Prone Positioning for the Non-Intubated Patient

May 13, 2020

Rationale:
Turning the patient with ARDS from a supine to a prone position can increase pulmonary capillary perfusion and oxygenation. The physiologic changes (fluid shifting from the posterior lung, allowing undamaged alveoli to be filled with oxygenated blood) that occur when turning a patient into a prone position improve ventilation. Prone positioning expands the dependent lung areas. Expanding dependent lung areas opens collapsed alveoli, increasing ventilation capacity and improving oxygenation.

Work of breathing can also be reduced with prone positioning because it reduces the pressure on the lungs from the cardiac structures and abdominal organs. Reducing work of breathing saves vital energy that the patient can use for healing and recovery.

Prone Position considerations for the non-intubated awake patient:
Proning an awake patient may be used with frequent monitoring. This should be considered early in the diagnosis of severe hypoxemia and the following situations:

1. Isolated hypoxemic respiratory failure without substantial dyspnea (the “paradoxically well appearing” hypoxemic patient). A reasonable candidate might meet the following criteria:
   a) not in multi-organ failure
   b) expectation that patient has a fairly reversible lung injury and may avoid intubation
   c) no hypercapnia or substantial dyspnea
   d) normal mental status, able to communicate distress
   e) no anticipation of difficult airway

2. Patients who do not wish to be intubated (DNI). The main risk of awake proning is that it could cause excessive delays in intubation. In the DNI patient who is failing other modes of ventilation, there is little to be lost by trialing awake proning.

3. This could be attempted as a stop-gap measure (Rescue therapy) for a hypoxemic patient when intubation isn’t immediately available (e.g. desaturation during transportation). Many awake patients are capable of proning themselves, so this could be achievable without any resources.

Contraindications: (Determine if the risks of prone positioning are outweighed by the patient's need for improved oxygenation)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Considerations</th>
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<tbody>
<tr>
<td>Extreme Obesity</td>
<td>Delirium and confusion</td>
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<tr>
<td>Spine Instability</td>
<td>Inability to independently change position</td>
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<tr>
<td>Abdominal or chest wounds</td>
<td>Recent nausea / vomiting</td>
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<tr>
<td>Ophthalmic surgery</td>
<td>Advanced pregnancy</td>
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<tr>
<td>Intraocular pressure</td>
<td>Multi-organ failure</td>
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<td>Hypercapnia</td>
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</table>
Equipment:
- Pillows
- Supplemental oxygen
- Continuous O2 monitor
- Foam dressings for pressure points

Timed position changes:
- If patient fulfills criteria for proning ask the patient to switch positions as follows. Monitor Oxygen saturation after every position change to ensure oxygen saturation has not decreased.

Proning details:

<table>
<thead>
<tr>
<th>Nursing Action</th>
<th>Special Considerations</th>
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<tbody>
<tr>
<td><strong>Assessment:</strong></td>
<td>Prior to being encouraged to adopt the prone position, the patient should be assessed for the ability to independently change position in bed</td>
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<tr>
<td>1. Assess mobility</td>
<td>To minimize interruptions during prone positioning, have the patient consider physiologic needs and comfort strategies prior to prone position, if possible (i.e., toileting, nutrition, medications, call bell within reach, phone or other device in reach, utilizing music or television as a distraction, etc.). Consider EKG leads as a potential pressure point for pressure injury</td>
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<tr>
<td>2. Assess mental status</td>
<td></td>
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<tr>
<td>3. Evaluate for contraindications and considerations</td>
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**Monitoring of the Patient**

- EKG leads may be moved to the back for comfort. However, can remain on the anterior chest wall for continuous monitoring.
- SPO2 probe (continuous) should be placed on the patient of not already in use.

**Timing**

- On admission, a patient experiencing respiratory symptoms or requiring supplemental oxygen should receive an initial one-hour period of prone position.
- EKG monitoring should remain in place.
- In the prone position, the patient should lie on his/her stomach, supported by their arms and a pillow in such a manner that oxygen supply tubing is not obstructed.
  - An alternative to the arms supporting model is on his/her stomach supported by pillows with the head of bed slightly raised.
- Pillows placed under the hips, or under legs as needed for comfort.
- Prevention of pressure injury with foam dressings on pressure points, slight

**Documentation**

Patient's SpO2, oxygen device, L/min of O2, respiratory rate and effort should be assessed just prior to proning and 1 hour after prone.

*Documenting the response to 1 hour in the prone position will help identify those who are most likely to benefit should prone position be needed for rescue therapy*
Repositioning and pillow support is needed.

6. After initial 1-hour period, the patient can reposition themselves to supine but should be encouraged to adopt the prone position as often as tolerated and able. The goal should be for the patient to be in the prone position more often than not while in bed.

<table>
<thead>
<tr>
<th>Prone Position as Rescue therapy</th>
<th>Documentation</th>
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<tbody>
<tr>
<td>1. A patient who develops increasing oxygen need (an increase of &gt;2L/min needed to maintain an SPO2&gt;90%) is at risk for respiratory failure.</td>
<td>At the time of the event,</td>
</tr>
<tr>
<td>2. If the patient is in the supine position, and it is safe to do so, place the patient in the prone position.</td>
<td>• O2 L/min</td>
</tr>
<tr>
<td>3. Notify the medical team of worsening hypoxemia.</td>
<td>• O2 device</td>
</tr>
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<td>4. If the patient stabilizes (decreased RR, increased SPO2, decreased O2 need) reassess frequently.</td>
<td>• Resp rate</td>
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<td>• SPO2</td>
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</table>

Prone position as a rescue therapy should not be used as a replacement for an ICU transfer or intubation. It is important to involve the medical team before attempting prone positioning as a rescue therapy.

Additional information:

1. Prone positioning has no effect on PaCO2, pH, respiratory rate, or hemodynamics.
2. There is often an initial decline in oxygenation with position change and after return to the supine position.
3. Frequent assessment of toleration is required
   a. Close monitoring of patients with co-morbidities that predispose them to rapid deterioration.

Resources:

1. Massachusetts General Hospital, Version 1.0 04/02/2020, Copyright 2020, publicly available content.
6. Nursing Critical Care 2020: [https://journals.lww.com/nursingcriticalcare/Fulltext/2012/03000/Prone_positioning_for_patients_with_ARDS.6.aspx](https://journals.lww.com/nursingcriticalcare/Fulltext/2012/03000/Prone_positioning_for_patients_with_ARDS.6.aspx)
7. Proper positioning on stomach photo courtesy of: myshepherdconnection.org