Respiratory Alkalosis Interventions

Respiratory alkalosis is an acid-base imbalance caused by hyperventilation resulting in a decrease in carbonic acid. Causes of hyperventilation include hypoxemia from acute pulmonary disorders, anxiety, CNS disorders, and mechanical overventilation. Treating the underlying disorder will help restore the patient's acid-base balance. Interventions for mechanical hyperventilation include decreasing tidal volume or respiratory rate and administering analgesics for pain relief. Patients who experience hyperventilation syndrome may benefit from rebreathing into a paper bag or receiving medications, such as sedatives or antidepressants. Special considerations include monitoring the patient for a compensatory drop in serum bicarbonate and slowly correcting the patient's CO2 level.



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Treat Underlying Cause
Treating Underlying Attacker
Because there are numerous etiologies for respiratory alkalosis, the primary goal of therapy should be to address or identify the underlying cause.

Mechanically Ventilated Patients

Decrease Tidal Volume and/or Respiratory Rate
Down-arrow Tidal-wave and Lungs
Mechanically ventilated patients may develop respiratory alkalosis if the tidal volume or respiratory rate is set too high. Decreasing the ventilator's tidal volume or respiratory rate may restore the patient's acid-base balance.

Give Adequate Pain Control and Sedation
Pain-bolt Controller and Sedation-darts
In response to anxiety or pain, mechanically ventilated patients may experience hyperventilation and try to fight against the ventilator or breathe out of synchrony. This response leads to respiratory alkalosis and may be alleviated with adequate pain control and sedation. Relieving the patient's pain and anxiety will help them relax and stop hyperventilating.

Hyperventilation Syndrome

Sedatives
Sedation-dart
Hyperventilation leads to excess loss of carbon dioxide and causes respiratory alkalosis. The administration of sedatives may help relieve hyperventilation by decreasing the amount of carbon dioxide loss. The medications will help the patient relax and stop deep rapid breathing causing the respiratory alkalosis.

Antidepressants
Ant-tie-depressed Emo
Antidepressants depress the central nervous system and help slow down rapid breathing. Decreasing the patient's respiratory rate will stop hyperventilation and help restore normal acid-base balance. The administration of antidepressants is reserved for patients who are unresponsive to other techniques or decreasing psychological stress.

Considerations

Compensatory Drop in Serum Bicarbonate
Down-arrow Bi-car-bombs
In response to decreased levels of CO2, the kidneys decrease bicarbonate reabsorption to help compensate the acid-base imbalance. The purpose of the compensatory drop in serum bicarbonate is to help lower the alkalinity of the blood.

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Calming Breathing Exercises

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Historically, during acute episodes anxiety-related hyperventilation, a patient was instructed to breathe into a paper bag. This is not currently recommended due to the risk of hypoxia, and calming breathing exercises like abdominal breathing are considered the treatment of choice. Abdominal breathing, also called diaphragmatic breathing technique, practiced regularly for five minutes and repeated as needed can mitigate feelings of anxiety and panic and further manage hyperventilation.

Correct CO2 Slowly

Correcting CO2 Snail

Patients with respiratory alkalosis should slowly correct CO2 levels to prevent rebound metabolic acidosis caused by a compensatory drop in serum bicarbonate.

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