

Non-Ventilated Prone Positioning for COVID-19 Patient Guidelines

Introduction / Purpose:

For the patient with hypoxemia, there has been some literature that indicate there are physiologic benefits to have the patient placed in Prone Position (PP). Some of these benefits include improved lung recruitment, better matching of pulmonary perfusion to ventilation and improved arterial oxygenation. The COVID-19 pandemic has resulted in an increase in the cases of acute respiratory distress syndrome (ARDS) with at least 5% of all the cases requiring mechanical ventilation in a critical care unit. ARDS has a mortality of 25-40% and prone positioning can improve the average ratio of arterial oxygen tension to the fraction of inspired oxygen (P/F ratio) by 35 mmHg and result reduce mortality. ^{1,2,3,4}

Prone positioning is done in the ICU to treat intubated patients with hypoxemic respiratory failure. Prone positioning has also been found to have benefits in COVID -19 patients early in their hospitalization. The following studies have demonstrated benefits of PP in the non-intubated COVID-19 patients.

- Scaravilli et al, did a retrospective study of non-intubated patients with hypoxemic respiratory failure who were treated with PP and found improved P/F ration in the charts examined. ⁵
- Another study found that PP in patients with moderate-severe ARDS on Non-Invasive Mechanical Ventilation (NIMV) and High Flow Nasal Cannula (HFNC) may help avoid intubation. ⁶
- Pan et al found that using high PEEP alone was not efficacious to recruit the lung, but with PP, lung recruitment was more successful.⁹
- Investigators in the Jiangsu province in China found that the rate of invasive mechanical ventilation (IMV) rate was reduced to under 1% utilizing PP with NIMV, HFNCC and restrictive fluid resuscitation.⁷

For these reason, patients admitted with hypoxemia should be encouraged to adopt the prone position where practical and it may be used as a rescue therapy in patients with mounting oxygen needs. This document serves to inform clinicians about PP of non-intubated, hypoxemic patients.

Objectives to Meet:

- Manage hypoxic respiratory failure in patients with COVID-19
- Improve oxygen in less severe disease
- Avert the need for ICU care/intubation
- Adhere to evidence-based practice and emerging literature for care of the COVID-19 positive patients

Flow Diagram Decision Tool for Non-Ventilated Proning Process

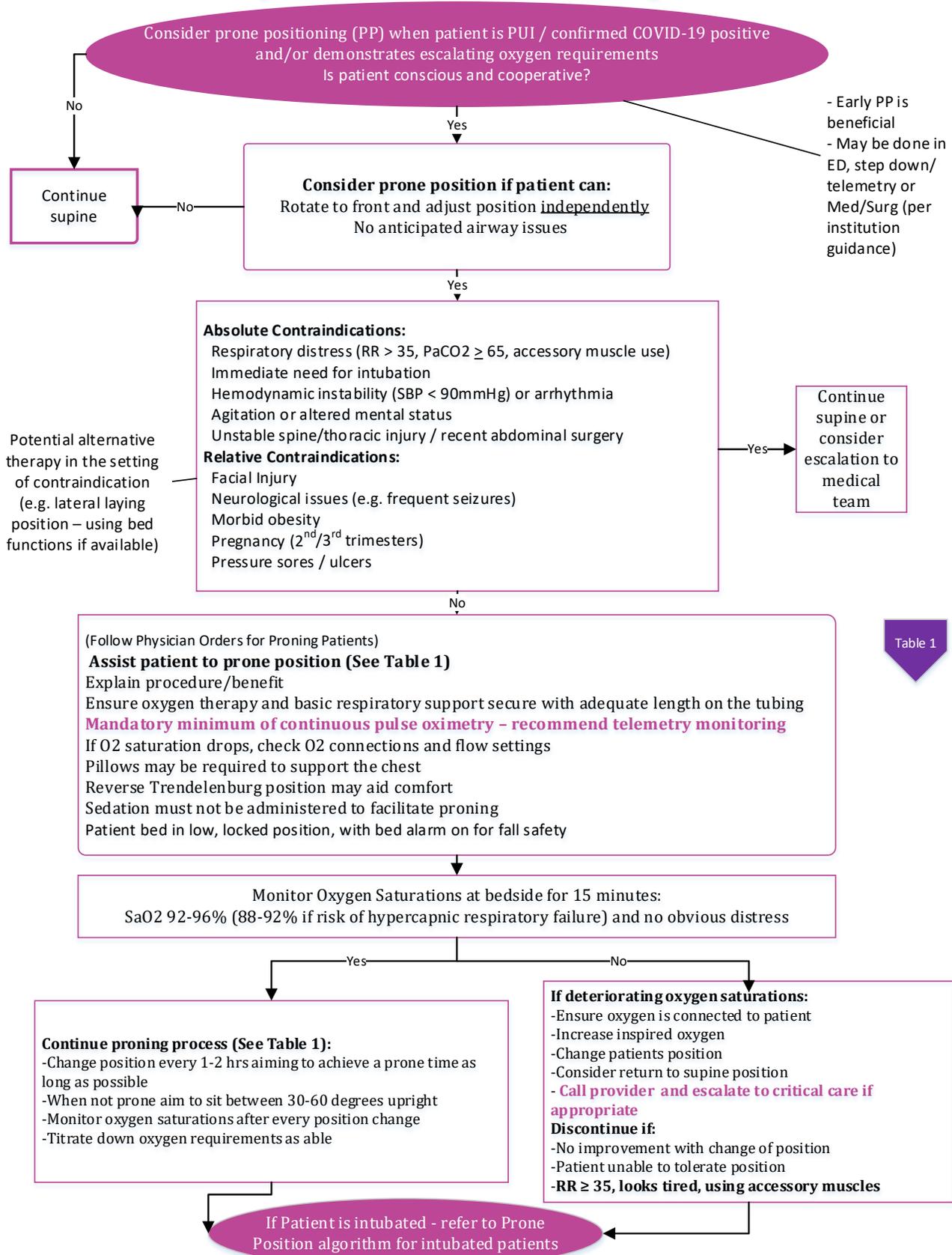


Table 1

Table 1 – Timed position changes for patients undergoing non-ventilated proning process

Timed Position Changes:

If patient fulfills criteria for proning ask the patient to switch positions as follows. Monitor oxygen saturations 15 minutes after each position change to ensure oxygen saturation has not decreased.

Start at 15-30 minute intervals and assess for tolerance. If **patient tolerates** the position – they can **stay in that position as long as they are able** with a goal of 2 hours minimum

If **unable to tolerate complete prone** for desired timeframe, consider the following alternative.

Example Routine:

- 30 minutes to 2+ hours lying fully prone (bed flat)
- 30 minutes to 2+ hours lying on right side (bed flat)
- 30 minutes to 2+ hours sitting up (30-60 degrees) by adjusting head of the bed
- 30 minutes to 2+ hours lying on left side (bed flat)
- 30 minutes to 2+ hours lying prone again
- Continue to repeat the cycle.....

Non-Ventilated Prone Positioning Procedure:

C	<ul style="list-style-type: none"> • Confirm Appropriateness for Prone Positioning (Review inclusion/exclusion criteria, follow algorithm)
O	<ul style="list-style-type: none"> • Offer Patient and Family Education (What is it, why we use it and what is the process)
V	<ul style="list-style-type: none"> • Verify Supplies and Patient Readiness to Prone (ECG leads, pillows, prep patient, position patient)
I	<ul style="list-style-type: none"> • Initiate Monitoring of Patient to Ensure Safety (Monitor oxygen saturation, assess for patient tolerance)
D	<ul style="list-style-type: none"> • Determine the Appropriate Frequency/ Document Patient Position and Response (Prone cycle target 2 - 4 hours or longer, minimum of 2 cycles per day)

PROCEDURE

Prior to Proning Checklist:

1. Educate patient on the importance of proning and its potential impact
2. Complete patient care activities
 - a. Bathroom, feeding, pain management
3. Confirm all lines are in place and secure:
 - a. Oxygen tubing should have adequate length for movement
 - b. Check all the IV tubing, connections length
 - c. Empty indwelling urinary catheters and ensure tube is secured to prevent pulling
4. Gather additional pillows to support patients comfort
5. Lines located in upper torso – align with one shoulder with excess tubing running to head of bed.
6. Lines located in lower torso align with one leg and run excess tubing to end of bed.
 - a. Disconnect SCD
7. Assess for potential skin integrity complications and apply any needed prophylactic dressings.
 - a. Place protective barriers (Mepilex) over bony prominences, pressure points and medical devices per diagrams

Prone Positioning

1. Lay bed flat and max inflate the bed
2. Place ECG leads on the patients back
3. Connect O2 saturation monitor or preferably end tidal CO2 continuously if available
4. Assist / ask patient to turn over into the prone position while assisting with navigation of lines.
 - a. Consider having patient head at the foot of the bed (clinicians can better observe patient for monitoring of respiratory status)
5. Ensure patient is comfortable
 - a. Place pillows as needed for proper alignment and comfort
 - b. Drop rails to ensure arms can be placed comfortable
 - c. For obese/pregnant patients – using a body pillow and have them lay semi prone against the pillow
6. Implement safety measures
 - a. Bed in low position and alarm on
 - b. Call light and phone within reach
7. Stay with the patient for the first 10 – 15 minutes
8. Monitor and assess patient vital signs and tolerance post maneuver
 - a. Oxygenation level within first 15 minutes
 - b. Note any arrhythmias (tachycardia, Qt interval if patient on azithromycin).

- c. Blood pressure elevation or drop
- 9. If patient decompensates (SpO2 less than 92%, HR greater than 120, RR greater than 36)
 - a. Assist patient into a semi-recumbent supine position
 - b. Adjust oxygen per physician order (goal is to maintain SpO2 greater than 92%)
 - c. if no improvement within 15 minutes - notify provider / call RRT

Post Prone to Supine Position

1. Reverse Steps above
2. Raise the head of bed
3. Continue to monitor SpO2
4. Continue to monitor for respiratory distress

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