

PRONING FAQs

1. Does proning actually work?

Yes! The PROSEVA trial demonstrated survival benefit at 28 and 90 days for patients with severe ARDS (PF ratio ≤ 150 with $F_{iO_2} \geq 0.6$) who received proning sessions ≥ 16 hours for several consecutive days. (Available at:

<https://www.nejm.org/doi/full/10.1056/NEJMoa1214103> - DOI: 10.1056/NEJMoa1214103).

2. You suggest proning patients with PF ratio ≤ 150 , but I don't understand PF ratios.

PF ratio is a validated measurement which refers to the ratio of the partial pressure of oxygen in arterial blood to the set fraction of inspired oxygen (P_{aO_2}/F_{iO_2}). The PF ratio provides information on how much supplemental oxygen a patient is requiring to maintain an adequate amount of oxygen dissolved in their blood. The PF ratio is also a simple indication of a patient's acute lung disease and is used to classify the severity of acute respiratory distress syndrome (ARDS). The lower the PF ratio, the more severe the ARDS.

3. How do you calculate the PF ratio?

The P_{aO_2}/F_{iO_2} can be calculated with information found in an Arterial Blood Gas (ABG). For example: A patient who is on 65% oxygen (F_{iO_2} 0.65) and has a P_{aO_2} of 91 mmHg on their ABG, has a PF of $(91/0.65) = 140$.

4. How soon after I prone my patient will I see a benefit?

Proning effects may not be immediate and it may take several hours to see the positive effects of proning. Some patients may have transient deterioration in gas-exchange immediately upon proning prior to showing improvement.

5. How do we know if proning was successful? What about the COVID patient who was improving then deteriorates again, as well as what about the patient at day 20 who is still hypoxemic?

When assessing if prone positioning was successful in patients with severe ARDS, assess how the patient responds once supine after prone positioning. Initially, oxygenation may be fine, but derecruitment may occur throughout the day or over the next 48 hours. If successful, we should see that the improvements in the PF ratio and F_{iO_2} after prone positioning are maintained while supine.

We suggest monitoring driving pressure in the supine and prone position as oxygenation can change quite a bit with positioning due to derecruitment. We also suggest not making too many changes at once. For example: maintaining paralysis while assessing if the patient can tolerate the supine position after a proned period.

The inability to sustain the PF ratio and F_{iO_2} when supine requires close attention from the ICU team. These scenarios require decisions from the MRHP and may not follow the pathway, especially in the event that other diagnoses begin to be considered. In most cases, management for mechanically ventilated patients with HRF and ARDS can be standardized however this should not take away from clinical judgment and personalization should a scenario arise where other treatments need to be considered.

6. If we initiate proning, do we need to continue with the practice for the next 3 days or "flips" even if the patient's oxygenation has significantly improved?

Proning increases ventilation to dependent lung zones by matching gravity dependent perfusion to ventilated alveoli, thus decreasing the shunt. This in turn improves compliance and oxygenation. With regards to how many times a patient should be proned, we suggest following what was done in the PROSEVA trial. The decision to prone should be based on the criteria from PROSEVA and the Venting Wisely pathway. **PROSEVA did not mandate that a patient should be proned and supinated for three days minimum.** This should be a daily assessment and decision. Proning should continue as long as necessary with position changes recommended every 16 hours or as per unit guidelines/discretion of the MRHP. Remember the VW Pathway suggests to consider proning with a PF less than or equal to 150 with an F_{iO_2} of ≥ 0.60 & strongly recommends proning with a PF ratio of less than or equal to 100 with an F_{iO_2} of ≥ 0.60

A systemic review & meta-analysis of proning therapy in ARDS by *Munshi et al. (2017)* indicated that proning the patient before the VW Pathway thresholds (mild ARDS patients) showed no outcome benefit. Similarly, there was no benefit if the patient was proned for less than 12 hours.

Finally, there is some risk with proning both for the patient and the staff as well as significant resources usage, so it is important that the proning criteria in the PROSEVA trial is used so as not to perform an unnecessary procedure.

7. Does my patient need to receive paralytics if they are being proned?

We strongly recommend that prior to prone positioning, patients are appropriately sedated, given neuromuscular blockage, and receive “pre-oxygenation”. Once a patient has been successfully put in the prone position and is clinically stable, attempts to reduce the level of sedation and neuromuscular blockage can be considered.

8. Does proning really need to be part of care for sites that perform ECMO?

We strongly recommend that prone positioning be trialed in all critically ill mechanically ventilated patients with ARDS prior to consideration for ECMO. Proning is supported by more robust evidence and is readily available for any and all patients, whereas ECMO is invasive, resource intensive, less readily available.

9. Should we try inhaled pulmonary vasodilators before proning is considered?

We suggest a trial of proning before starting inhaled vasodilators. Inhaled pulmonary vasodilators are not supported by robust evidence. Refer to the [Care of the Adult Critically Ill COVID-19 Patient](#)

10. Can I prone my patient if they have a new trach?

Yes, however, we recommend extra care must be taken to maintain tracheostomy positioning and airway patency. Decisions regarding prone positioning should be made with a consideration of risk versus benefit.

11. Are resources available for hands on prone positioning practice?

Yes. There are proning simulation scenarios provided in the CCSCN PRONTO Toolkit (Low Fidelity Proning Sim section).

12. Can I prone my patient if they are on CRRT?

Yes. The patient should ideally have a dialysis catheter in the internal jugular position, as it has better visibility while in the prone position. Femoral and subclavian lines pose

greater risk because of the inability to visualize the line at all times and disconnection may lead to exsanguination.

13. We might not have enough staff available to prone patients, especially at night. What should we do in these circumstances?

In addition to one RN and one RT, sites can utilize non-ICU staff and allied health workers for proning. Whenever possible, prone positioning should be done when there are adequate personnel to support the procedure and in anticipation of responding quickly to complications. These resources are generally most commonly available during the day or at times when there are more staff available (e.g., shift changes).

14. What happens if my proned patient codes?

Ensure to don appropriate PPE properly, even in an emergency. Activate your emergency response. You can perform compressions to the patients back until you have enough people to safely supinate the patient. Look for more details in the *CPR of the Proned Patient* fact sheet found in the CCSCN PRONTO Toolkit (Clinical Decision Support section).

15. What happens if my proned patient's ETT becomes dislodged?

If the ETT becomes dislodged in your proned patient, activate your emergency response. You will need to call for additional help to turn the patient over. Even in an emergency, do not enter the room of a patient on isolation without adequate PPE. Supplemental oxygen and bag-mask (with filter) should be applied while resources are mobilized to re-intubate the patient.

16. Can we do a chest x-ray on a proned patient?

Yes. The technician should make sure to note patient positioning so that the x-ray can be interpreted correctly.

17. Can physiotherapy be performed on a proned patient?

Yes. Physiotherapy will generally be performed to the back. Selected passive range of motion may be performed by if deemed safe and appropriate. Refer to Physician orders and Physiotherapist guidance.

18. Can we feed patients that are proned?

Yes, patients who are proned should be fed as tolerated and as per Physician order. Continue with your usual gastric residual assessments. Preference can be given to position of a small bowel feeding tube if there is feeding intolerance. Bed should be positioned in reverse Trendelenburg to prevent gastric contents reflux.

19. What should I do if my proned patient has diarrhea?

You can consider the need for a fecal management device (rectal tube). This would require a Physician order, but may be of benefit if the patient is requiring frequent repositioning for cleaning.