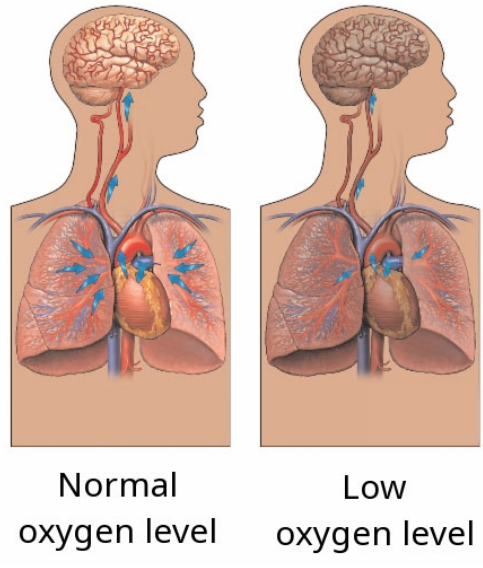
Acute Respiratory Failure, Pediatric

Acute respiratory failure occurs when there is not enough oxygen passing from your child's lungs to his or her body. When this happens, your child's lungs have trouble removing carbon dioxide from the blood. This causes your child's blood oxygen level to drop too low as carbon dioxide builds up.

Acute respiratory failure is a medical emergency. It can develop quickly, but it is temporary if treated promptly. Your child's lung function can improve with time, exercise, and treatment.



What are the causes?

There are many possible causes of acute respiratory failure, including:

- Lung injury.
- Chest injury or damage to the ribs or tissues near the lungs.
- Lung conditions that affect the flow of air and blood into and out of the lungs, such as pneumonia, acute respiratory distress syndrome, and cystic fibrosis.
- Medical conditions, such as strokes or spinal cord injuries, that affect the muscles and nerves that control breathing.
- Blood infection (*sepsis*).
- Inflammation of the pancreas (*pancreatitis*).
- A blood clot in the lungs (*pulmonary embolism*).
- A large-volume blood transfusion.
- Burns.
- Near-drowning.
- Seizure.
- Smoke inhalation.
- Reaction to medicines.

What increases the risk?

This condition is more likely to develop in children who have:

- A blocked airway.
- Asthma.
- A condition or disease that damages or weakens the muscles, nerves, bones, or tissues that are involved in breathing.
- A serious infection.
- A health problem that blocks the unconscious reflex that is involved in breathing, such as hypothyroidism or sleep apnea.
- A lung injury or trauma.

What are the signs or symptoms?

Trouble breathing is the main symptom of acute respiratory failure. Your child may also have:

- Rapid breathing.
- Restlessness or anxiety.
- Skin, lips, or fingernails that appear blue (*cyanosis*).
- Rapid heart rate.
- Abnormal heart rhythms (*arrhythmias*).
- Confusion or changes in behavior.
- Tiredness or loss of energy.
- Feeling sleepy or having a loss of consciousness.
- Flaring of the nostrils.
- Wheezing and grunting.

How is this diagnosed?

Your child's health care provider can diagnose acute respiratory failure with a medical history and physical exam. During the exam, your child's health care provider will listen to your child's heart and check for crackling or wheezing sounds in his or her lungs. Your child may also have tests to confirm the diagnosis and determine what is causing respiratory failure. These tests may include:

- Measuring the amount of oxygen in your child's blood (*pulse oximetry*). The measurement comes from a small device that is placed on your child's finger, earlobe, or toe.
- Other blood tests to measure blood gases and to look for signs of infection.
- Sampling your child's cerebral spinal fluid or tracheal fluid to check for infections.
- Chest X-ray to look for fluid in spaces that should be filled with air.
- Electrocardiogram (ECG) to look at the heart's electrical activity.

How is this treated?

Children with this condition are usually treated in a hospital intensive care unit (ICU). Treatment depends on what is causing the condition. It may include one or more treatments until your child's symptoms improve. Treatment may include:

- Supplemental oxygen. Extra oxygen is given through a tube in the nose, a face mask, or a hood.
- A device such as a continuous positive airway pressure (CPAP) or bi-level positive airway pressure (BiPAP or BPAP) machine. This treatment uses mild air pressure to keep the airways open. A mask or other device will be placed over your child's nose or mouth. A tube that is connected to a motor will deliver oxygen through the mask.
- Ventilator. This treatment helps move air into and out of the lungs. This may be done with a bag and mask or a machine. For this treatment, a tube is placed in your child's windpipe (*trachea*) so air and oxygen can flow to the lungs.
- Extracorporeal membrane oxygenation (ECMO). This treatment temporarily takes over the function of the heart and lungs, supplying oxygen and removing carbon dioxide. ECMO gives the lungs a chance to recover. It may be used if a ventilator is not effective.
- Tracheostomy. This is a procedure that creates a hole in the neck to insert a breathing tube.
- Receiving fluids and medicines.
- Rocking the bed to help breathing.

Follow these instructions at home:

- Give your child over-the-counter and prescription medicines only as told by your child's health care provider.
- Have your child return to normal activities as told by your child's health care provider. Ask your child's health care provider what activities are safe for your child.
- Keep all follow-up visits as told by your child's health care provider. This is important.

How is this prevented?

Treating infections and medical conditions that may lead to acute respiratory failure can help prevent the condition from developing.

Contact a health care provider if:

- Your child has a fever.
- Your child's symptoms do not improve or they get worse.

Get help right away if:

- Your child is having trouble breathing.
- Your child loses consciousness.
- Your child develops belly breathing. This is when your child draws in his or her stomach just below the rib cage or at the bottom of the breastbone while breathing.
- Your child has cyanosis or turns blue.
- Your child develops a rapid heart rate.
- Your child develops confusion.
- Your child who is younger than 3 months has a temperature of 100°F (38°C) or higher.

These symptoms may represent a serious problem that is an emergency. Do not wait to see if the symptoms will go away. Get medical help right away. Call your local emergency services (911 in the U.S.).

This information is not intended to replace advice given to you by your health care provider. Make sure you discuss any questions you have with your health care provider.

Document Released: 07/05/2017 Document Revised: 07/16/2017 Document Reviewed: 07/05/2017