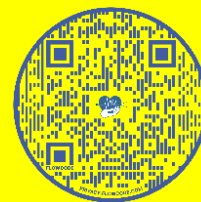




# Nursing Care Plan

## "Impaired gas exchange"



<b>Patient Problem</b> ( Actual )	<b>Nursing diagnosis \ Impaired gas exchange (contributing factor</b> according to the patient's condition)	
<b>Subjective Data</b>	<ul style="list-style-type: none"> <li>• According to the nurse's observation.</li> </ul>	
<b>Objective Data</b>	<ul style="list-style-type: none"> <li>• According to the patient description.</li> </ul>	
<b>Objectives</b>	<b>Short term</b>	<p><b>In 2 days, the patient will...</b></p> <ul style="list-style-type: none"> <li>• Patient verbalizes understanding of oxygen and other therapeutic interventions.</li> <li>• Patient maintains optimal gas exchange as evidenced by usual mental status, unlabored respirations at 12-20 per minute, oximetry results within normal range, blood gases within normal range, and baseline HR for patient.</li> </ul>
	<b>Long term</b>	<p><b>In 2 weeks, the patient will...</b></p> <ul style="list-style-type: none"> <li>• Patient maintains clear lung fields and remains free of signs of respiratory distress.</li> <li>• Patient manifests resolution or absence of symptoms of respiratory distress.</li> </ul>
<b>Nursing intervention</b>	<b>Assessment</b>	<ul style="list-style-type: none"> <li>• Assess respiratory rate, depth, and effort, including the use of accessory muscles, nasal flaring, and abnormal breathing patterns.</li> <li>- <b>Rationale:</b> Rapid and shallow breathing patterns and hypoventilation affect gas exchange. Increased respiratory rate, use of accessory muscles, nasal flaring, abdominal breathing, and a look of panic in the patient's eyes may be seen with hypoxia.</li> </ul>

- Assess the lungs for areas of decreased ventilation and auscultate presence of adventitious sounds.
  - **Rationale:** Any irregularity of breath sounds may disclose the cause of impaired gas exchange. Presence of crackles and wheezes may alert the nurse to an airway obstruction, which may lead to or exacerbate existing hypoxia. Diminished breath sounds are linked with poor ventilation.
  
- Monitor patient's behavior and mental status for onset of restlessness, agitation, confusion, and (in the late stages) extreme lethargy.
  - **Rationale:** Changes in behavior and mental status can be early signs of impaired gas exchange. Cognitive changes may occur with chronic hypoxia.
  
- Monitor for signs and symptoms of atelectasis: bronchial or tubular breath sounds, crackles, diminished chest excursion, limited diaphragm excursion, and tracheal shift to affected side.
  - **Rationale:** Collapse of alveoli increases shunting (perfusion without ventilation), resulting in hypoxemia.
  
- Observe for signs and symptoms of pulmonary infarction: bronchial breath sounds, consolidation, cough, fever, hemoptysis, pleural effusion, pleuritic pain, and pleural friction rub.
  - **Rationale:** Increased dead space and reflex bronchoconstriction in areas adjacent to the infarct result to hypoxia (ventilation without perfusion).
  
- Monitor for alteration in BP and HR.
  - **Rationale:** BP, HR, and respiratory rate all increase with initial hypoxia and hypercapnia. However, when both conditions become severe, BP and HR decrease, and dysrhythmias may occur.
  
- Observe for nail beds, cyanosis in skin; especially note color of tongue and oral mucous membranes.
  - **Rationale:** Central cyanosis of tongue and oral mucosa is indicative of serious hypoxia and is a medical emergency. Peripheral cyanosis in extremities may or may not be serious
  
- Assess for headaches, dizziness, lethargy, reduced ability to follow instructions, disorientation, and coma.
  - **Rationale:** These are signs of hypercapnia.
  
- Monitor oxygen saturation continuously, using pulse oximeter.
  - **Rationale:** Pulse oximetry is a useful tool to detect changes in oxygenation. An oxygen saturation of <90% (normal: 95% to 100%) or a partial pressure of oxygen of <80 (normal: 80 to 100) indicates significant oxygenation problems.

- Note blood gas (ABG) results as available and note changes.
- **Rationale:** Increasing PaCO<sub>2</sub> and decreasing PaO<sub>2</sub> are signs of respiratory acidosis and hypoxemia. As the patient's condition deteriorates, the respiratory rate will decrease and PaCO<sub>2</sub> will begin to increase. Some patients, such as those with COPD, have a significant decrease in pulmonary reserves, and additional physiological stress may result in acute respiratory failure.
- Monitor chest x-ray reports.
- **Rationale:** Chest x-ray studies reveal the etiological factors of the impaired gas exchange.
- Assess the patient's ability to cough out secretions. Take note of the quantity, color, and consistency of the sputum.
- **Rationale:** Retained secretions weaken gas exchange.
- Evaluate the patient's hydration status.
- **Rationale:** Overhydration may impair gas exchange in patients with heart failure. Insufficient hydration, on the other hand, may reduce the ability to clear secretions in patients with pneumonia and COPD.

Interventions

- Position patient with head of bed elevated, in a semi-Fowler's position (head of bed at 45 degrees when supine) as tolerated.
- **Rationale:** Position patient with head of bed elevated, in a semi-Fowler's position (head of bed at 45 degrees when supine) as tolerated.
- Regularly check the patient's position so that he or she does not slump down in bed.
- **Rationale:** Slumped positioning causes the abdomen to compress the diaphragm and limits full lung expansion.
- Turn the patient every 2 hours. Monitor mixed venous oxygen saturation closely after turning. If it drops below 10% or fails to return to baseline promptly, turn the patient back into a supine position and evaluate oxygen status.
- **Rationale:** Turning is important to prevent complications of immobility, but in critically ill patients with low hemoglobin levels or decreased cardiac output, turning on either side can result in desaturation

- Consider positioning the patient prone with upper thorax and pelvis supported, allowing the abdomen to protrude. Monitor oxygen saturation, and turn back if desaturation occurs. Do not put in prone position if patient has multisystem trauma.
  - **Rationale:** Partial pressure of arterial oxygen has been shown to increase in the prone position, possibly because of greater contraction of the diaphragm and increased function of ventral lung regions. Prone positioning improves hypoxemia significantly.
- Maintain an oxygen administration device as ordered, attempting to maintain oxygen saturation at 90% or greater.
  - **Rationale:** Supplemental oxygen may be required to maintain PaO<sub>2</sub> at an acceptable level.
- Avoid a high concentration of oxygen in patients with COPD unless ordered.
  - **Rationale:** Hypoxia stimulates the drive to breathe in the patient who chronically retains carbon dioxide. When administering oxygen, close monitoring is imperative to prevent unsafe increases in the patient's PaO<sub>2</sub> which could result in apnea.
- Administer humidified oxygen through appropriate device (e.g., nasal cannula or face mask per physician's order); watch for onset of hypoventilation as evidenced by increased somnolence after initiating or increasing oxygen therapy.
  - **Rationale:** A patient with chronic lung disease may need a hypoxic drive to breathe and may hypo ventilate during oxygen therapy.
- Suction as necessary.
  - **Rationale:** Suction clears secretions if the patient is not capable of effectively clearing the airway. Airway obstruction blocks ventilation that impairs gas exchange.
- Consider the need for intubation and mechanical ventilation.
  - **Rationale:** Early intubation and mechanical ventilation are recommended to prevent full decompensation of the patient. Mechanical ventilation provides supportive care to maintain adequate oxygenation and ventilation.
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- Monitor the effects of sedation and analgesics on patient's respiratory pattern; use judiciously.

		<ul style="list-style-type: none"> <li>- <b>Rationale:</b> Both analgesics and medications that cause sedation can depress respiration at times. However, these medications can be very helpful for decreasing the sympathetic nervous system discharge that accompanies hypoxia.</li> </ul>
	Health Teaching	<ul style="list-style-type: none"> <li>• Instruct patient to limit exposure to persons with respiratory infections.</li> <li>- <b>Rationale:</b> This is to reduce the potential spread of droplets between patients.</li> <li>• Instruct family in complications of disease and importance of maintaining medical regimen, including when to call physician.</li> <li>- <b>Rationale:</b> Knowledge of the family about the disease is very important to prevent further complications.</li> <li>• Support family of patient with chronic illness.</li> <li>- <b>Rationale:</b> Severely compromised respiratory functioning causes fear and anxiety in patients and their families. Reassurance from the nurse can be helpful.</li> </ul>
Evaluation		Achieved ( )    Partially achieved ( )    Not achieved ( )
	Evidence by:	

### Important Note

"We just recommend examples of nursing care plans. There are many references and interventions may change according to patient condition. You should consider this, search, and see more than one reference to reach the best quality for writing the care plan"