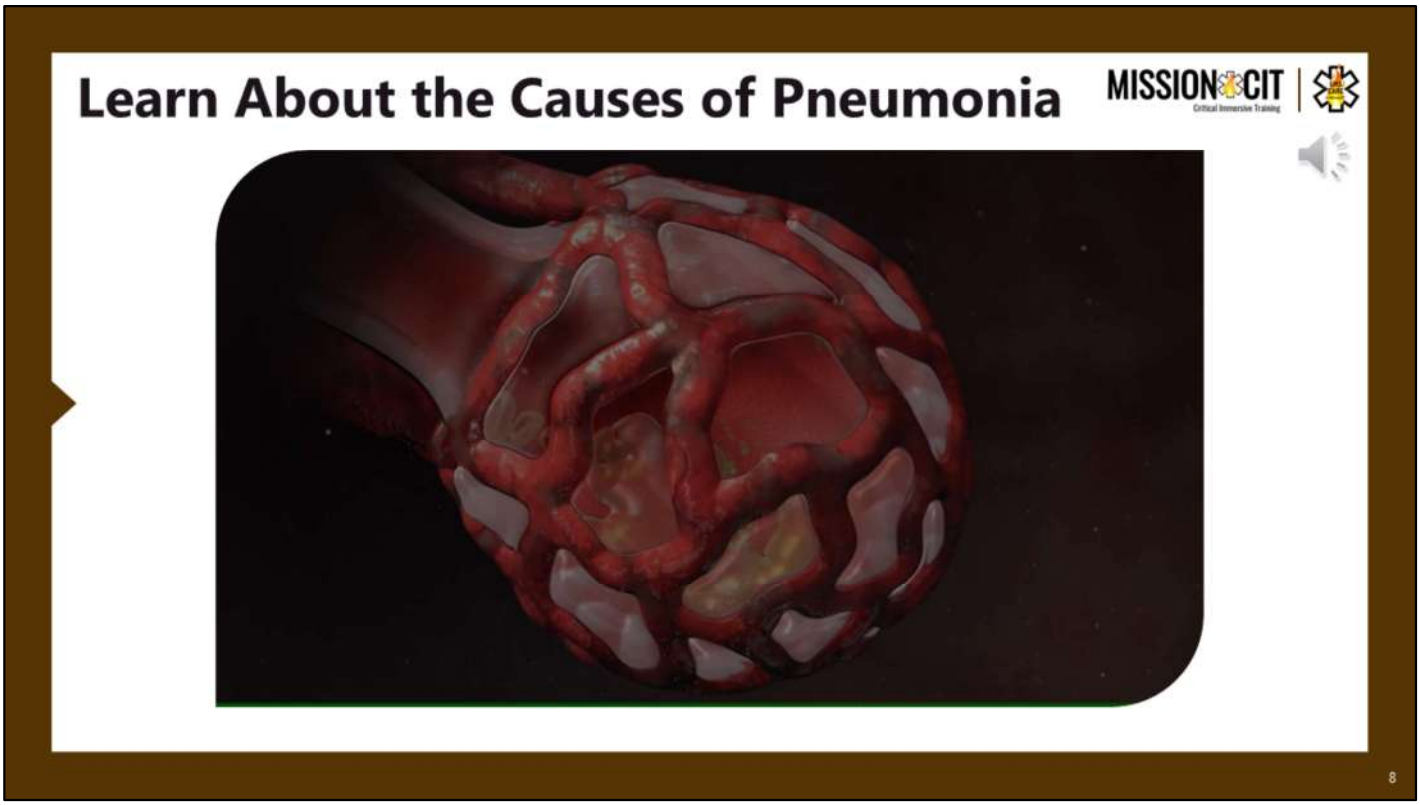
The signs and symptoms of pneumonia vary from mild to severe, depending on factors such as the type of germ causing the infection, and the age and overall health. Mild signs and symptoms often are similar to those of a cold or flu, but they last longer.

Signs and symptoms of pneumonia may include:

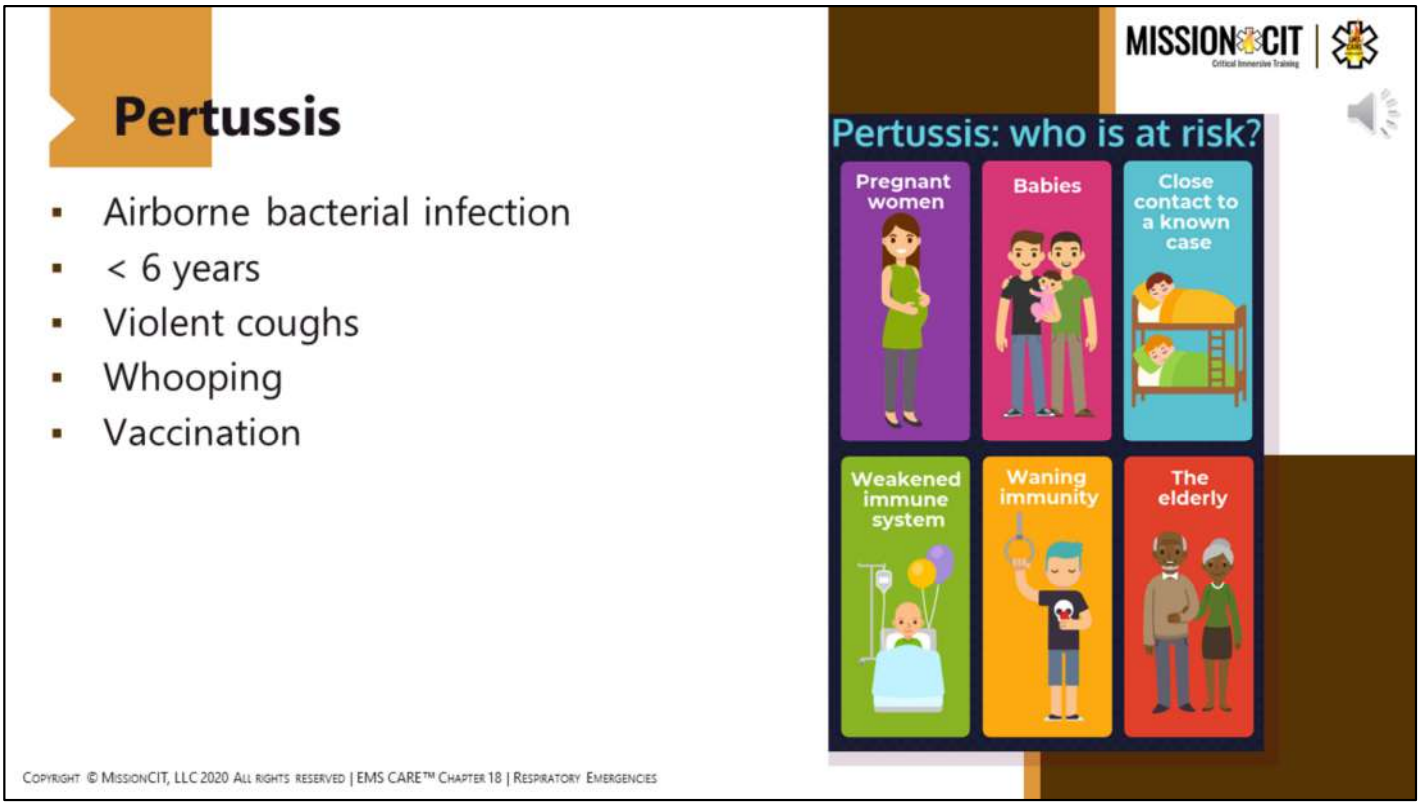
- Chest pain when the patient breathes or coughs
- Confusion or changes in mental awareness (in adults age 65 and older)
- Cough, which may produce phlegm
- Fatigue

- Fever, sweating and shaking chills
- Lower than normal body temperature (in adults older than age 65 and people with weak immune systems)
- Nausea, vomiting, or diarrhea
- Shortness of breath

Newborns and infants may not show any sign of the infection. Or they may vomit, have a fever and cough, appear restless or tired and without energy, or have difficulty breathing and eating.



This video from NHLBI shows how your immune system tries to get rid of germs in your respiratory system and how you develop pneumonia.

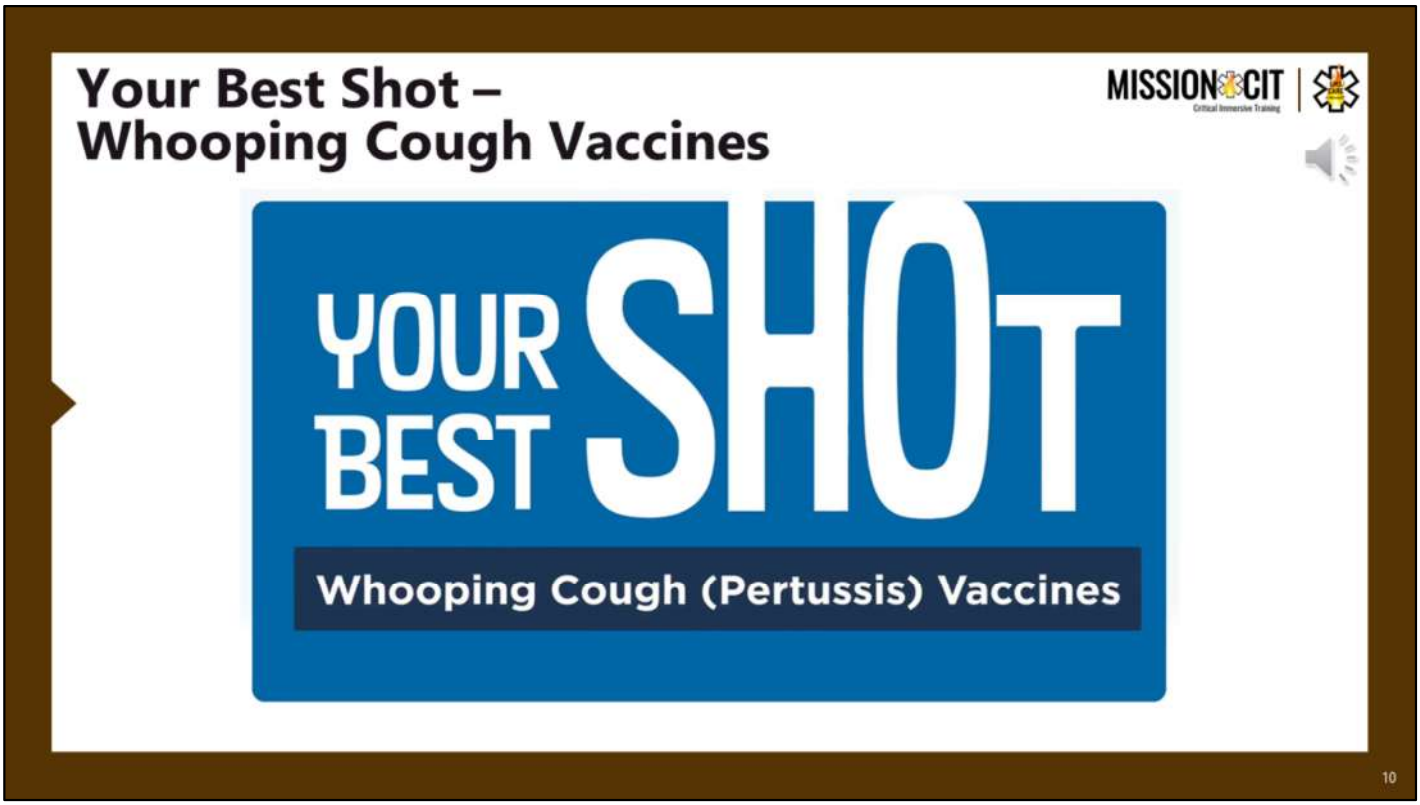


Pertussis is an airborne bacterial infection that mostly affects children below six years of age.

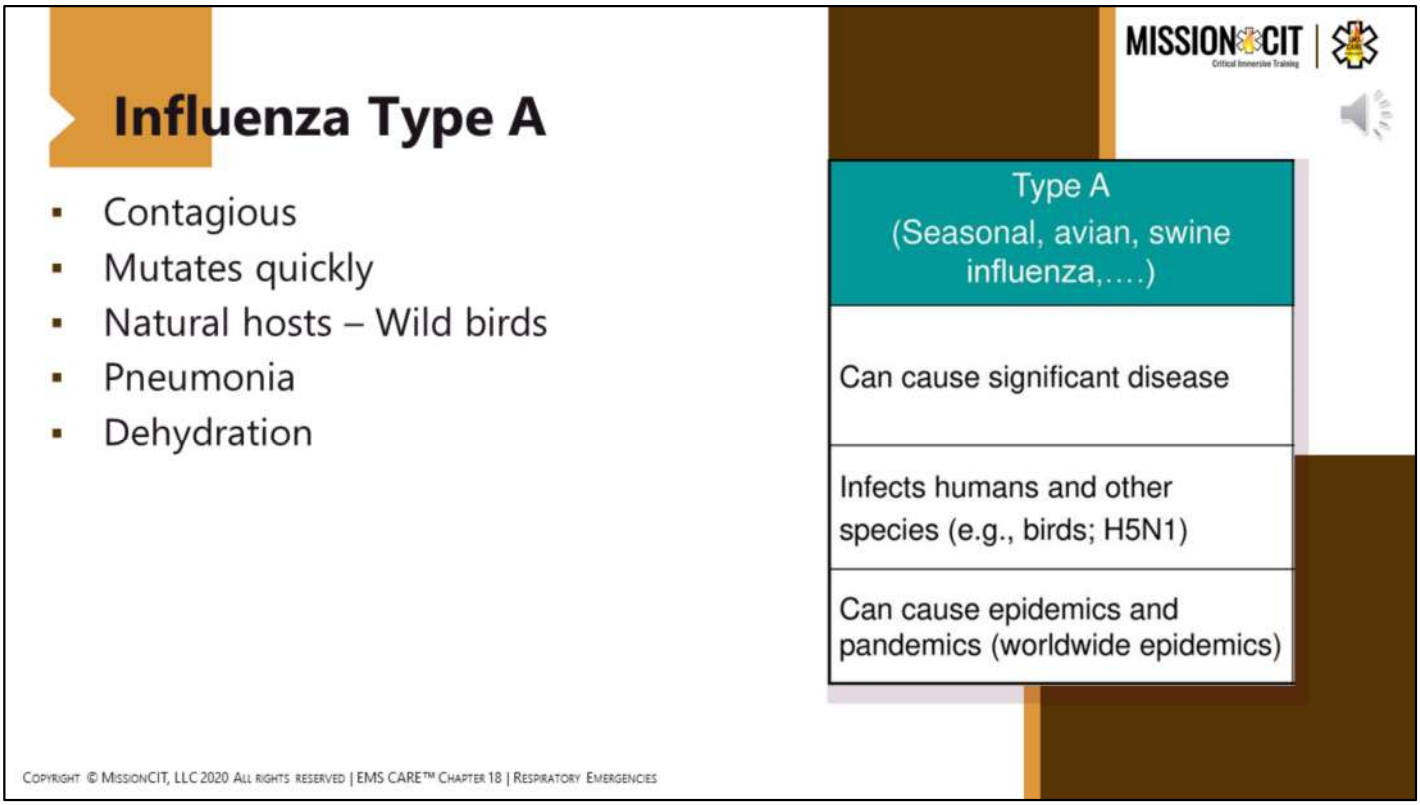
Pertussis, also known as whooping cough, is a highly contagious respiratory disease. It is caused by the bacterium Bordetella pertussis.

Pertussis is known for uncontrollable, violent coughing which often makes it hard to breathe. After cough fits, someone with pertussis often needs to take deep breaths, which results in a “whooping” sound. Pertussis can affect people of all ages but can be very serious, even deadly, for babies less than a year old.

The best way to protect against pertussis is by getting vaccinated.



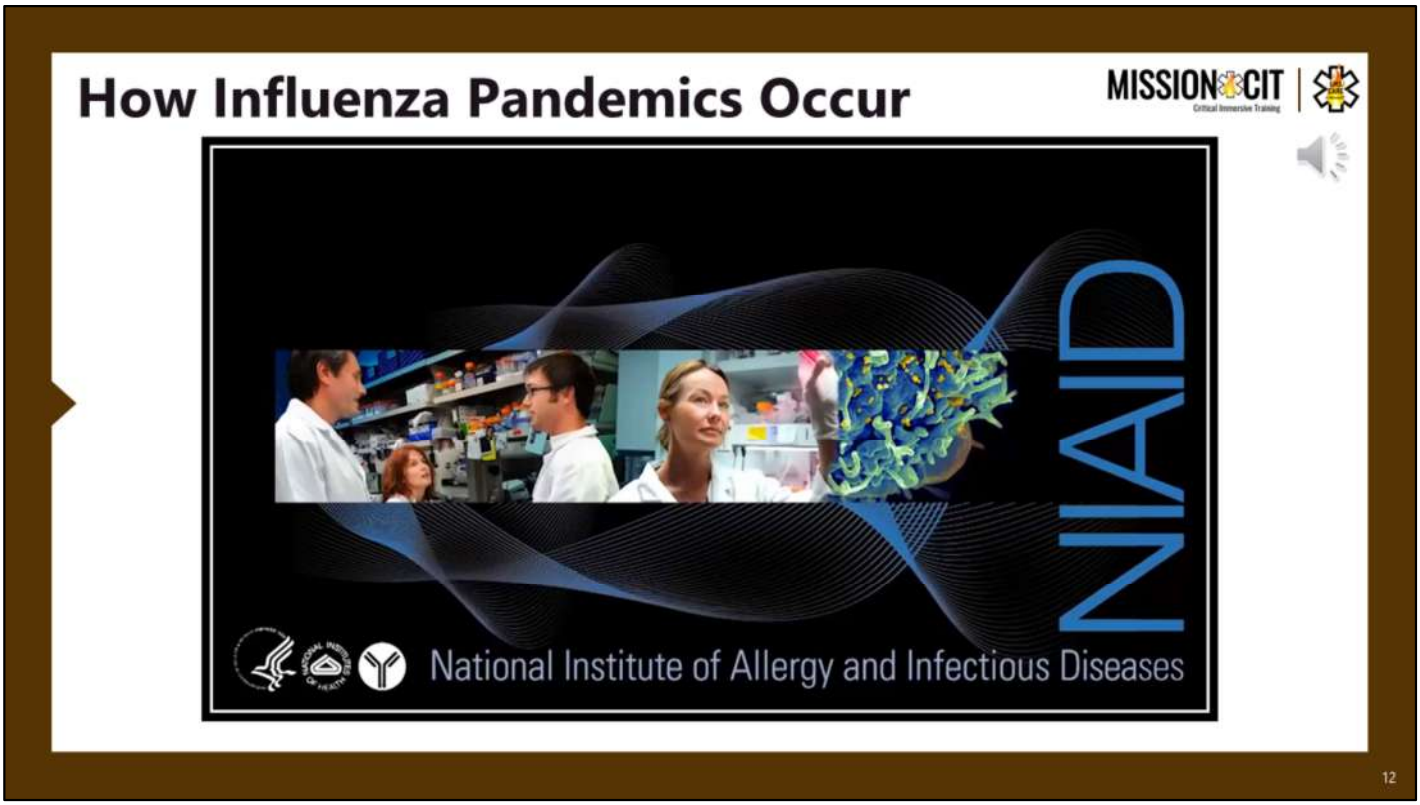
Whooping cough, which is also known as pertussis, makes thousands of people in the United States sick each year. It's especially dangerous for infants under 12 months of age. Vaccines are the best shot against whooping cough. Learn more from this video by the U.S. Department of Health and Human Services.



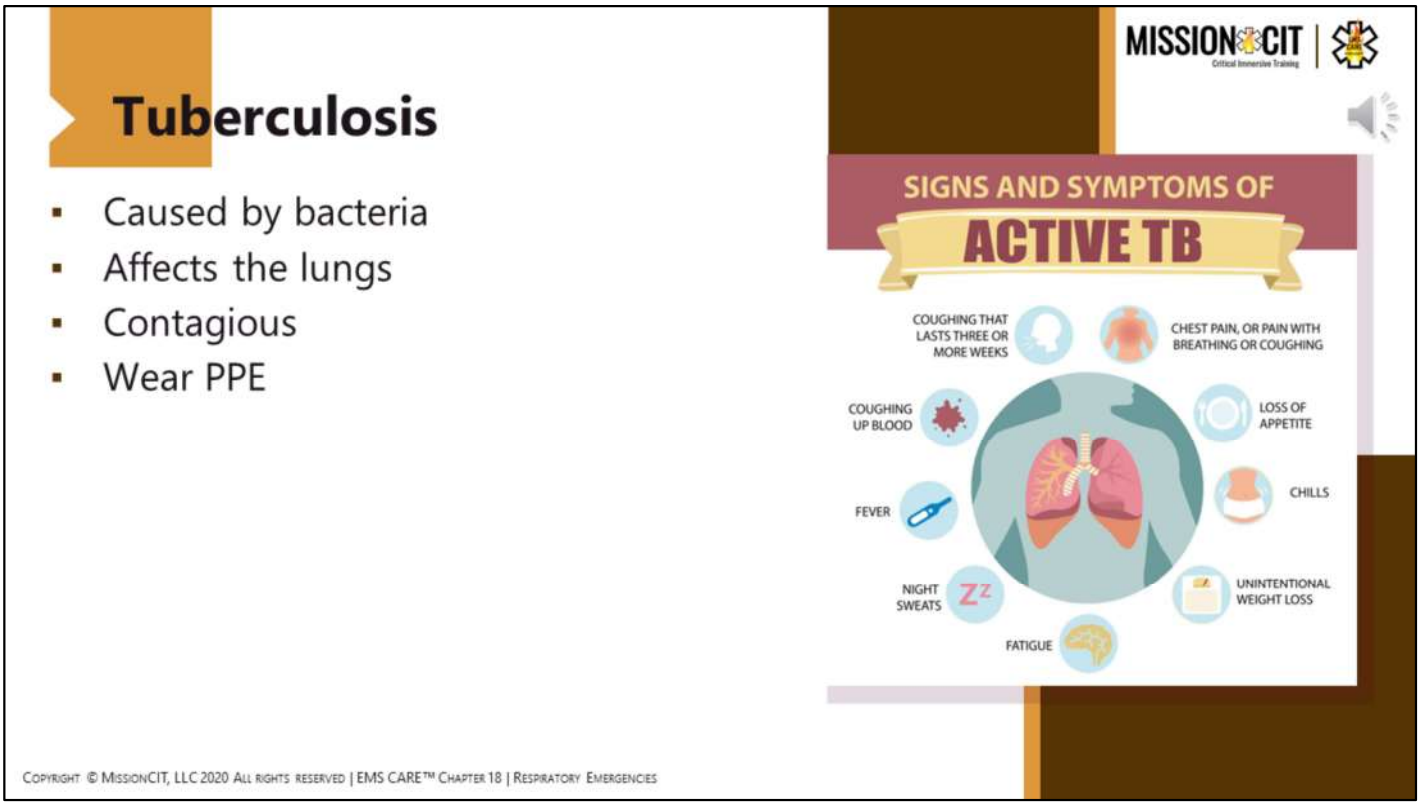
Type influenza can be dangerous and is known to cause outbreaks and increase the risk of disease. Unlike a type B infection, type A viruses are categorized by subtypes and strains. Influenza A mutates faster than influenza B, but both viruses are always changing, creating new strains from one flu season to the next. Past flu vaccinations will not prevent infection from a new strain.

Wild birds are the natural hosts for a type A virus, also called avian flu and bird flu. This infection can also spread to other animals and humans. This, combined with the ability of type A influenza to mutate faster than type B, can cause pandemics.

The symptoms include fever, cough, sore throat, muscle aches, headache, and fatigue. It can lead to pneumonia or dehydration.



The National Institute of Allergy and Infectious Diseases explains the emergence and potential spread of new influenza viruses.



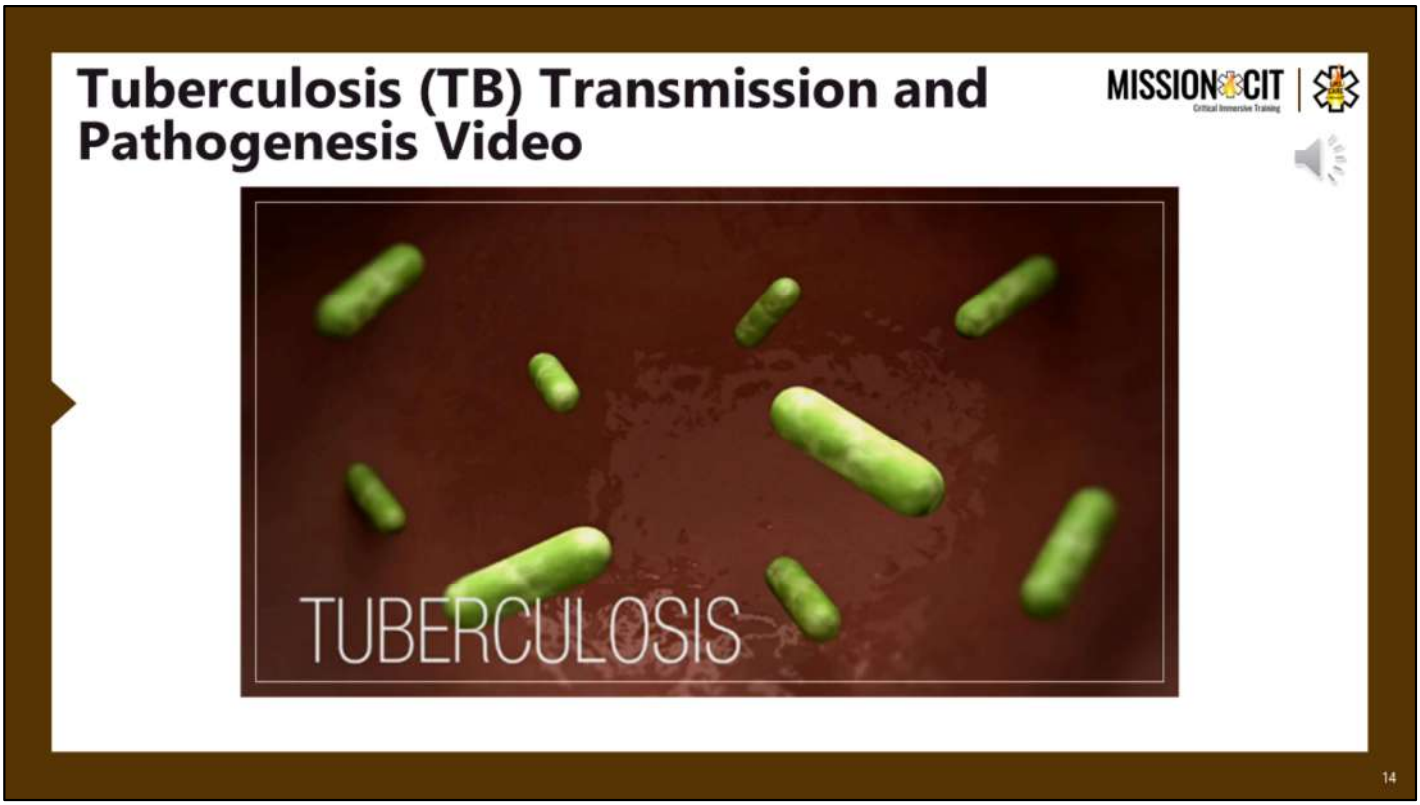
Tuberculosis is caused by bacteria (Mycobacterium tuberculosis) that most often affect the lungs. Tuberculosis is curable and preventable.

TB is spread from person to person through the air. When people with lung TB cough, sneeze, or spit, they propel the TB germs into the air. A person needs to inhale only a few of these germs to become infected.

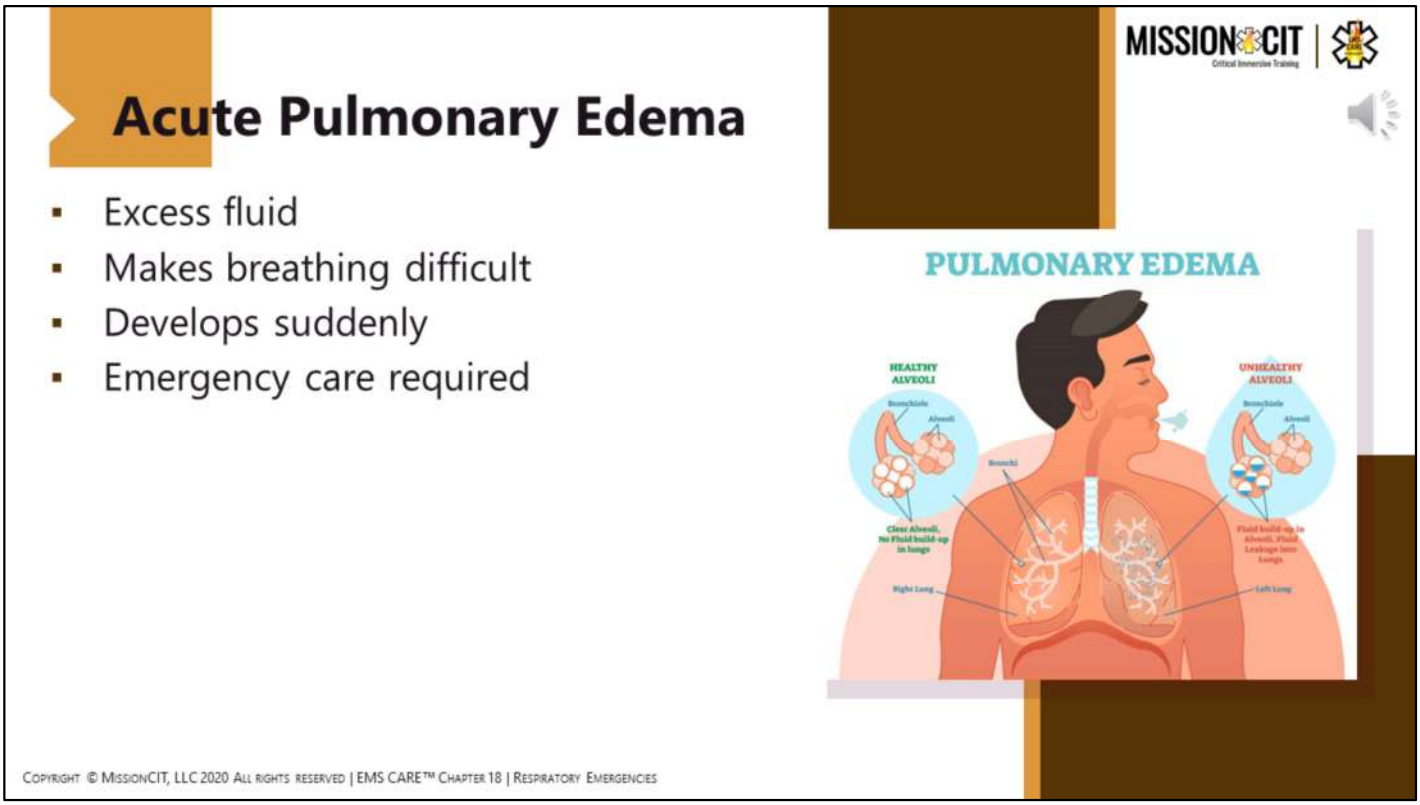
Tuberculosis mostly affects adults in their most productive years. However, all age groups are at risk. Alcohol use disorder and tobacco smoking increase the risk of TB. It can also remain inactive for many years.

Common symptoms of active lung TB are cough with sputum and blood at times, chest pains, weakness, weight loss, fever, and night sweats.

While handling patients with TB, wear gloves, eye protection, and an N95 respirator.



Here is an animated video from the CDC demonstrating the transmission and pathogenesis of tuberculosis (TB).



Pulmonary edema is a condition caused by excess fluid in the lungs. This fluid collects in the numerous air sacs in the lungs, making it difficult to breathe.

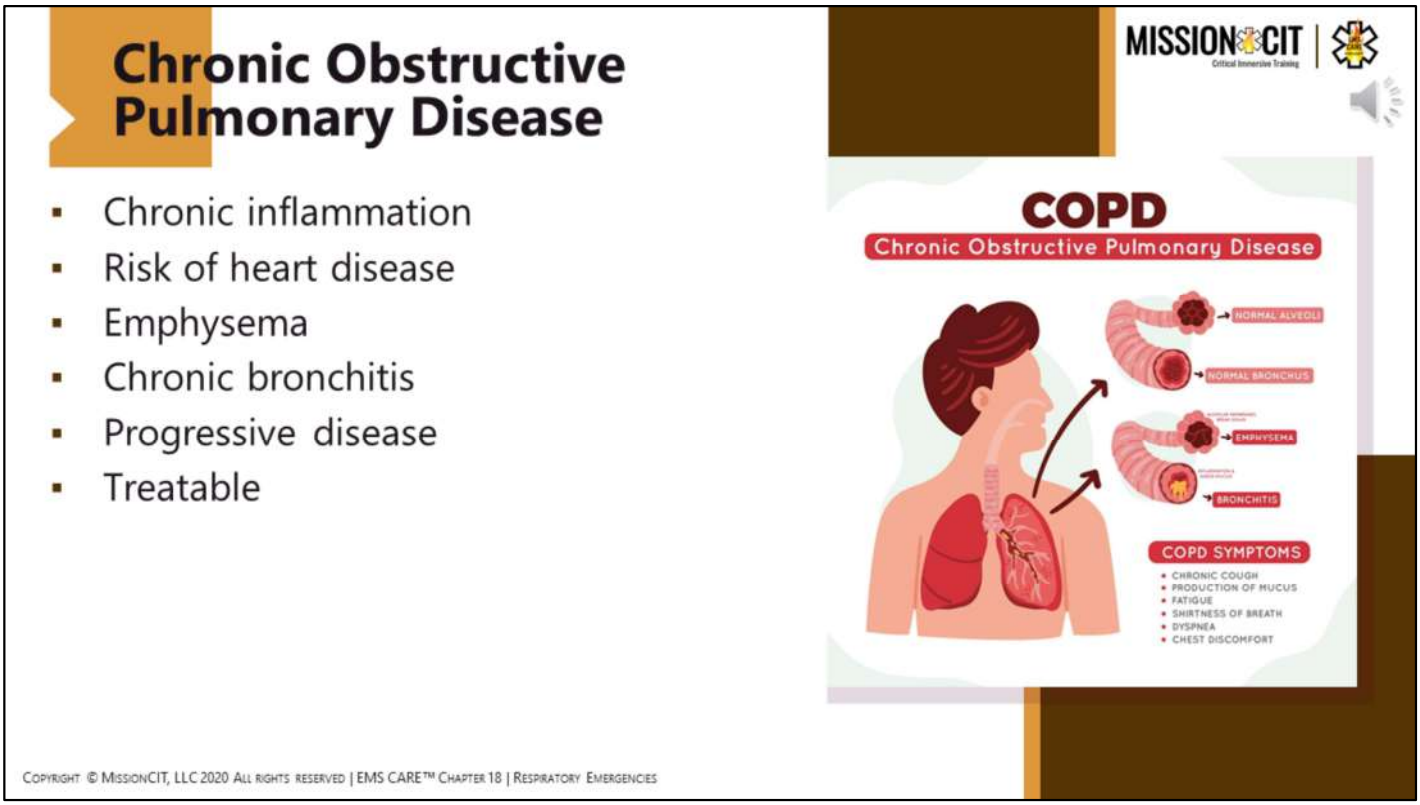
In most cases, heart problems cause pulmonary edema. But fluid can collect in the lungs for other reasons, including pneumonia, exposure to certain toxins and medications, trauma to the chest wall, and traveling to or exercising at high elevations.

Pulmonary edema that develops suddenly, called acute pulmonary edema, is a medical emergency requiring immediate care. Pulmonary edema can sometimes cause death.

Signs and symptoms to watch out for are:

- Difficulty breathing or extreme shortness of breath that worsens with activity or when lying down
- A feeling of suffocating or drowning that worsens when lying down
- A cough that produces frothy sputum that may be tinged with blood
- Wheezing or gasping for breath
- Cold, clammy skin
- Anxiety, restlessness, or a sense of apprehension

- Bluish lips
- A rapid, irregular heartbeat called palpitations



Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease that causes obstructed airflow from the lungs. Symptoms include breathing difficulty, cough, mucus (sputum) production, and wheezing. It's typically caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke. People with COPD are at increased risk of developing heart disease, lung cancer, and a variety of other conditions.

Emphysema and chronic bronchitis are the two most common conditions that contribute to COPD. These two conditions usually occur together and can vary in severity among individuals with COPD.

Chronic bronchitis is inflammation of the lining of the bronchial tubes, which carry air to and from the air sacs (alveoli) of the lungs. It's characterized by daily cough and mucus (sputum) production.

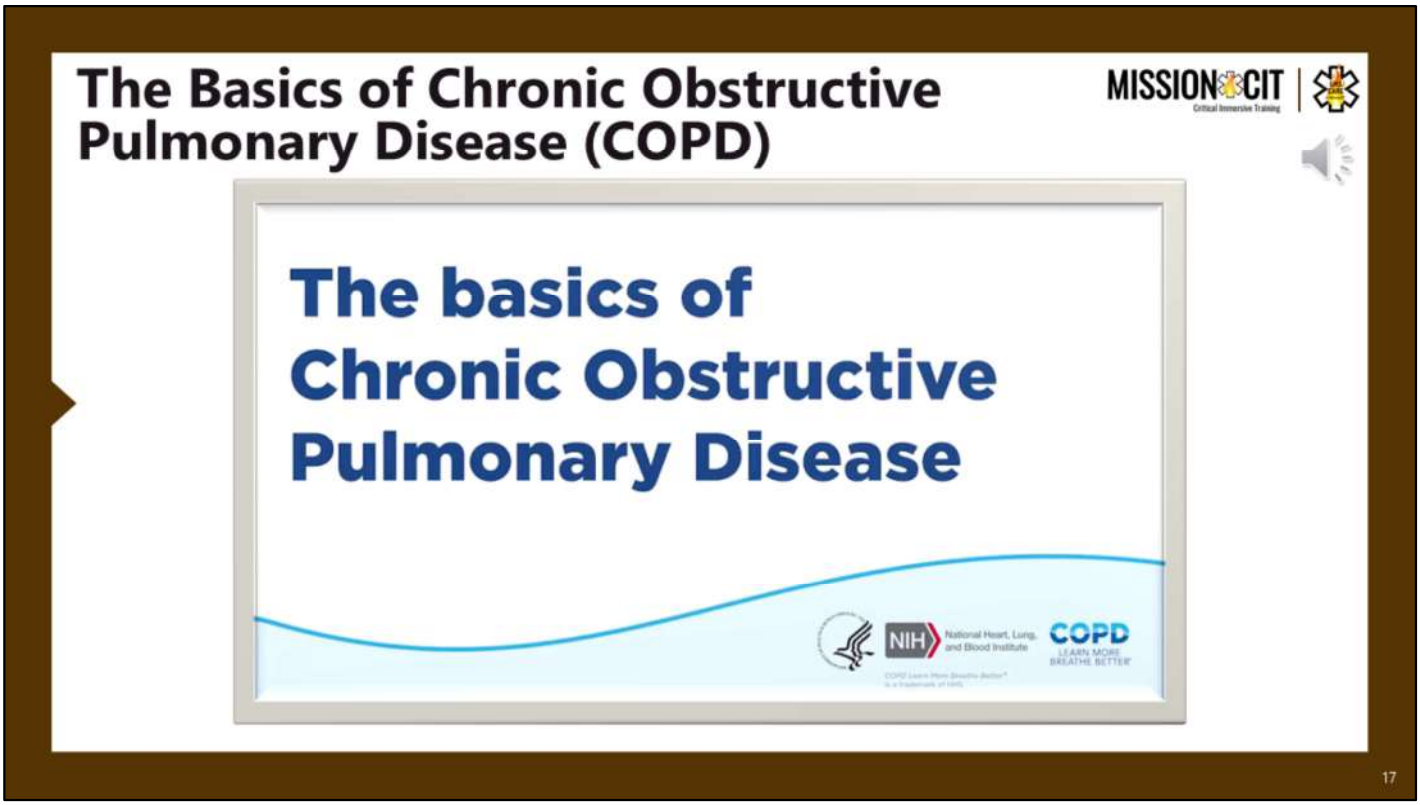
Emphysema is a condition in which the alveoli at the end of the smallest air passages (bronchioles) of the lungs are destroyed as a result of damaging exposure to cigarette smoke and other irritating gases and particulate matter.

Although COPD is a progressive disease that gets worse over time, COPD is treatable.

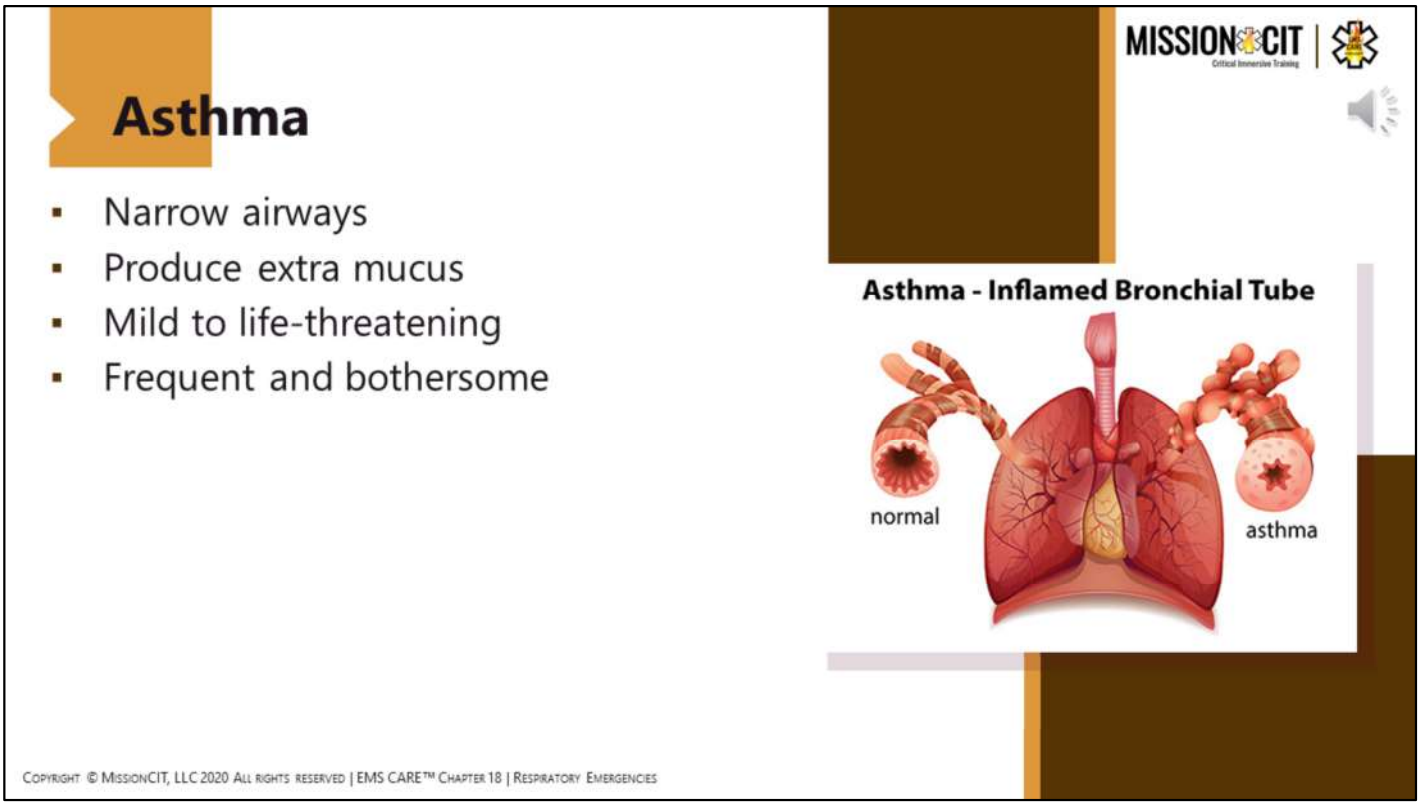
Signs and symptoms of COPD may include:

- Shortness of breath, especially during physical activities

- Wheezing
- Chest tightness
- A chronic cough that may produce mucus (sputum) that may be clear, white, yellow, or greenish
- Frequent respiratory infections
- Lack of energy
- Unintended weight loss (in later stages)
- Swelling in ankles, feet, or legs



Chronic obstructive pulmonary disease (COPD) is a long-term lung disease. Watch this video by Learn More, Breathe Better — a program sponsored by the National Heart, Lung, and Blood Institute (NHLBI), part of the National Institutes of Health (NIH) to know more.



Asthma is a condition in which the airways narrow and swell and may produce extra mucus. This can make breathing difficult and trigger coughing, a whistling sound when the patient breathes out, and shortness of breath.

For some people, asthma is a minor nuisance. For others, it can be a major problem that interferes with daily activities and may lead to a life-threatening asthma attack.

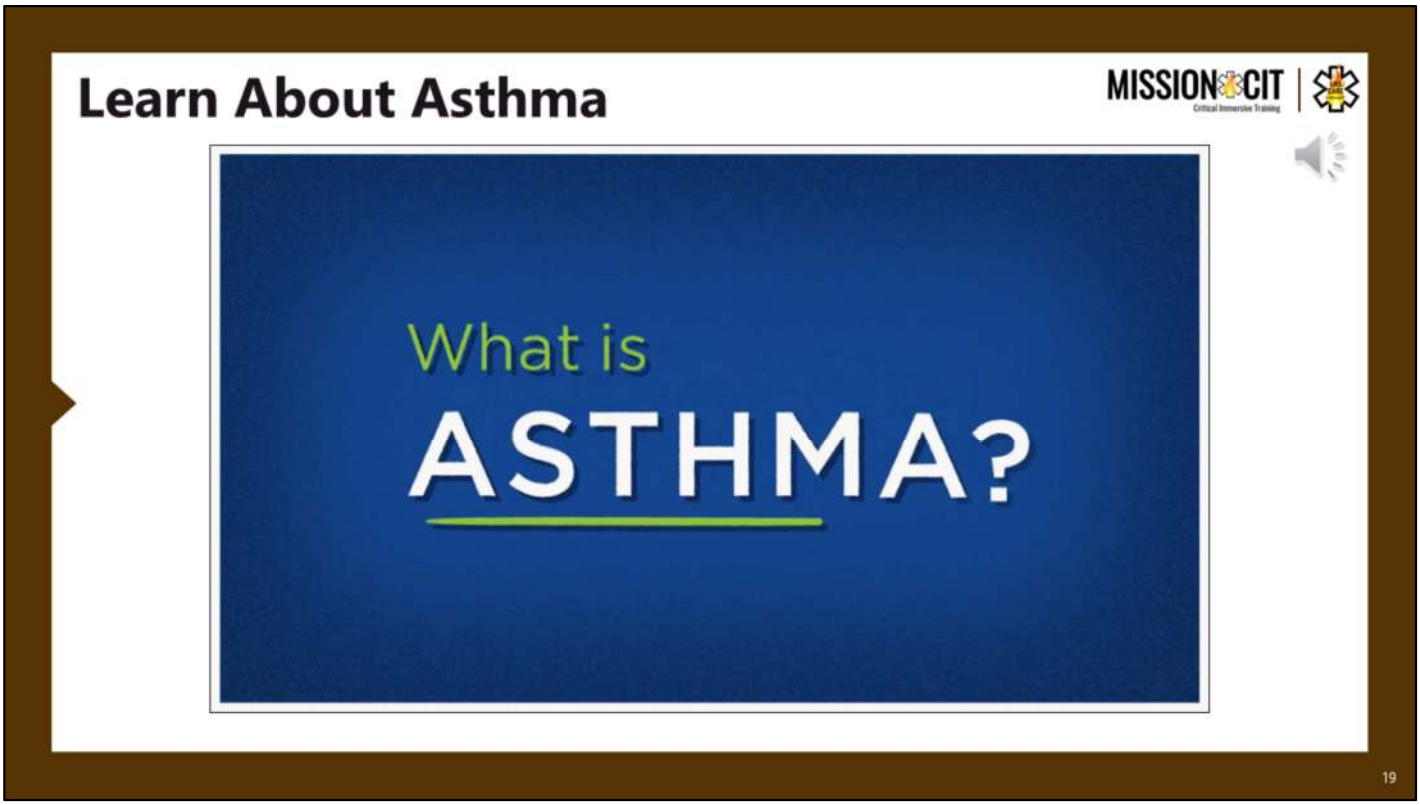
Asthma signs and symptoms include:

- Shortness of breath
- Chest tightness or pain
- Wheezing when exhaling, which is a common sign of asthma in children
- Trouble sleeping caused by shortness of breath, coughing, or wheezing
- Coughing or wheezing attacks that are worsened by a respiratory virus, such as a cold or the flu

The worsening signs of asthma are:

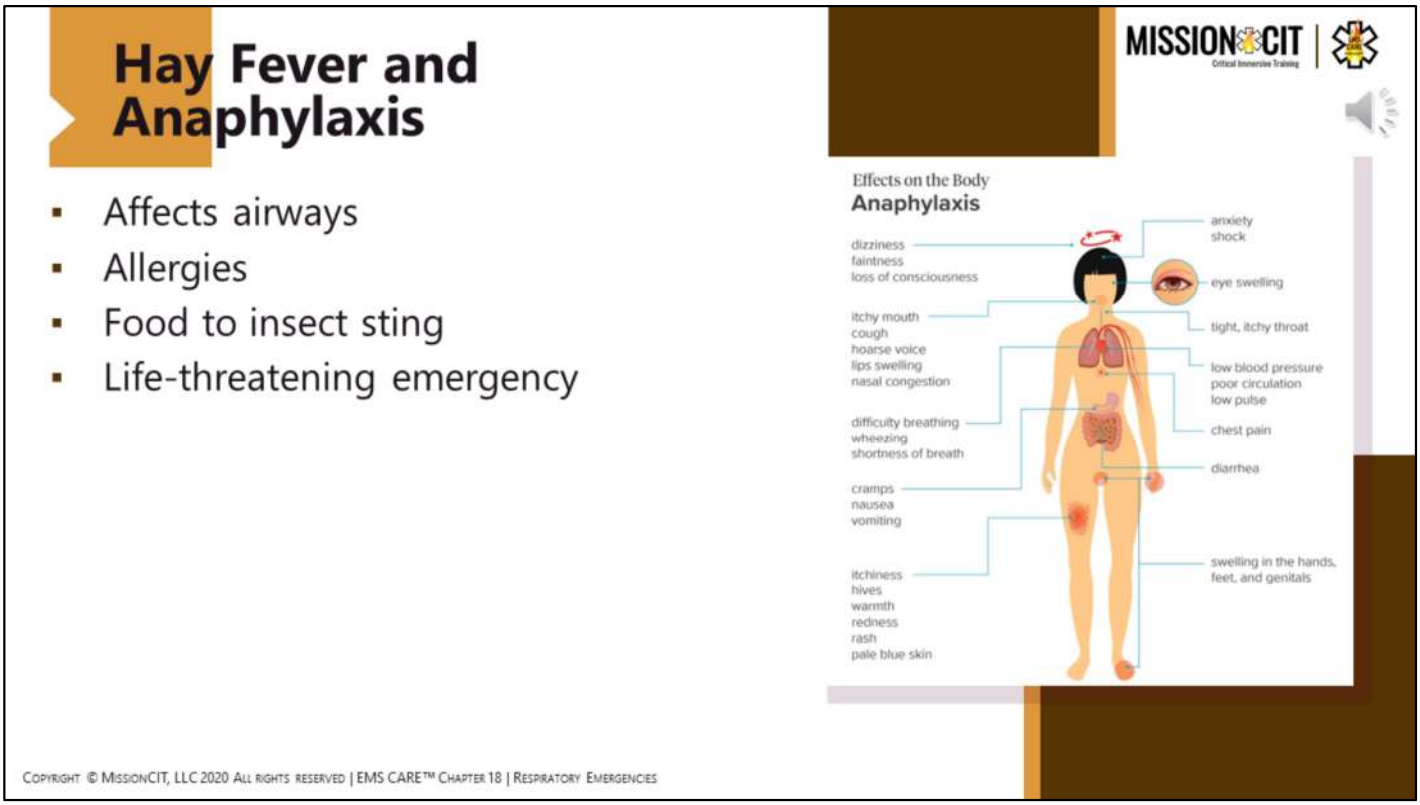
- Asthma signs and symptoms that are more frequent and bothersome
- Increasing difficulty breathing, as measured with a device peak flow meter

- The need to use a quick-relief inhaler more often



Asthma is a chronic condition that affects 1 in 13 Americans. People with asthma may experience wheezing, coughing, shortness of breath, and tightness in the chest. They may also wake up at night coughing or short of breath. Watch this video to learn about asthma and how it affects the lungs.

This video is by COPD Learn More, Breathe Better — a program sponsored by the National Heart, Lung, and Blood Institute (NHLBI), part of the National Institutes of Health (NIH).



Allergy symptoms, which depend on the substance involved, can affect the airways, sinuses and nasal passages, skin, and digestive system. Allergic reactions can range from mild to severe and can cause hay fever and anaphylaxis.

Hay fever, also called allergic rhinitis, can cause:

- Sneezing
- Itching of the nose, eyes, or roof of the mouth
- Runny, stuffy nose
- Watery, red, or swollen eyes (conjunctivitis)

Some types of allergies, including allergies to foods and insect stings, can trigger a severe reaction known as anaphylaxis. In a life-threatening medical emergency, anaphylaxis can cause the patient to go into shock.

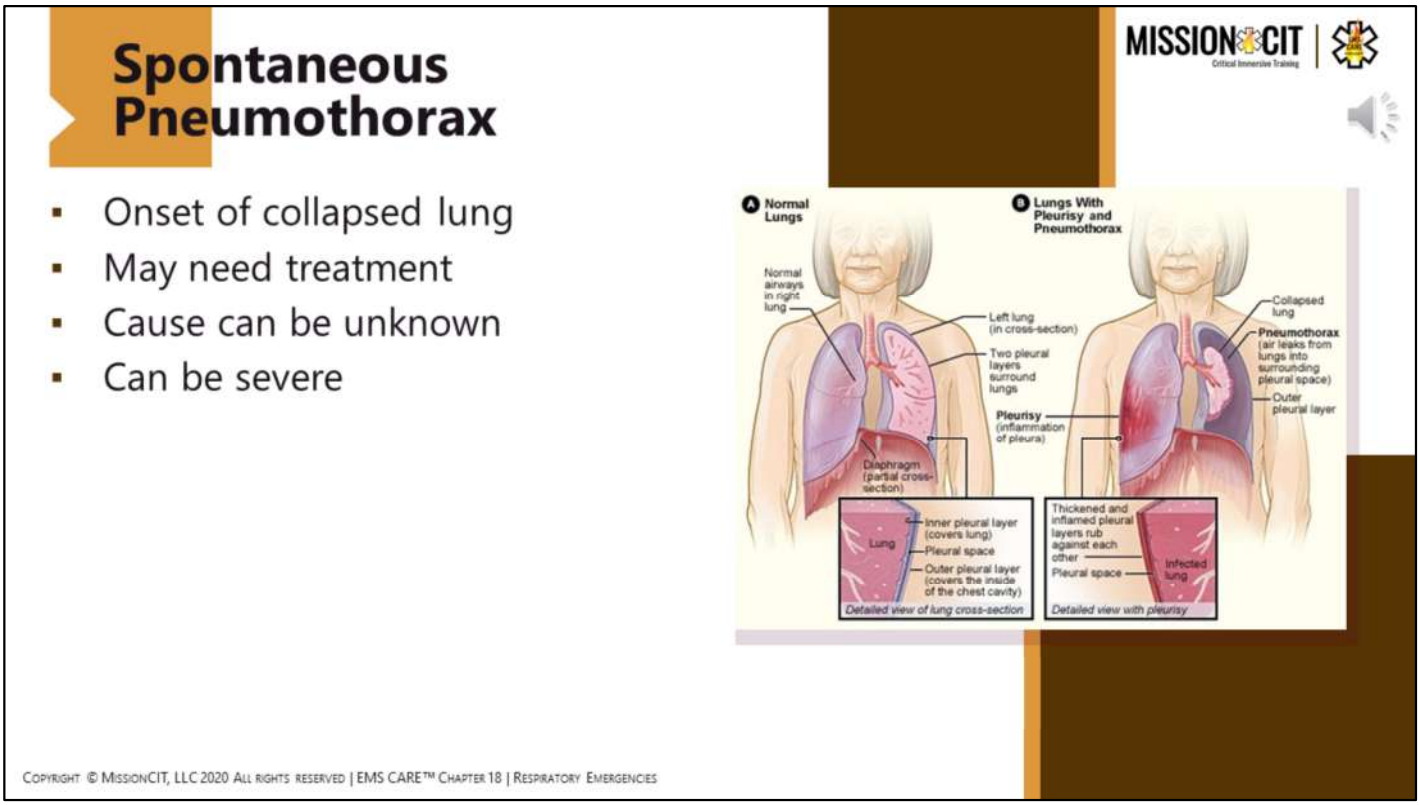
Signs and symptoms of anaphylaxis include:

- Loss of consciousness
- A drop in blood pressure
- Severe shortness of breath

- Skin rash
- Lightheadedness
- A rapid, weak pulse
- Nausea and vomiting



The National Institute of Allergy and Infectious Diseases explains food allergy and offers tips on how to manage the condition.



Spontaneous pneumothorax is the sudden onset of a collapsed lung without any apparent cause, such as a traumatic injury to the chest or known lung disease. A collapsed lung is caused by the collection of air in the space around the lungs. This buildup of air puts pressure on the lung, so it cannot expand as much as it normally does when the patient takes a breath. In most cases of spontaneous pneumothorax, a small area in the lung that is filled with air, called a bleb, ruptures, causing the air to leak into the space around the lung.

Spontaneous pneumothorax can be either small or large. A small spontaneous pneumothorax may resolve without treatment, while a larger pneumothorax may need surgical intervention.

In most cases of spontaneous pneumothorax, the cause is unknown.

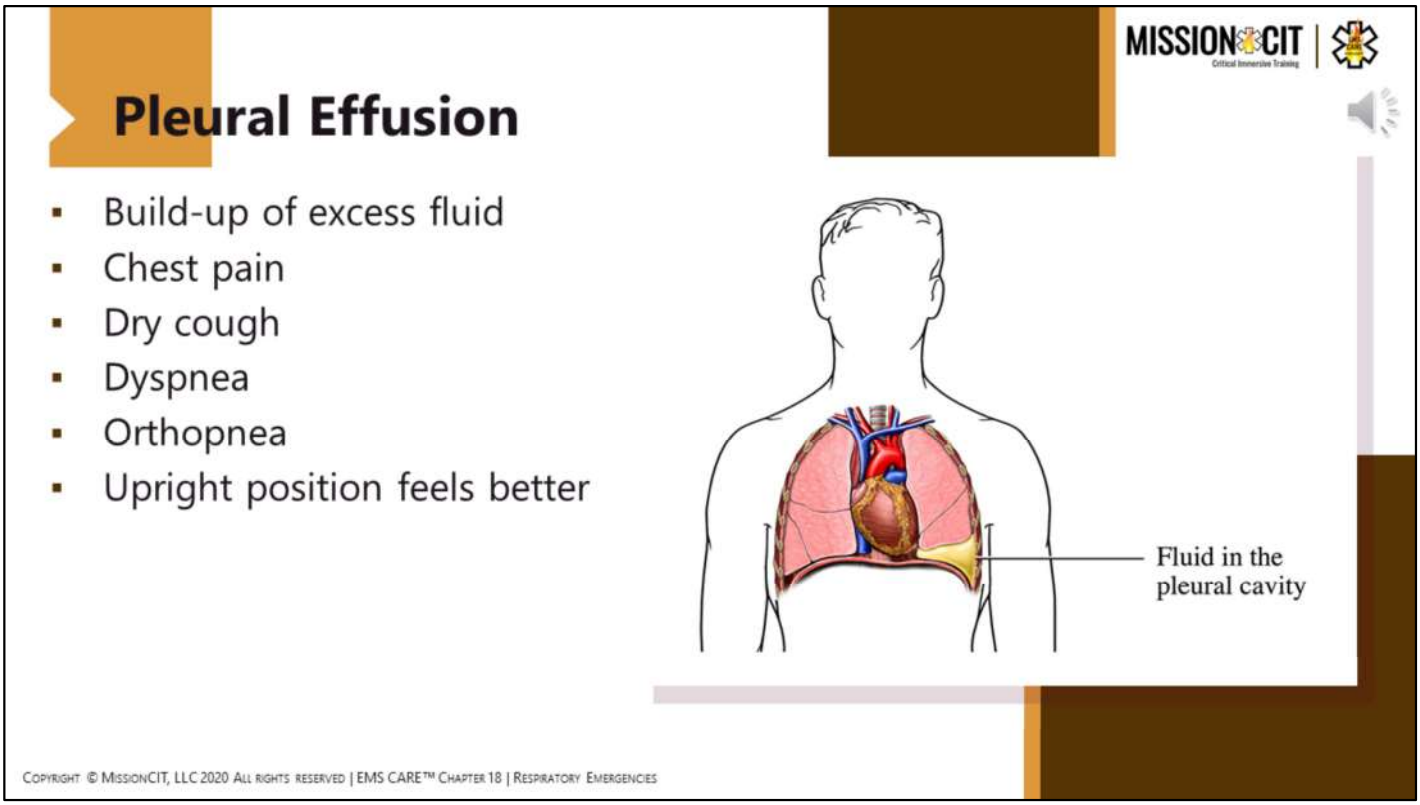
Patients with a collapsed lung may experience a sudden onset of the following symptoms:

- Sharp chest pain, made worse by a deep breath or a cough
- Shortness of breath

A larger pneumothorax will cause more severe symptoms, including:

- Chest tightness
- Easy fatigue
- Rapid heart rate

- Bluish color of the skin caused by lack of oxygen
- Nasal flaring, and
- Chest wall retractions

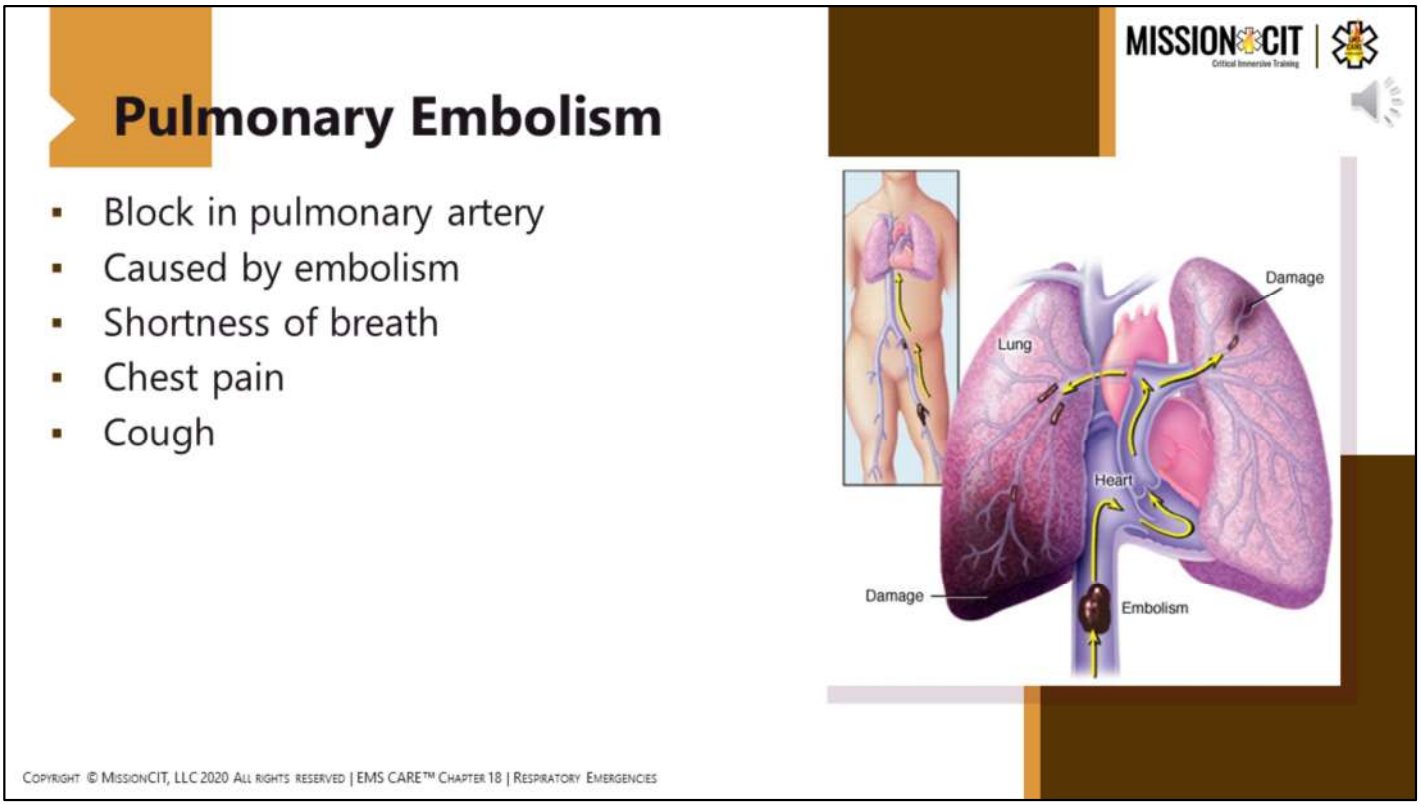


Pleural effusion, sometimes referred to as “water on the lungs,” is the build-up of excess fluid between the layers of the pleura outside the lungs. The pleura are thin membranes that line the lungs and the inside of the chest cavity and act to lubricate and facilitate breathing. Normally, a small amount of fluid is present in the pleura.

Symptoms of pleural effusion include:

- Chest pain
- Dry, nonproductive cough
- Dyspnea
- Orthopnea

It can stem from irritation, infection, congestive heart failure, and cancer. The patient feels better sitting upright, so that can be one of the first things to do.



Pulmonary embolism is a blockage in one of the pulmonary arteries in the lungs. In most cases, pulmonary embolism is caused by blood clots that travel to the lungs from deep veins in the legs or, rarely, from veins in other parts of the body, called deep vein thrombosis.

Because the clots block blood flow to the lungs, pulmonary embolism can be life-threatening. However, prompt treatment greatly reduces the risk of death.

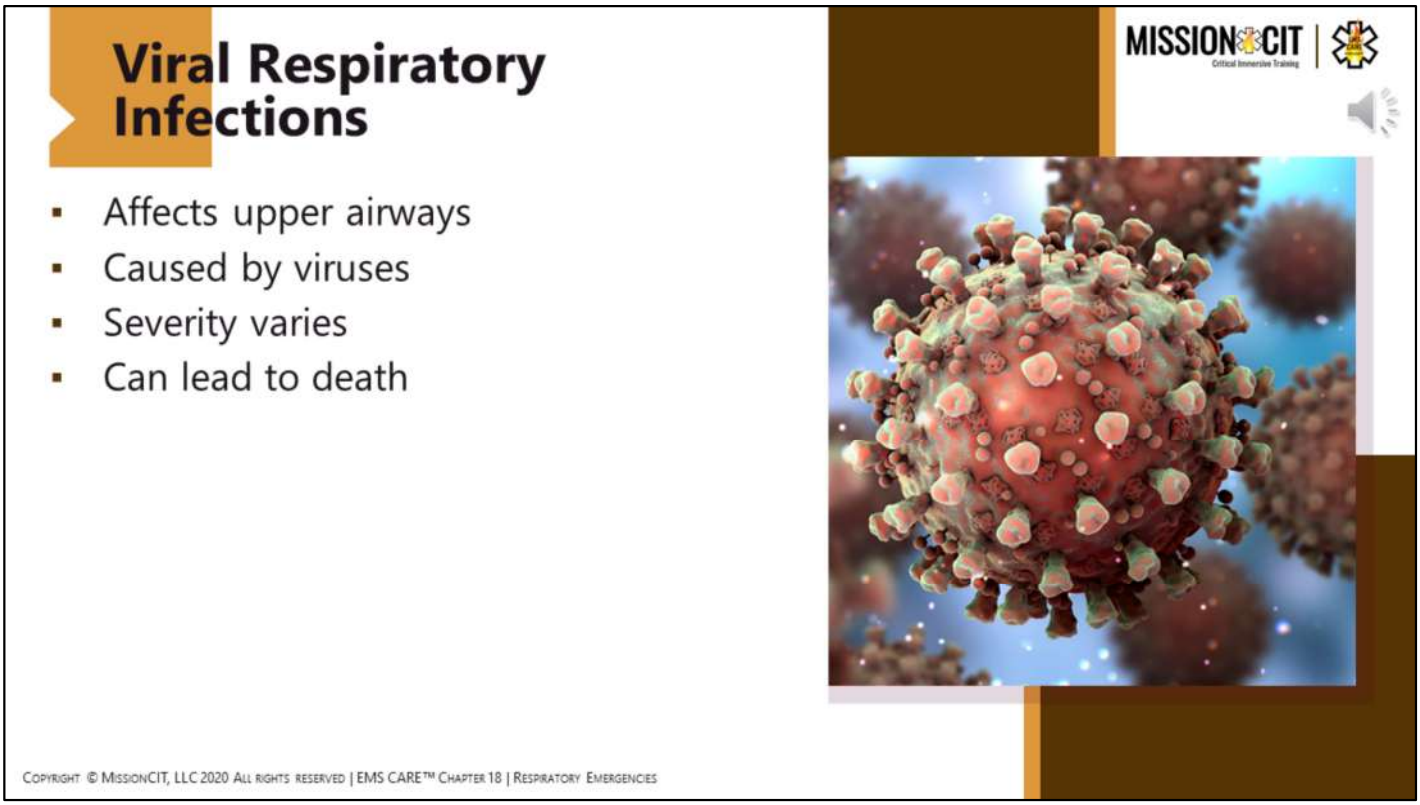
Common signs and symptoms include:

- Shortness of breath. This symptom typically appears suddenly and always gets worse with exertion
- Chest pain
- Cough. The cough may produce bloody or blood-streaked sputum

Other signs and symptoms that can occur with pulmonary embolism include:

- Rapid or irregular heartbeat
- Lightheadedness or dizziness
- Excessive sweating
- Fever

- Leg pain or swelling, or both, usually in the calf caused by a deep vein thrombosis
- Clammy or discolored skin



Common viral respiratory diseases are illnesses caused by a variety of viruses that have similar traits and affect the upper respiratory tract. The viruses involved may be the influenza viruses, respiratory syncytial virus (RSV), parainfluenza viruses, or respiratory adenoviruses.

The severity of viral respiratory illness varies widely; severe disease is more likely in older patients and infants. Morbidity may result directly from viral infection or maybe indirectly, due to exacerbation of underlying cardiopulmonary conditions or bacterial superinfection of the lung, paranasal sinuses, or middle ear.



Pesticides, cleaning solutions, chemicals, chlorine, and other gases can be released at home and in industries. Exposure to these chemicals can lead to respiratory infections.

Another life-threatening disease is carbon monoxide. It is a silent killer because it is odorless, highly poisonous, and produced by fuel-burning appliances and smoke.

These are potential causes to look into when a patient is suffering from respiratory illness with no identifiable cause.

On this note, we end this interesting lesson and in the next one, Missah will take about the patient care and assessment for respiratory emergencies.