Guidance Tool:

Prone Positioning of the Awake & Alert Adult COVID-19 Patient

Purpose:

- To support evidence-based practice and clinical decision-making by health care professionals in regards to use of prone positioning for awake, alert, adult COVID-19 patients in an acute care setting including:
  - Indications and contraindications
  - Risks and benefits
  - Proper Positioning
  - Monitoring needs and documentation

Key Messages

- Prone positioning may be a treatment option for some awake and alert patients having difficulty maintaining arterial oxygen levels (e.g., hypoxemic respiratory failure and/or Acute Respiratory Distress Syndrome [ARDS]).
- In awake, alert COVID-19 patients, early prone positioning, when used along with other non-invasive ventilation, may help improve oxygen saturation.
  - Decision support criteria are available in this document
  - Currently, there are ongoing international studies of awake proning with Calgary Zone hospitals in participation. https://clinicaltrials.gov/ct2/show/NCT04402879
  - There is currently no strong evidence to support sustained benefit from prone positioning in patients with COVID-19 pneumonia
- In the Intensive care unit, prone positioning of intubated, mechanically ventilated patients with moderate to severe ARDS is a proven, life –saving, but complex intervention.
- Prone positioning should not be used in place of mechanical ventilation for patients showing signs of respiratory distress in which intubation and ventilation support is indicated as it could further delay care

Prone Position Ventilation Principles

Prone position may assist with better ventilation and oxygenation in patients with the most severe forms of COVID-19 pneumonia. Proposed mechanisms include:

- Improve secretion drainage,
- Improved lung recruitment: Causes the diaphragm to move lower and backward (caudal and dorsal), which helps open up the bases of the lungs for gas exchange
- Takes the weight of the heart off of the lungs, thus decompressing the left lower lobe and part of the right lower lobe,
- Reduces the pleural pressure,
- Equalizes the transpulmonary pressure in the dorsal and ventral areas, which reduces the strain stress on recruited alveoli,
- May reduce ventilation-perfusion mismatches.

Decision Tool:

Prone Positioning of the Awake & Alert Adult COVID-19 Patient

(adapted from ICS guidelines 2020 and Avera health 2020)

The patient has BOTH:

- Suspected or confirmed COVID-19
- FiO2 ≥ 28% or requires basic respiratory support to achieve SpO_2 92 – 96% (88-92% if risk of hypercapnic respiratory failure)

NO → Continue supine

YES ↓

Patient has ALL of the following:

- Able to communicate
- Able to co-operate with procedure
- Able to rotate and adjust position **independently**
- No anticipated airway issues

NO → Continue supine

YES ↓

Review the following ABSOLUTE contraindications (exclusion criteria):

- Respiratory distress
- Immediate/anticipated need for intubation
- Hemodynamic instability (SBP < 90mmHg or MAP < 60)
- Cardiac arrhythmia
- Agitation or altered mental status
- Need for restraints
- Unstable spine/thoracic injury/recent abdominal surgery
- Documented aspiration risk
- Nausea/vomiting
- Continuous gastric tube feedings
- Specific surgical and/or trauma precautions ordered

PRESENT → Continue supine

ABSENT ↓

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PRESENT

If any present, further discuss risk versus benefit with care team before proceeding

Review the following RELATIVE contraindications (possible exclusion criteria):

- Facial injury
- Neurological issues (e.g. frequent seizures)
- Morbid obesity - BMI greater than 40
- Pregnancy (2/3rd trimesters)
- Pressure sores/ulcers on specific anterior body parts?
- Tracheostomy/Laryngectomy
- Severe reflux
- Recent pacemaker (no arm movement on pacemaker side above shoulder x 4 weeks)
- Recent surgeries to the chest (i.e. no proning ≤6 weeks post CABG; anterior chest tubes)
- Inability to provide continuous cardiac monitoring – cardiac monitoring is an evidence-based, best-practice recommendation

ABSENT – or risks reviewed with care team and decision to proceed

PRESENT

Consult PT/OT where possible, prior to proceeding

Review the following PRECAUTIONS:

- Previous injury and/or problem with range of motion
  - especially neck, shoulders
  - limitations/pain with turning/movement
- Problems with sensation such as numbness, tingling

ABSENT

Prepare to assist patient to prone position (See next pages for procedures)

- Explain procedure and benefit
- Obtain informed (verbal) consent to proceed
- Gather supplies:
  - Ensure oxygen therapy and basic respiratory support
  - Pillows may be required to support the, hips, and shins
  - Consider supplemental oxygen prior to initiating position change
- Begin oxygen saturation monitoring.

A medical order is required for prone positioning of any patient admitted to hospital for treatment of COVID- 19.

Procedure:

Prone Positioning of the Awake & Alert, Adult COVID-19 patient

(Adapted from Lippincott Procedures)

1. Verify the practitioner's order.
2. Assemble supplies (e.g. pillows, foam, cardiac monitor leads, comfort items)
3. Perform hand hygiene.
4. Confirm the patient's identity using at least two patient identifiers.
5. Provide privacy.
6. Explain the procedure to the patient and family including goals (minimum 30 minutes to a maximum of patient's comfort)
7. Consider comfort needs (e.g. toileting) and reassess mobility, ability to turn head and sites of potential skin breakdown.
8. Connect the patient to the cardiac monitor and pulse oximeter if not already connected. Make sure that the alarm limits are set appropriately and that alarms are turned on, functioning properly, and audible.
9. Assess the patient's vital signs and other hemodynamic parameters.
10. Assess the patient's neurologic status before prone positioning.
11. Perform hand hygiene.
12. Put on gloves and, as needed, other personal protective equipment.
13. Empty ileostomy or colostomy drainage bags as needed.
14. Remove the anterior chest wall electrocardiogram (ECG) monitoring leads while ensuring the ability to monitor the patient's cardiac rate and rhythm. You'll reposition these leads on the patient's back after assisting the patient to the prone position.
15. Ensure that the patient's supplemental oxygen equipment has sufficient tubing.
16. Adjust all patient tubing and invasive monitoring equipment.
17. Assist the patient to the prone position (see instructions/images on following pages)
18. Place the ECG leads on the patient's back.
19. Support the patient's chest with a pillow if needed.
20. Place the patient's bed in the reverse Trendelenburg position if needed.

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21. **Monitor the patient's oxygen saturation level for 15 minutes after each position change.**

If distress:

- Ensure oxygen is connected to patient
- Increase inspired oxygen
- Change patient's position and consider a return to supine position (Head of bed elevated greater than 30 degrees unless contraindicated)
- Liaise with Care Team

Notify the most responsible health care provider

Discontinue Prone Positioning if:

- No improvement with change of position
- Patient unable to tolerate position
- Respiratory rate worsening, looks tired and/or using accessory muscles

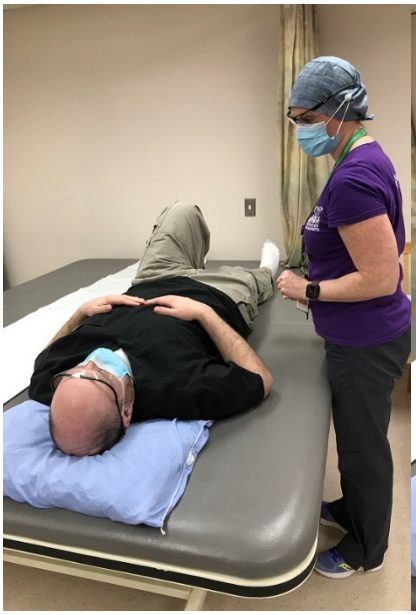
If no distress:

- Titrate down supplemental oxygen as tolerated
- If patient continues to fulfill criteria for proning continue with proning goals.
- Continue to check pressure points, pain or numbness or any evidence of injury q1h minimum.

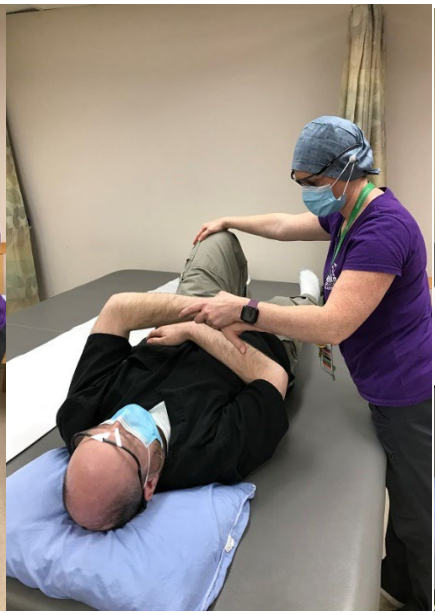
22. If the patient tolerates prone positioning, assist with position changes
    - Monitor patient with each position change including baseline VS.
    - Distress usually occurs within first 15 minutes.
    - Observe Work of breathing, LOC, discomfort/tolerance
    - Monitor at least hourly or more frequently as needed
23. Discontinue prone positioning if the patient feels unable to tolerate the position, if the respiratory rate increases to 35 breaths/minute or higher, or if the patient appears tired or uses accessory muscles to breathe (see boxes in step 21 above).
24. Remove and discard your gloves and other personal protective equipment if worn.
25. Perform hand hygiene.
26. Document the procedure including VS, Work of breathing, LOC, discomfort/tolerance, time spent in the position, oxygen status and delivery as well as potential pressure areas. Continue to document hourly and with each position change.

(Prone and ¾ Prone positioning guidance on next page)

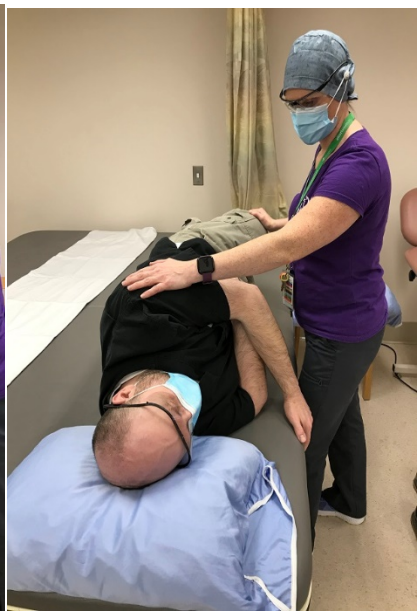
Prone Position:



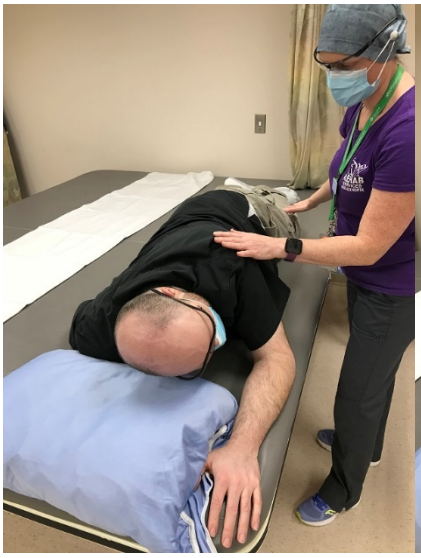
Shift body to far side of bed→



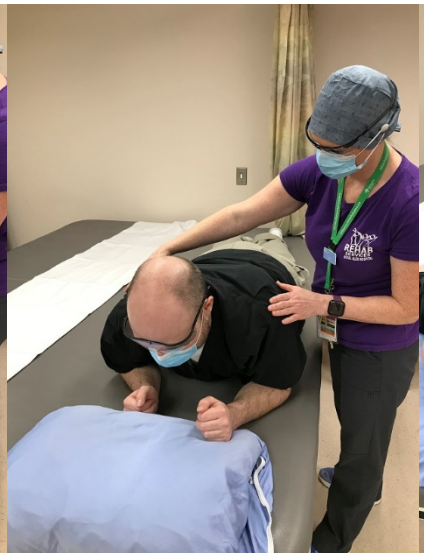
bend far knee up→



roll onto side →



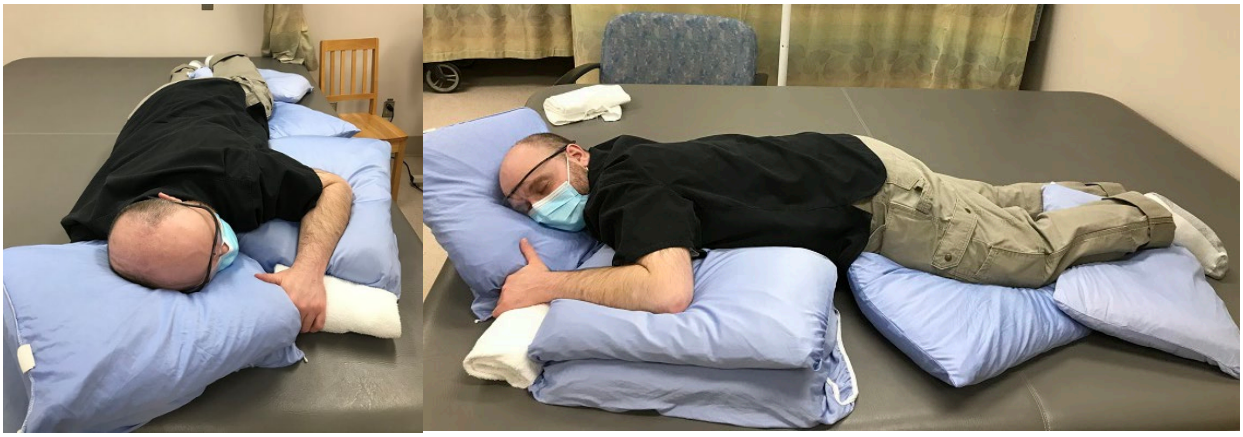
Get on to one forearm→



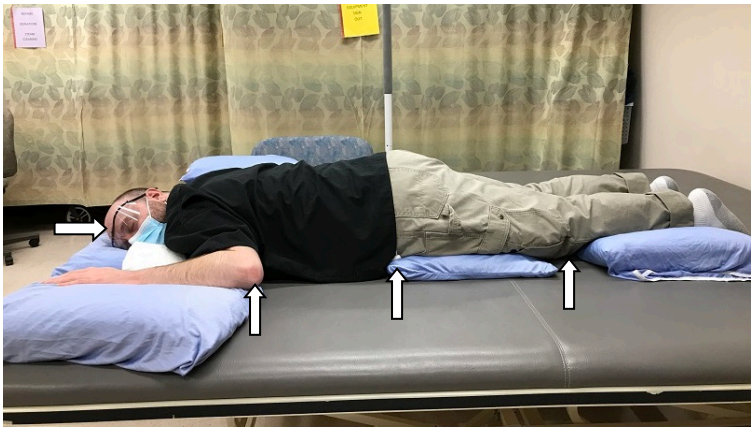
bring other forearm up→

Prone Position: Position arm facing patient with the elbow below the axilla to prevent brachial plexus nerve injury. Position opposite arm with palm up at hip level

¾ Prone (Recovery Position):



In ¾ prone some patients may need extra pillows under the arm, chest, pelvis and shins for support and to offload bony prominences.



Note: Potential areas for pressure injuries in prone position include ears, cheek, sternum, elbow, hip knees and toes.

For both Prone and ¾ Prone Positioning:

- ¾ prong position may be beneficial for patients who do not tolerate full prone or who want to change position periodically for comfort and/or pressure relief
- Place a towel or a piece of foam to support the front of shoulder to prevent an anterior subluxation of shoulder
- May consider tilting the bed to reverse Trendelenburg position for comfort
- Make there is no tension on any nerves, (e.g. brachial plexus)
- Patient can switch their arms and head positions as per comfort
- Beware of the position of lines/tubes during turn

Evidence for Prone Positioning

The efficacy and safety of awake prone positioning of non-intubated COVID-19 patients with hypoxemic respiratory failure is not established and hence this practice is not recommended for routine application in COVID-19 patients. (AHS Scientific Advisory Committee [SAG], May 2020). However, there is some evidence to support the early use of Prone Positioning in Awake & Alert adult patients in select circumstances.

The American College of Emergency Physicians recommends

- For patients with persistent hypoxemia despite increasing supplemental oxygen requirements in whom endotracheal intubation is not otherwise indicated, a trial of awake prone positioning to improve oxygenation should be considered.
- Awake prone positioning is NOT recommended as a rescue therapy for refractory hypoxemia to avoid intubation in patients who otherwise require intubation and mechanical ventilation.

Interprofessional team collaboration is important and may include nursing, physicians, respiratory services, rehabilitation services, pharmacist and other disciplines. All clinicians should also understand the rationale of prone positioning and its limitation as well as the ongoing debate on the effectiveness of this intervention. A patient's feedback and perception of treatment is a key component in evaluating effectiveness.

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