# Respiratory Acidosis Interventions

Respiratory acidosis is caused by an increase in carbonic acid. Hypoventilation results in CO2 buildup that leads to carbonic acid accumulation in the blood. Causes of respiratory acidosis include COPD, barbiturate overdose, respiratory muscle weakness, and pneumonia. The main goal of therapy is to improve respirations and increasing CO2 release. Pharmacologic interventions for respiratory acidosis include bronchodilators, respiratory stimulants, and drug antagonists. Non-pharmacological interventions include oxygen therapy and assisted ventilation.


PLAY PICMONIC

### Improve Respiration

Fix Respirator

By improving the patient's respiratory status, more CO2 will be exhaled and will decrease the level of carbonic acid in the blood.

## Pharmacologic Interventions

### Bronchodilators

Broccoli-dyed Lungs

Bronchodilators may be used to reverse some types of airway obstructions and decrease the number of bronchospasms. Examples of bronchodilators include beta agonists (albuterol, salmeterol), anticholinergics (ipratropium), and methylxanthines (theophylline) (refer to the Picmonics on "Albuterol (Proventil)" and "Theophylline (Theo-24)"). Theophylline may help facilitate increase breathing by improving diaphragm muscle contractility and stimulating the respiratory center.

### Respiratory Stimulants

Respirator and Stim-mule

Medroxyprogesterone increases central respiratory drive and may help stimulate ventilation in patients with COPD. The diuretic acetazolamide causes metabolic acidosis by increasing bicarbonate excretion. The excretion of bicarbonate stimulates the body to increase ventilation.

### Drug Antagonists

Drugs and Ant-toga

Drug antagonists, such as naloxone and flumazenil, may help treat respiratory acidosis by reversing the effects of sedative drugs. Naloxone reverses the effects of narcotics while flumazenil helps reverse the side effects of benzodiazepines (refer to the Picmonic on "Naloxone (Narcan)").

## Nonpharmacologic Interventions

### Oxygen

O2-tank

Oxygen therapy may used to improve gas exchange, prevent hypoxemia, and restore acid-base balance. Although CO2 is the main drive for breathing, patients with COPD or high levels of CO2 lose this drive and rely on low O2 to stimulate their need to breathe. To prevent respiratory arrest, oxygen delivery should be titrated to maintain oxygen saturation in the low 90% range in patients with COPD.

**Assisted Ventilation**

Assisted into Vent

Ventilatory support, such as endotracheal intubation with mechanical ventilation, may be necessary to improve oxygen levels for patients unable to maintain oxygen levels above 90%. Assisted ventilation also provides respiratory support for patients with muscle fatigue. Increasing the patient's breathing rate will help release carbon dioxide and correct respiratory acidosis.

**Prevent Complications**

Prevention-wall and Complicated-guy

Respiratory acidosis caused by hypoventilation may lead to various complications related to decreased oxygenation. Carbonic acid accumulation may also cause carbon dioxide narcosis presenting with confusion. Frequent assessment is critical to detecting complications. Monitor the patient's breathing status and auscultate breath sounds to determine changes in the respiratory system. Check the use of accessory muscles and assess for retractions to determine if the patient has any difficulties with breathing. Assess the color of the patient's nail beds to help determine adequate circulation and oxygen transportation.