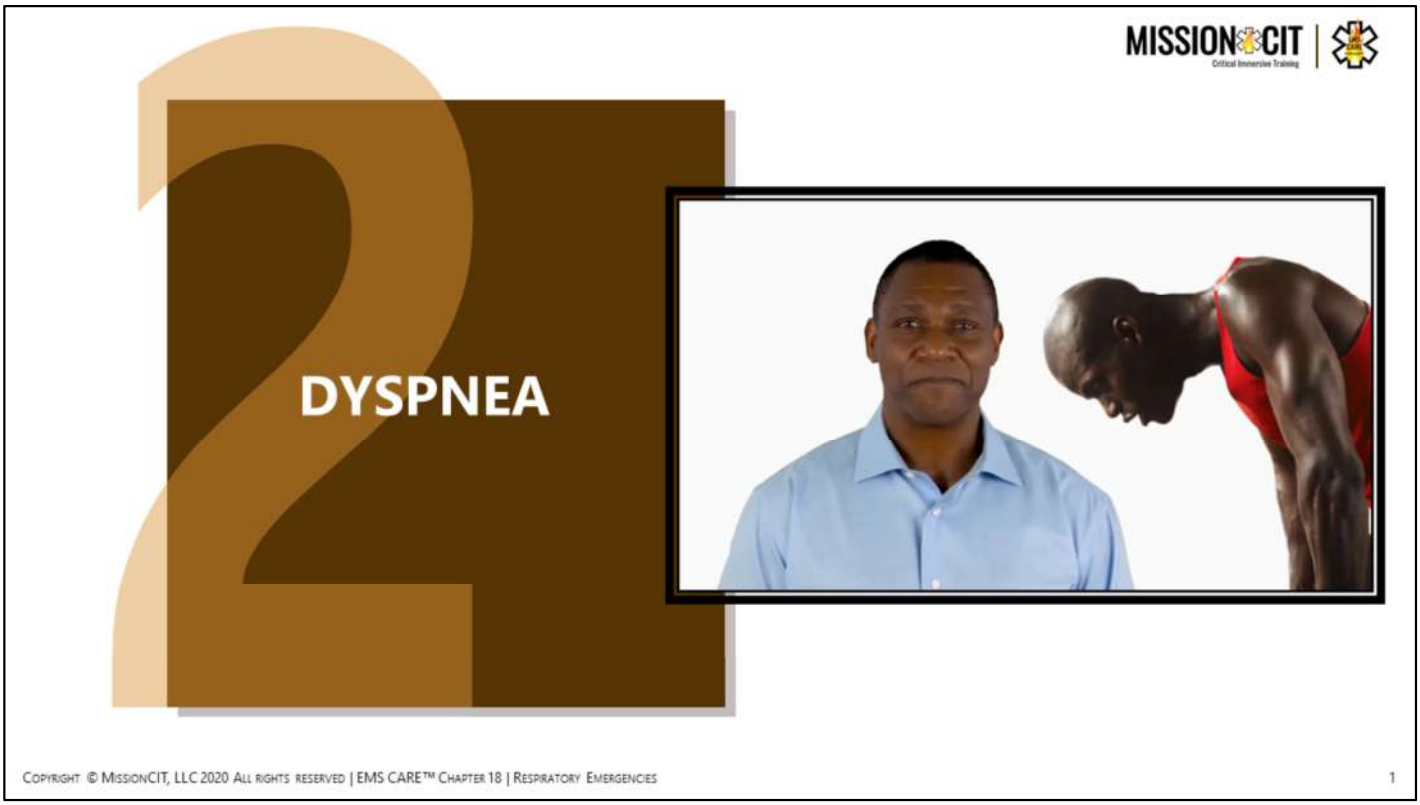
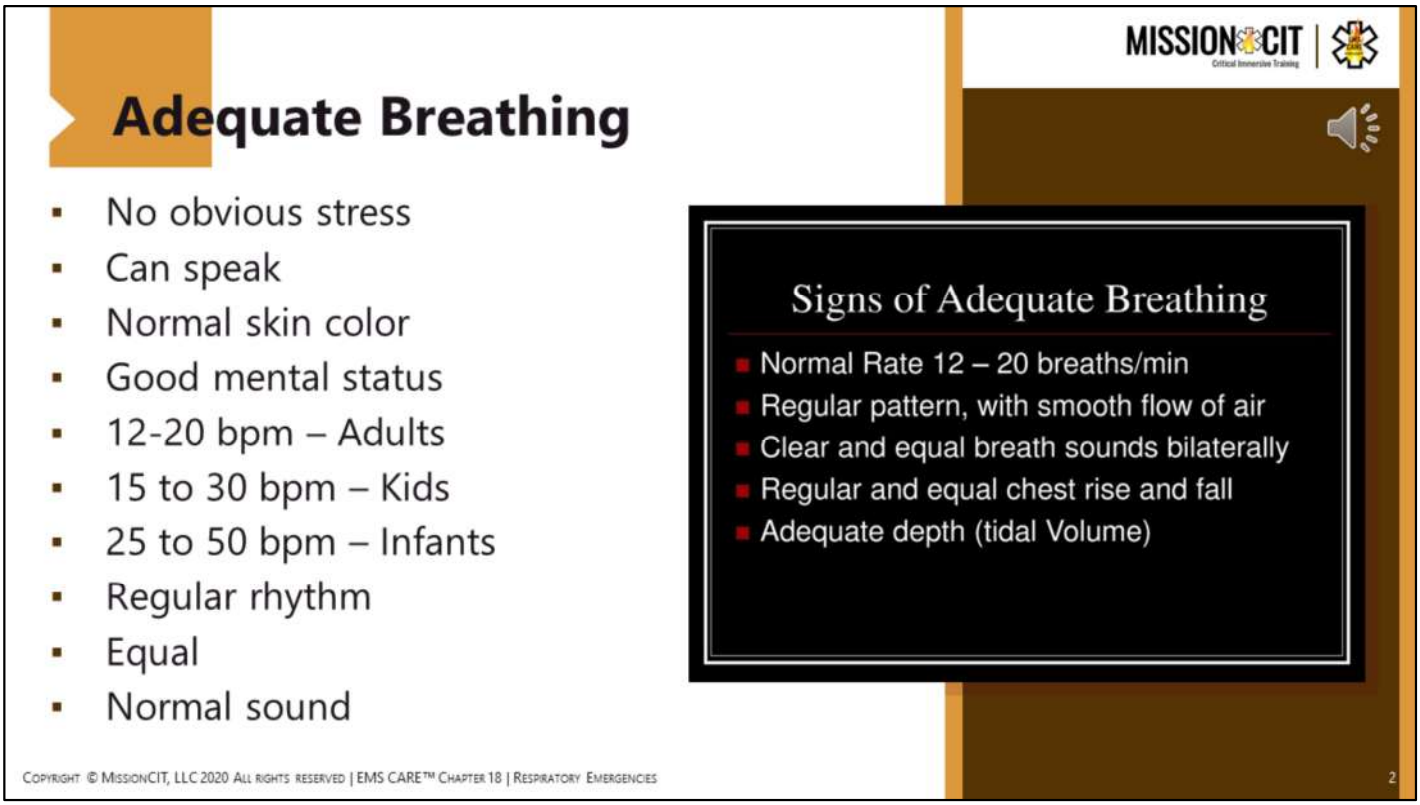


Thank you, Missah!

In this lesson, we will talk about dyspnea and its associated symptoms and causes. Dyspnea is the term used when someone experiences shortness of breath and this can happen due to many reasons, many of which may not be related to an underlying disease. For example, running up a flight of stairs can cause dyspnea, even if the person is in great health.

At the same time, it can also indicate the possibility of an underlying disease. So, differentiating between them is important, to provide appropriate care.

So, let's get started.

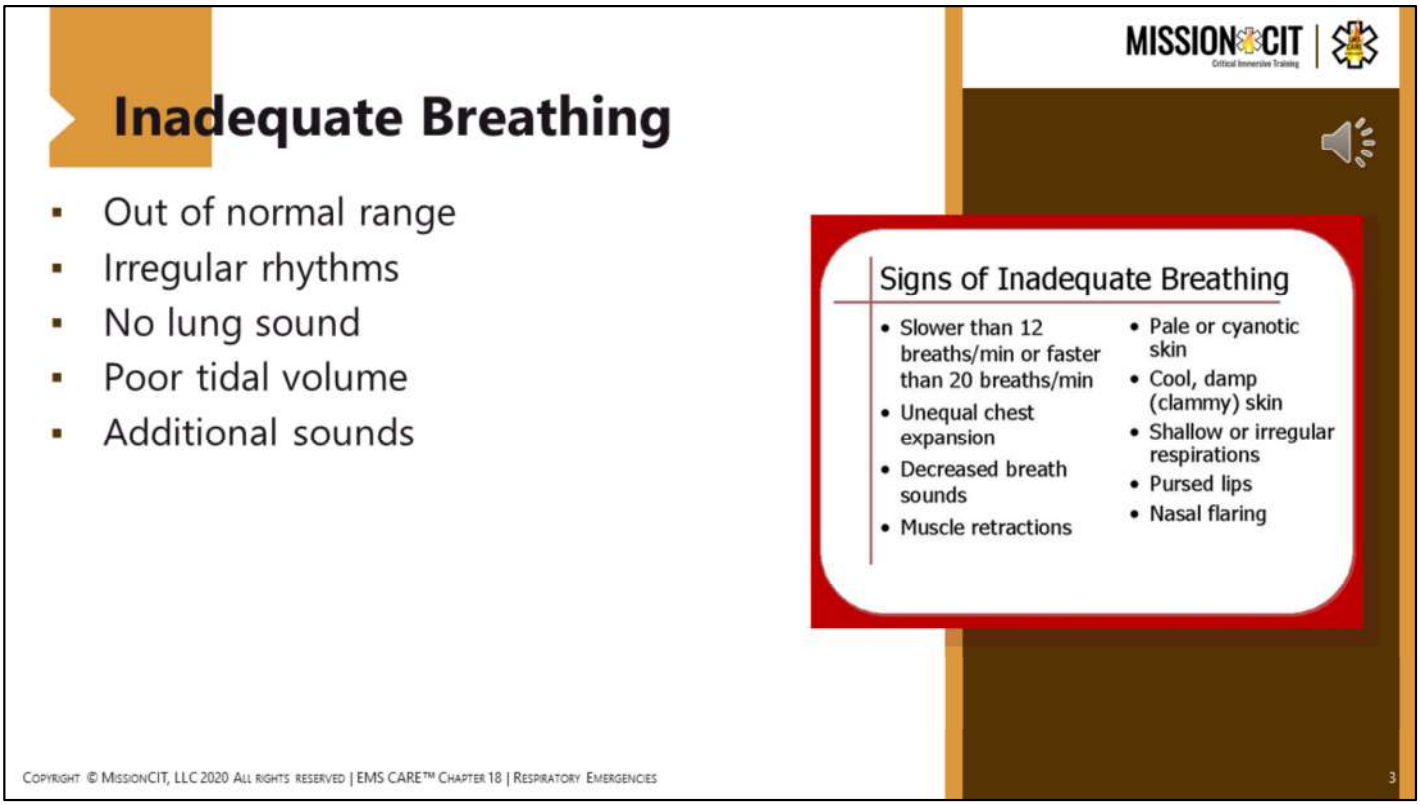


Adequate breathing is when the breathing is sufficient enough to support life. Some of the signs of adequate breathing are:

- No obvious stress or effort to breathe
- Ability to speak in full sentences without having to catch one's breath
- Normal skin color and mental status and orientation

Adequate breathing can also be determined by observing the rate, rhythm, and quality of breaths. This has to be 12 to 20 breaths per minute for adults, 15 to 30 breaths per minute for children, and 25 to 50 breaths per minute for infants.

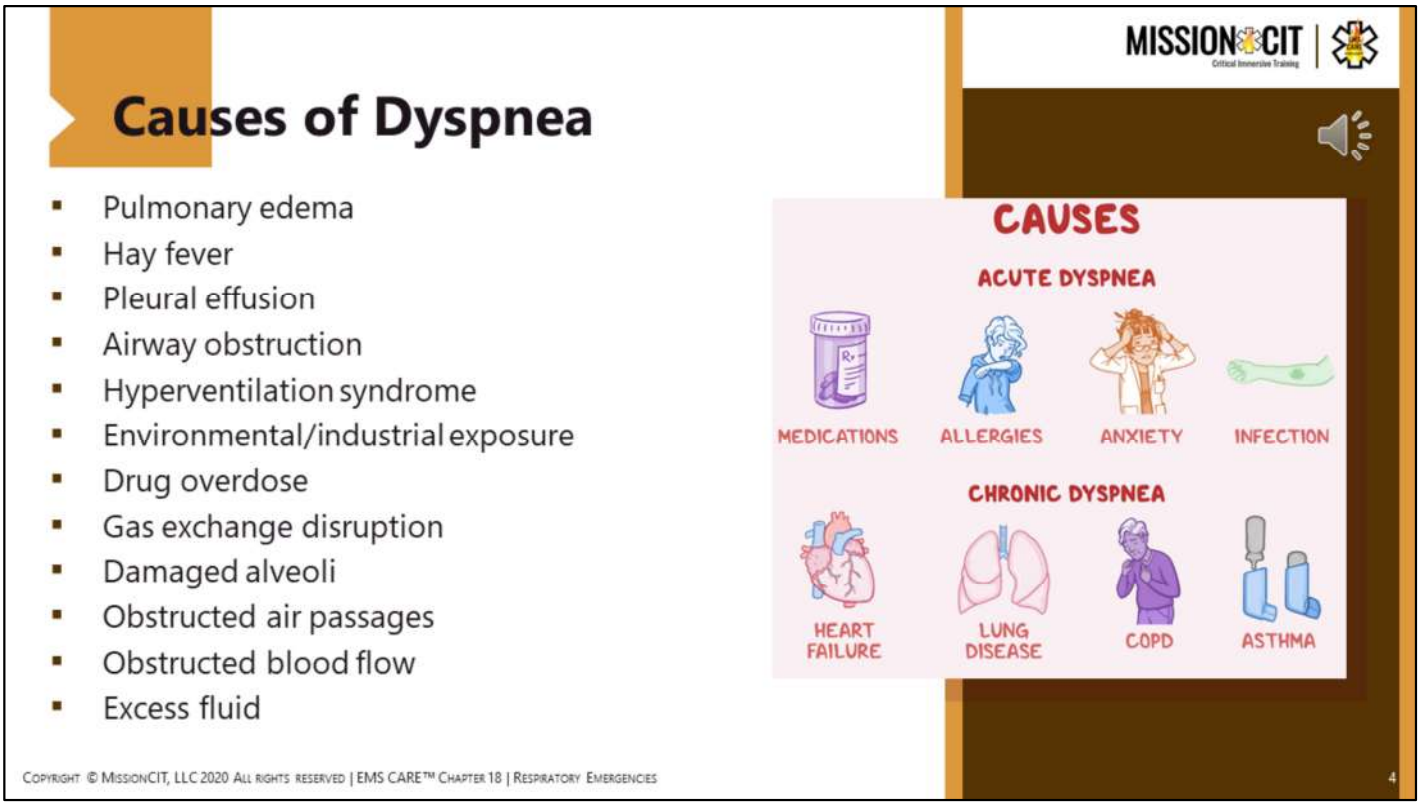
The rhythm must be regular and the sounds should be normal and equal.



Inadequate breathing is not enough to sustain life, so emergency intervention may be needed.

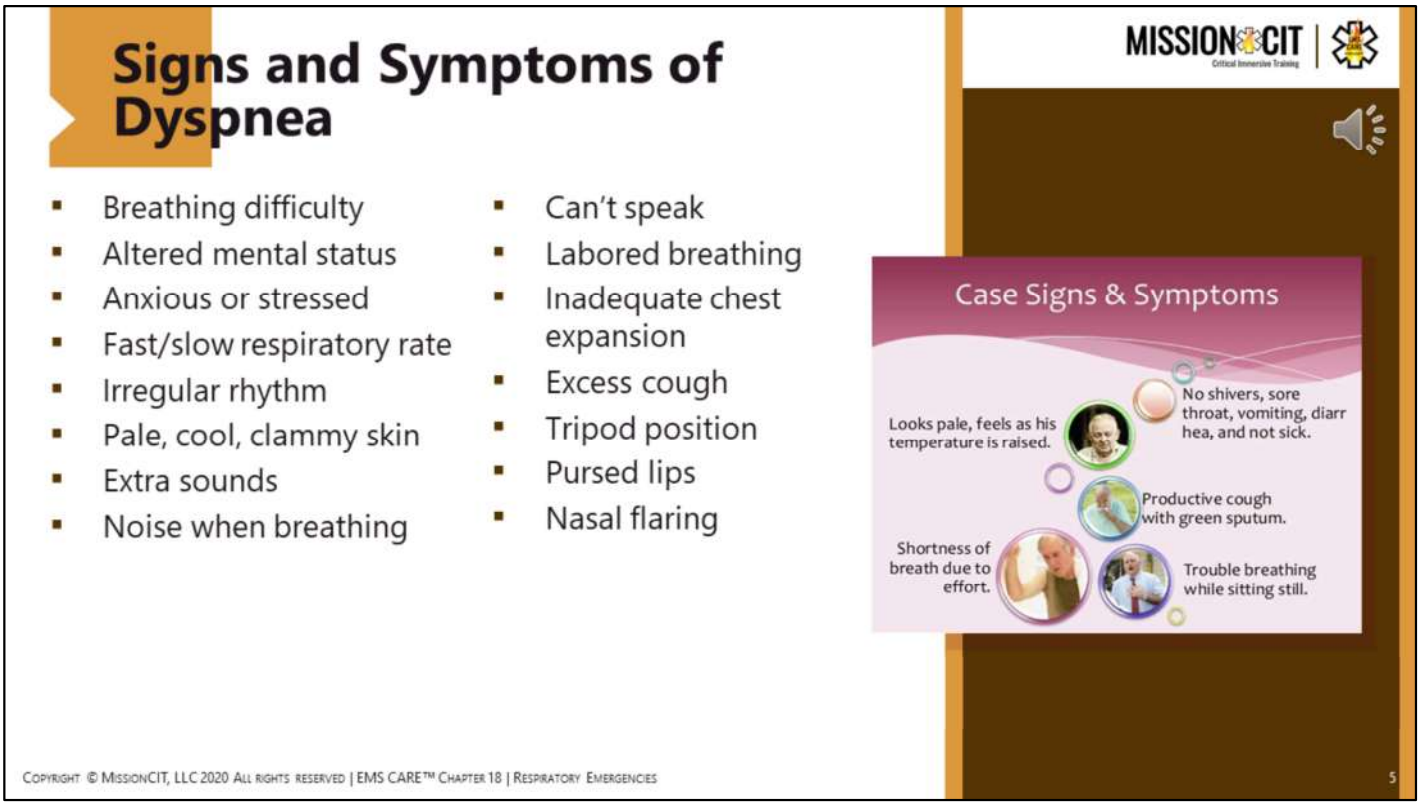
Some of the signs of inadequate breathing are:

- Rate is out of the normal range
- Irregular rhythms
- Diminished or absent lung sounds
- Poor tidal volume, and
- Additional sounds while breathing



Patients often have dyspnea when they have the following respiratory conditions or diseases.

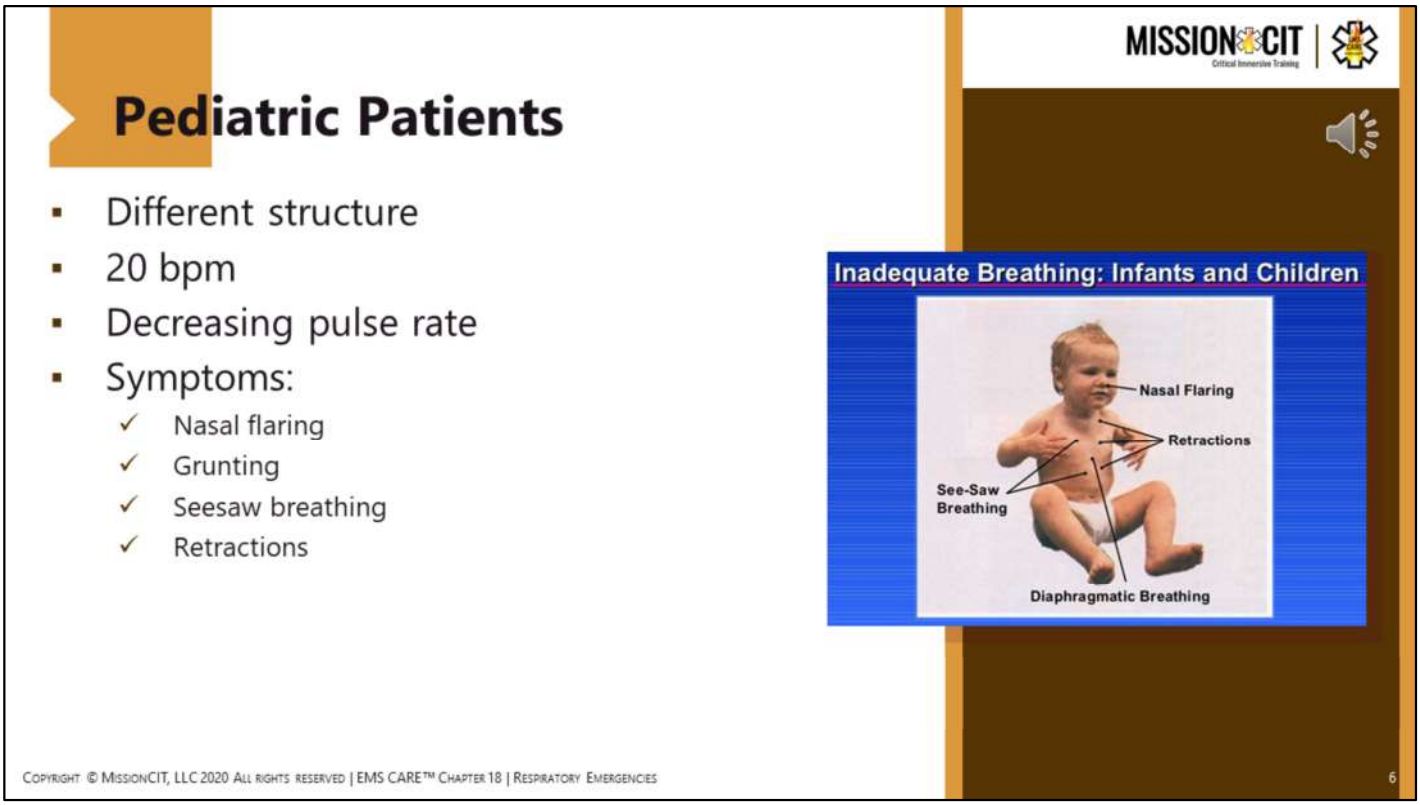
- Pulmonary edema
- Hay fever
- Pleural effusion
- Obstruction of the airway
- Hyperventilation syndrome
- Environmental or industrial exposure
- Drug overdose
- When the gas exchange is disrupted
- Damaged alveoli
- Obstructed air passages
- Obstructed blood flow to the lungs
- Excess fluid in the pleural space



The signs and symptoms of dyspnea are:

- Breathing difficulty
- Altered mental status
- Adults appear anxious or stressed while pediatric patients appear sleepy or listless
- Respiratory rate is too fast or too slow
- Breathing rhythm is irregular
- Skin is pale, cool, clammy, and moist
- Adventitious breath sounds are heard including wheezing, gurgling, snowing, crowing, or stridor
- Noise when breathing
- The patient cannot speak more than a few words
- Accessory muscle use and labored breathing
- Unequal or inadequate chest expansion
- Excess cough

- Sitting up or leaning forward in a tripod position
- Pursed lips or nasal flaring



The structure of an infant's and child's airways are very different from that of adults, so the possible diseases and treatment are different too.
The differences in the anatomy of a pediatric respiratory system are:

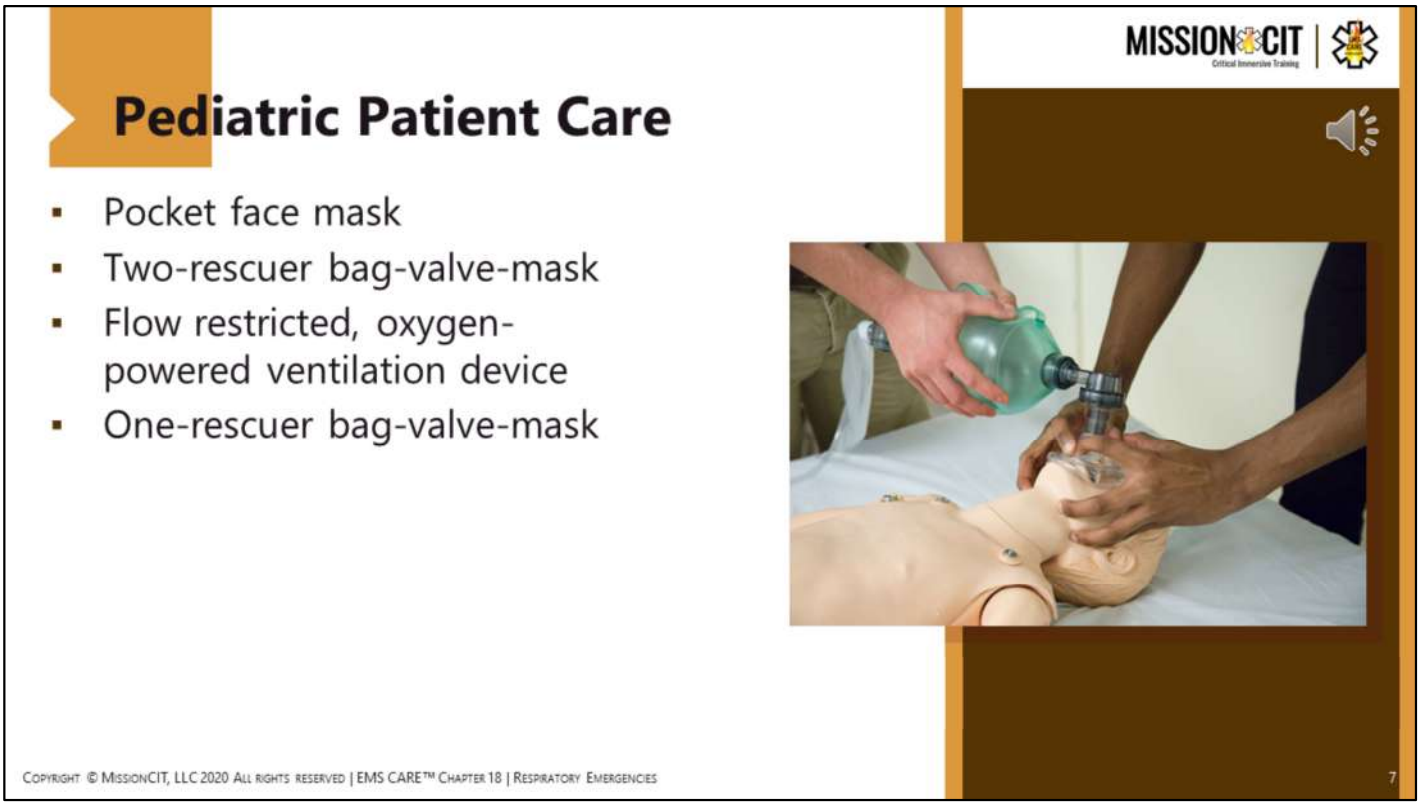
- The smaller airways get obstructed easily
- The tongues are proportionally larger
- The trachea is smaller, softer, and more flexible
- The cricoid cartilage is less developed and less rigid when compared to adults
- There's heavy dependence on the diaphragm for respiration

Due to these differences, some of the signs and symptoms you must see for respiratory distress are:

- Nasal flaring
- Grunting
- Seesaw breathing
- Retractions

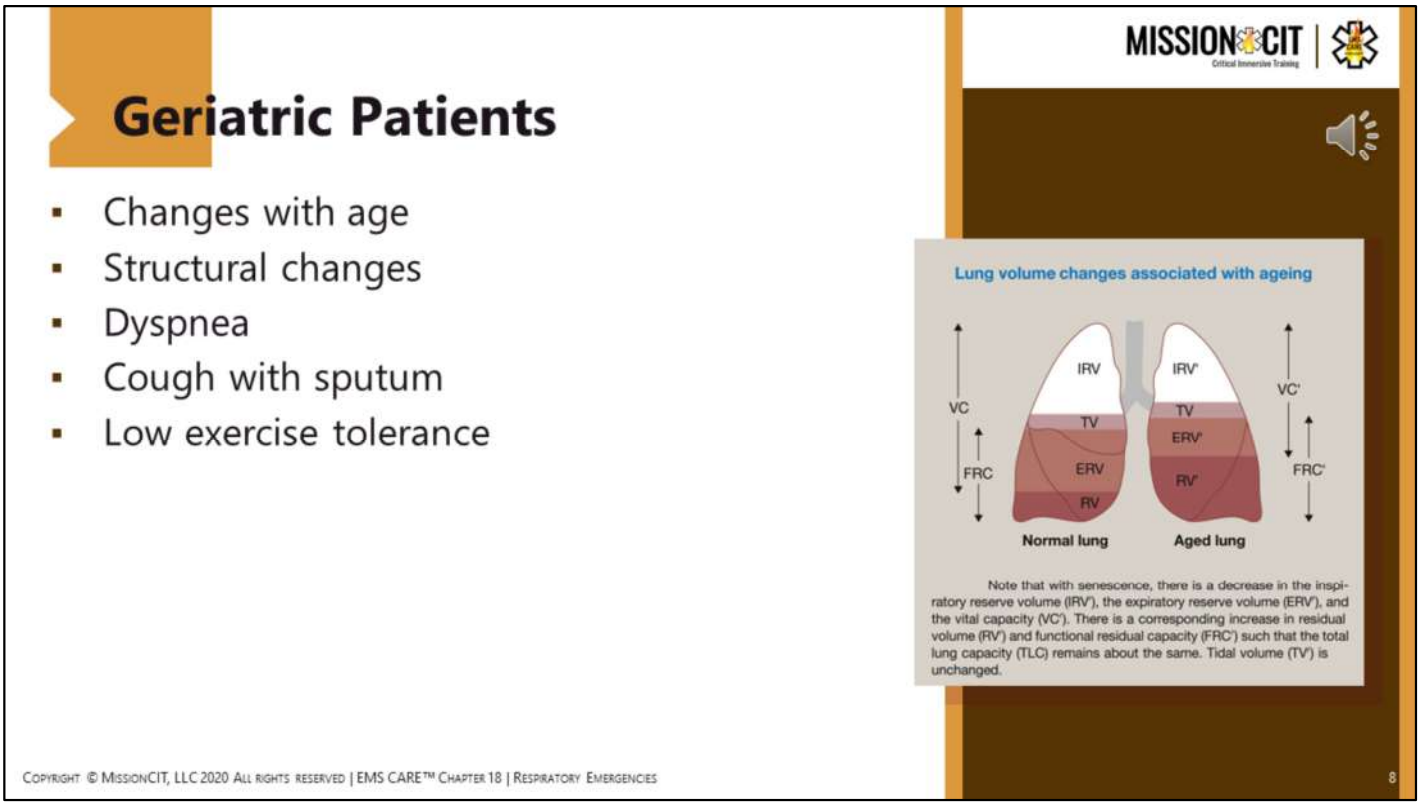
In a healthy child, the chest rise and fall should be visible and adequate ventilation rates are 20 breaths per minute.

Another key difference to note is that an increasing pulse rate can indicate inadequate ventilation in adults while in children, a decreasing pulse rate indicates inadequate breathing.



If you notice signs of inadequate breathing, provide assisted ventilation with supplemental oxygen. To do this, use

- Pocket face mask with supplemental oxygen
- Two-rescuer bag-valve-mask with supplemental oxygen
- Flow restricted, oxygen-powered ventilation device
- One-rescuer bag-valve-mask with supplemental oxygen



The respiratory system undergoes various anatomical, physiological, and immunological changes with age. The structural changes include chest wall and thoracic spine deformities which impairs the total respiratory system compliance leading to increase work of breathing. The lung parenchyma loses its supporting structure causing dilation of air spaces: “senile emphysema”. Respiratory muscle strength decreases with age and can impair effective cough, which is important for airway clearance. The lung matures by age 20–25 years, and thereafter aging is associated with progressive decline in lung function. The alveolar dead space increases with age, affecting arterial oxygen without impairing the carbon dioxide elimination. The airways receptors undergo functional changes with age and are less likely to respond to drugs used in younger counterparts to treat the same disorders. Older adults have decreased sensation of dyspnea and diminished ventilatory response to hypoxia and hypercapnia, making them more vulnerable to ventilatory failure during high demand states like heart failure, pneumonia, etc, and possible poor outcomes.

The most commonly reported pulmonary symptoms in the elderly include dyspnea, cough, and decreased exercise tolerance. These symptoms can be caused by a variety of pulmonary, as well as non-pulmonary, conditions. Cough with sputum is reported by up to 27% of elderly patients and is associated with increased mortality.

Understanding these changes can help you provide the necessary interventions for older patients.

On this note, we come to the end of this lesson, and in the next one, Missah will talk about

breathing difficulties and what you can do in such situations.