

# Improving prone positioning for severe ARDS during the COVID-19 pandemic: An implementation mapping approach

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## Online Data Supplement

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**Figure E1: Intersection of CFIR domains with broad themes of perceived determinants of evidence-based prone positioning utilization.**

	<i>CFIR Domain</i>					
		Intervention Characteristics	Outer Setting	Inner Setting	Characteristics of the Individual	Process
<i>Theme</i>	Knowledge					
	Resources					
	Team Culture					
	Patient Factors					
	Alternative Therapies					

**Table E1: Consolidated framework for implementation research (CFIR) domains and constructs\***

<b>Domain</b> <i>Description</i>	<b>Constructs</b>
<b>I - Intervention characteristics</b>  <i>Characteristics of the evidence-based intervention that may influence how it can or should be translated into practice</i>	Intervention source Evidence strength and quality Relative advantage Adaptability Triability Complexity Design quality and packaging Cost
<b>II - Outer setting</b>  <i>Factors in the broader environment that may impact implementation</i>	Patient needs and resources Cosmopolitanism Peer pressure External policies and incentives
<b>III - Inner setting</b>  <i>Factors in or characteristics of the site of implementation that are relevant to implementation</i>	Structural characteristics Networks and communications Culture Implementation climate Tension for change Compatibility Relative priority Organizational incentives and rewards Goals and feedback Learning climate Readiness for implementation Leadership engagement Available resources Access to knowledge and information
<b>IV - Characteristics of the Individual</b>  <i>Characteristics of the individuals (e.g., clinicians) who directly administer the evidence-based intervention</i>	Knowledge and beliefs about the intervention Self-efficacy Individual stage of change Individual identification with organization Other personal attributes
<b>V - Process</b>  <i>Factors in or characteristics of the actual process of translating the intervention into practice that may influence implementation</i>	Planning Engaging Opinion leaders Formally appointed internal implementation leaders Champions External change agents Executing Reflecting and evaluating

\* Adapted from [www.cfirguide.org](http://www.cfirguide.org)

**Table E2: Determinants of evidence-based utilization of prone positioning**

Representative quotations for each theme are provided and summarized as main points.

Theme	Quotations	Main points
<b>Knowledge</b>	<p>I think it was just a lack of knowledge on the part of the team that – how long do you prone someone, how often do you have to prone them, and is there a window in terms of is it too late to prone someone or where are the benefits of proning someone who has ARDS for seven days, eight days, ten days now and now there is a new team member or the new faculty who started rounding with the team and if they suggest that we should prone them now, is there a window after which you should not consider someone to be proned or not? (<i>Critical Care Attending</i>)</p> <p>... I think the evidence would suggest if you have severe ARDS it doesn't have to be a rescue maneuver and, in fact, you should probably be doing it sooner rather than waiting until it's sort of too late or the patient's really not doing well, and we just didn't do it very frequently. (<i>ICU Director</i>)</p> <p>But the nurses are familiar with doing it. And if there's any questions, usually the charge nurse is able to answer them, or someone is able to explain what should be done next. And so it helps that they know what they're doing. (<i>Hospitalist</i>)</p> <p>And once the decision was made, I think the clinical nurse educator took the lead in training all the staff and the team members, the physician team, was made aware about the next few steps from the intensivist who has a lot of experience in these patients' care. So he educated the physician team how to manage and what to expect, the possible complications and how to troubleshoot those. So once that decision was made, it was just to execute it, and the nurses came on board, and the respiratory therapists facilitated it. (<i>Critical Care Hospitalist</i>)</p>	<p>Knowledge about patient eligibility criteria, timing, and procedure of prone positioning is sometimes lacking or erroneous.</p> <p>New staff need training in prone positioning.</p> <p>Experienced staff can facilitate education.</p>
<b>Resources</b>	<p>... basically we just knew that there was evidence for it, and we wanted to have it available here. And at that point – up to that point – first, the manpower was an issue. But then when that problem was resolved, we said that this is something that we want to do, and talked with the people who were in charge. And showed them the evidence, and they said they were in agreement with it. And we got several different protocols together, and kind of made it coalesce into something that worked for us best. And that's how it came about. (<i>Medical Director</i>)</p> <p>And in fact, I can think of a recent, actually, situation whereby the decision was to prone and we knew we were going to need a lot of resources to complete the physical act of proning the patient. And just to be honest, that particular day we had a lot of high-acuity patients... So, we actually contacted our lift team. And they are willing to engage. (<i>Bedside Nurse</i>)</p> <p>... I think if we had clear set guidelines and indications for it, that clinicians would feel more comfortable making that decision on their own and doing it almost like a traditional therapy, like starting heparin for an MI. (<i>Nurse Practitioner, Acute Care</i>)</p> <p>...some units will use a bed or some equipment to help them. Other than that, sometimes it's just a lot of people, and very carefully rotating the patient, protecting their airway and their lines. (<i>ICU Nurse Manager</i>)</p> <p>You need to have everything that you need equipment wise there – because they also have to put an eye shield over the patient, the foam pillows, and they've got to make sure everything underneath the patient is proper, because there's going to be a lot of pressure on that patient for hours. And it's just making sure everyone is ready and prepared before we do anything with the patient, and we discuss it – we do discuss what the plan of action is before we actually do it. (<i>Respiratory Therapist</i>)</p>	<p>Adequate number of staff is needed to safely turn a patient.</p> <p>Staffing and expertise are often inadequate at night.</p> <p>Clinical protocols to delineate procedures and roles may be helpful.</p> <p>Opinions regarding the need for specific equipment to facilitate proning are mixed,</p> <p>Ready availability of support supplies (eye shields, support pillows, etc.) is necessary.</p>

**Table E2: Determinants of evidence-based utilization of prone positioning (continued)**

Theme	Quotations	Main points
<p><b>Team culture</b></p>	<p>I think the culture or concern is that we are new to this and the more we do, the better we will get at it. So I think the idea is that the intensivist will have to take the lead in guiding the rest of the team. So it all depends on the team leader. If they want someone to be in prone position, it will happen because the staff is trained and ready now. It will have to be a push from the intensivist now. (<i>Critical Care Hospitalist</i>)</p> <p>...they didn't do it as much when I first started here in the MICU as opposed to the SICU, and so it was definitely a culture of seeing that it has been successful in other patients so your willingness to move forward and do it again. (<i>Clinical Nurse Specialist</i>)</p> <p>I think like a lot of things, when you start bringing in something new, there's a culture change, so people have to almost prove that it works before we start doing it. So we, as a – they had to see that it was actually beneficial, and then they bought into it... changed culture is a kind of hard thing to get people to buy into. (<i>Respiratory Therapist</i>)</p> <p>Definitely, because I think there is an inertia and there's a fear of harm associated with proning. Because as I mentioned that when we lost airway as we were proning the patient, there was significant concern from the entire team. And that one bad experience at the beginning of any initiative can cause a lot of resistance for further guiding that therapy. (<i>Critical Care Attending</i>)</p> <p>So as long as it's interdisciplinary: the nurses, the respiratory therapists, the providers are all engaged in part of the decision, then it goes pretty well, because you do have to increase resources in order to do it. (<i>ICU Nurse Manager</i>)</p> <p>I mean, obviously, nurses are able to voice their opinions if they have any concerns. If they disagree, they're able to voice those concerns. The same with respiratory therapy if they're worried about something they're also able to voice their concerns, so it's kind of like the whole team. The provider are the ones that kind of make the overall decision, but it's with input from everybody on the team. (<i>Bedside Nurse</i>)</p>	<p>Staff inexperience can be a barrier.</p> <p>ICU leadership and promotion of prone positioning can be a strong facilitator.</p> <p>Prior experiences, both positive and negative, can influence practice.</p> <p>Experienced staff should mentor, guide, and educate.</p> <p>Positive team dynamics is a facilitator.</p> <p>Decision is usually made during interdisciplinary rounds.</p> <p>Respect and consideration of all opinions is important.</p>
<p><b>Patient factors</b></p>	<p>...for our sick patients, I just try to do everything that we can. And to my understanding, basically proning is gold standard for our ARDS patients. And if they're that sick, then I will want to try everything possible to help them in whichever way that I can. So, if they're eligible, if they meet the criteria, if they're – if I've tried medical management – in regards to medications, I've tried those things and they're not working, the patient's getting sicker, then I – in those cases, I definitely have recommended it. (<i>Hospitalist</i>)</p> <p>I think – I think it's because – as far as the why, I think it's because of our patients. A lot of our patients are pulmonary patients so they – we frequently see patients that are in ARDS. So because of that, it's going to be used more frequently. (<i>Bedside Nurse</i>)</p> <p>I would say that in certain patients that might be hemodynamically unstable and wouldn't be able to tolerate the actual physical turn. We would avoid it if they had certain lines, drains, incisions, wounds. I think those types of things would prohibit you from being able to turn. (<i>ICU Nurse Manager</i>)</p> <p>Body mass index, I think, or BMI is one of the driving factor for that; that if we have a patient who is morbidly obese, there is initial reluctance I believe that it will be very challenging to prone them. (<i>Critical Care Attending</i>)</p> <p>Educating families, I think, is a challenge. We developed ... an educational brochure... And that was helpful, because we didn't have anything to use for other families, but it was hard for them to understand why we would prone their loved one. (<i>ICU Nurse Manager</i>)</p>	<p>Hemodynamic instability and large body habitus are barriers.</p> <p>Certain comorbidities are perceived to be contraindications.</p> <p>Concerns about inability to manage clinical deterioration while prone are a barrier.</p> <p>Proning may not be easily understood by families.</p>

**Table E2: Determinants of evidence-based utilization of prone positioning (continued)**

Theme	Quotations	Main points
<b>Alternative therapies</b>	<p>I understand the data and I understand that it's – it could work for this patient, but one, I haven't tried all the traditional therapies yet. So let me try paralyzing him, making sure that he's adequately sedated and make sure that that's all in line before I even think about – and adding Flolan before I think about proning him. <i>(Nurse Practitioner)</i></p> <p>I think availability of ECMO team is I guess an easier path. ...And the ECMO team is very invested and is always proactive about the calls. If we call them for an evaluation, they are heavily invested in the care of their patient then. So – and if they feel the patient is an appropriate candidate for ECMO then that – it comes to path rather than let's prone this patient first. So I think ECMO availability in-house is a big factor. <i>(Critical Care Attending)</i></p> <p>One – some of the – our attendings, really, are just, this is what was demonstrated, we wanna begin the first 48 hours. And others, not so much. They really look at that more as a – they still treat is as a salvage maneuver. ...And that has influenced some of the nursing perspective around the utilization, as well. Because it's obviously very different outcomes and you see a different response when you begin it early versus so late in the course. <i>(Bedside Nurse and Clinical Nurse Educator)</i></p>	<p>Some clinicians perceive prone positioning to be a last resort.</p> <p>Several alternative therapies require less effort.</p> <p>Hospital culture in one site prioritizes consideration of ECMO first.</p> <p>Uncertainty exists about which therapy to implement first.</p> <p>There is a tendency to default to familiar interventions.</p> <p>Attending physicians are variable in practice.</p>

### Table E3: Implementation mapping matrix of program objectives, CFIR constructs, and ERIC strategies

After refinement of the objectives of a program to improve evidence-based utilization of prone positioning, we provided the ICU leader taskforce with strategies adapted from the ERIC framework, mapped to CFIR constructs for each theme. We consolidated similar and closely related strategies for simplicity in our presentation to the taskforce.

Program objectives	CFIR domains* and constructs	ERIC strategies
<b>KNOWLEDGE</b>		
Improve clinicians’ knowledge about prone positioning – existing evidence, patient eligibility, timing, process	I – Evidence Strength & Quality	Develop and distribute educational materials
Provide training for new and inexperienced clinicians in prone positioning processes	I – Adaptability	Conduct educational outreach visits
Leverage experienced providers’ expertise to provide education and leadership	III – Culture	Conduct ongoing training
	IV – Knowledge & Beliefs about the Intervention	Capture and share local knowledge
	IV – Self-efficacy	Create a learning collaborative
		Inform local opinion leaders
		Conduct local consensus discussions
		Identify and prepare champions; recruit, designate and train for leadership
<b>RESOURCES</b>		
Ensure adequate numbers of staff members	I – Complexity	Identify early adopters
Ensure availability of staff with expertise/experience	III – Structural characteristics	Conduct ongoing training
Ensure availability of necessary supplies	III – Implementation climate	Create a learning collaborative
	III – Readiness for implementation	Identify and prepare champions; recruit, designate and train for leadership
	V – Planning	Conduct cyclical tests of change
		Develop a formal implementation blueprint
		Develop and implement tools for quality monitoring
<b>TEAM CULTURE</b>		
Facilitate and improve interdisciplinary communication	I – Evidence Strength & Quality	Conduct local needs assessment – local consensus, readiness for change, barriers and facilitators
Empower experienced staff to lead and educate	III – Networks & Communications	Engage local leaders
Engage and educate ICU leadership	III – Culture	Identify and prepare champions; recruit, designate and train for leadership
	III – Implementation Climate - Goals & Feedback	Create a learning collaborative
	III – Implementation Climate – Learning Climate	Develop an implementation blueprint, tailor to individual ICUs, conduct cyclical tests of change
	III – Readiness for implementation - Leadership Engagement	Use experts as a resource – shadowing, training, consultation
	IV – Self-efficacy	Provide feedback, develop and examine quality monitoring plan
	V – Engaging – Opinion leaders	
	V – Engaging – Champions	
	V – Executing	
	V – Reflecting & Evaluating	

**Table E3: Implementation mapping matrix of program objectives, CFIR constructs, and ERIC strategies (continued)**

<b>Program objectives</b>	<b>CFIR domains* and constructs</b>	<b>ERIC strategies</b>
<b>PATIENT FACTORS</b>		
Educate providers on eligibility for (and contraindications to) prone positioning.	I – Complexity	Conduct local needs assessment – local consensus, readiness for change, barriers and facilitators
Educate providers on addressing clinical deterioration during proning	I – Design Quality & Packaging	
Provide education to family members regarding prone positioning	II – Patient Needs & Resources	
	III – Implementation Climate – Compatibility	Identify and prepare champions; recruit, designate and train for leadership
		Promote adaptability
<b>ALTERNATIVE THERAPIES</b>		
Education on timing of prone positioning	I – Evidence Strength & Quality	Develop and distribute educational materials
Education about evidence regarding alternative therapies	I – Relative Advantage	Conduct educational meetings
Standardize practices across providers	III – Culture	Conduct ongoing training
Avoid improper use of prone positioning	III – Implementation Climate - Tension for Change	Identify and prepare champions; recruit, designate and train for leadership
	III – Implementation Climate - Compatibility	Conduct local needs assessment – local consensus, readiness for change, barriers and facilitators
	III – Implementation Climate - Relative Priority	Develop clinical protocol or pathway
	IV – Knowledge & Beliefs about the Intervention	

\*CFIR domains: I, Intervention Characteristics; II, Outer Setting; III, Inner Setting; IV, Characteristics of the Individual; V, Process

Abbreviations: *CFIR, Consolidated Framework for Implementation Research; ERIC, Expert Recommendations for Implementing change*



## **INTERVIEW SCRIPT**

We are conducting interviews with up to 40 ICU clinicians to better understand practices for managing patients with acute respiratory distress syndrome, or ARDS, across the different ICUs of UPHS. We're specifically interested in understanding practices and beliefs regarding "prone positioning." We want your opinions because you are someone who cares for mechanically ventilated patients. This interview should last about 20-30 minutes.

We recently sent you an email explaining the research study, the funding body, how we will protect your privacy and confidentiality, your rights as a participant and who to call if you have concerns or complaints about the study. Please remember that your participation is completely voluntary, and you do not have to answer any questions that you don't want to. Lastly, today's interview will be recorded and professionally transcribed – with pseudonyms to replace your name and any other names that may come up—and the de-identified transcripts will be kept on a secure server here at Penn. Any research publications arising will report data in the aggregate. Did you have any questions? Can I have your verbal permission to turn on the tape recorder and start the interview?

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*[START RECORDING]*

### **Part 1 – General understanding of prone positioning**

*[In this section, we are trying to understand if clinicians have accurate knowledge about the evidence for prone positioning – who is eligible, what are the contraindications, what it entails, what are the potential risks. I don't want it to feel too much like a quiz, though.]*

**To start, I'm interested in your understanding of what prone positioning is. This is not meant to be a quiz of any sort. I just want to make sure we're on the same page.**

**Can you tell me what prone positioning for ARDS is?**

*Probe questions if not discussed:*

*What types of patients should be prone?*

*When might you avoid prone positioning?*

*What is involved in proning a patient?*

*What are the risks or downsides of proning?*

### **Part 2 – Experience with prone positioning**

*[In this section, we want to understand whether the interviewee and their ICU has experience with prone positioning, and if so, what the general challenges are, specific to the patient and clinician. This may start to get at barriers and facilitators.]*

**Have you ever taken care of a patient who was prone?**

If NO: Have you ever observed a patient in the ICU who was prone?

If NO to BOTH of the above questions:

*What have you heard about proning?*

*Do you have any concerns about proning?*

If YES to EITHER of the above (if NO, then skip to the next section):

**Think back for a minute to a recent time that you took care of someone who was proned.**

**What were the things that facilitated proning the patients?**

*Probes:*

*Was there anything about the patient that made it easy?*

*Was there anything about the clinicians taking care of the patient?*

*Was there anything about the room or the ICU?*

*Was there anything about the ICU culture or leadership?*

*Anything else?*

**What were the challenges of proning, if any?**

*Probes:*

*Was there anything about the patient that made it hard to prone him or her?*

*Was there anything about the clinicians taking care of the patient?*

*Was there anything about the room or the ICU?*

*Was there anything about the ICU culture or leadership?*

*Anything else?*

**Did you have any concerns about proning that patient (or any patients)?**

**How did the patient's family feel about it?**

*Probes:*

*Were there any specific negative or positive reactions from the family?*

*What were the family's concerns about proning?*

*What were their hopes?*

**Have you ever thought about proning a patient but then didn't?**

If YES: Why didn't you prone that patient?

What factors prevented proning?

### **Part 3 – Decision-making about prone positioning**

*[In this section, I want to understand the factors that influence the decision-making around prone-positioning – who are the stakeholders, what are the patient, clinician, and ICU factors.]*

**We are trying to understand how the decision is actually made to prone a patient in your ICU. If you work in more than one ICU, pick one where you spend the most time to answer the following questions.**

**Again, thinking back to the last patient or last few patients you cared for who were proned, can you walk me through the process of how the decision to prone the patient was made?**

*Probes:*

*What prompted the discussion in the first place?*

*Who were involved in deciding about proning?*

*Does the nurse have a say? The respiratory therapist? Anyone else?*

**Who do you think ULTIMATELY decides whether a patient will be proned?**

*Probe:*

*Is it the person who enters the orders?  
A supervising clinician who tells the one entering orders what to do?  
The respiratory therapist? The nurse?*

**Overall, how do you feel about the way decisions about prone positioning are determined in your unit?**

**Do you work in more than one ICU?**

**If YES: Are there any differences in the process of deciding on proning?**

**Do you have any other comments on the culture around prone positioning in your ICU?**

## **Part 4 – Barriers and facilitators to prone positioning**

*[In this section, we want to explore barriers and facilitators a bit more.]*

**Would you say you individually prescribe prone-positioning in eligible patients frequently, sometimes, rarely, or never?**

**Why do you think that is?**

*OR ask more specifically related to their response above:*

*Why do you think you have adopted proning when some clinicians have not?*

*OR Why do you think you do not use prone positioning very often or at all?*

*Do you think there is enough evidence to support proning?*

*Have you had or heard of a bad experience with proning?*

**Would you say your ICU uses prone-positioning in eligible patients frequently, sometimes, rarely, or never?**

**Why do you think that is?**

*OR ask more specifically related to their response above:*

*Why do you think your ICU has adopted proning when many other ICUs have not?*

*Why do you think your ICU does not use prone positioning very often or at all?*

**General probes:**

*Does the medical director or unit leadership have any role?*

*Is there something about the culture of the ICU that facilitates or prevents proning?*

*Do you think all physicians prescribe proning equally? If not, why do they differ?*

*Do you think all disciplines in your unit (docs, RNs RTs) feel similarly about proning?*

*Can you explain further?*

**Probes if response is “frequently or sometimes”:**

*Are there ICU factors that facilitate proning patients?*

*Like protocols, policies, equipment, or anything else you can think of?*

**Probes if response is “rarely” or “never”:**

*Has your ICU or Hospital had any bad experiences with proning in the past?  
Is your ICU limited by not having certain equipment you feel is needed to prone pt's?  
Do you feel that proning interferes with routine care in some way?  
Are there other patient factors that may play a role?*

**Do you have any other thoughts about factors that promote or impair utilization of prone positioning in your ICU?**

**Do you personally have any other concerns about prone positioning?**

*[END RECORDING]*

# PennMedicine Prone Positioning Educational Infographic

## PENN Proning Guidelines for Critically Ill Patients with COVID 19

### Criteria to Prone

If PF ratio <150 despite appropriate PEEP and FiO2 >60%

### Contraindications

**Absolute:** Unstable cervical spine or pelvis fractures.

**Relative contraindications:** May be related to cardiovascular instability, intracranial pressure management, pregnancy, and BMI > 50 or habitus unable to stabilize chest with belly, but pros and cons should be discussed by ICU team to determine a final decision to prone.

### Duration

Typically 16-18 hours but may consider up to 24 hours or longer if tolerated well. Supination periods are typically 4 hours before next prone cycle begins.

### If Cardiac Arrest Occurs when Prone\*

CPR and defibrillation can be started on the pt's back. Defib pads L mid axillary & R scapula



### Penn Chart Orders for Proning

**Proning Protocol for Adult Severe ARDS**

Process Inst: Please prone patient for a minimum of 16 hours a day until discontinued.

Priority:

Frequency:

Starting: 7/25/2019 Today Tomorrow At: 0645

First Occurrence: Today 0645

Scheduled Times: 07/25/19 0645

Comments:

Phase of Care:

### Prior to Proning

- Apply prophylactic foam or hydrocolloid dressing to all bony prominences incl. knees, iliac crest, shoulders; and apply hydrocolloid dressing to forehead, cheeks, chin
- Ensure lubricant ordered for eyes
- Obtain EKG leads to be placed on patients back
- Obtain head support. If commercial device not available, a foam operating room head pillow with the middle cut out can be used
- Obtain chest and pelvis bolsters. These are used to support patient's chest and pelvis, and allows abdomen to protrude without touching bed. If commercial devices not available, create using rolled bed linens.
- Ensure Secure Airway
  - ETT taped circumferentially around head
  - Commercial securement devices not rec.
  - It is safe to prone patients with a trach; ensure RT secures with bands to prevent disconnect. (If trach < 7 days, consult provider who placed)



- Hold enteral feeding for 45 minutes up to 1 hour prior to proning. It is safe and feasible to resume while patient in prone position.
- Secure all tubes and catheters. Typically lines from waist to head are gathered at the top, and lines from waist to feet are gathered at the bottom of the bed
- Ensure all emergency airway and resuscitation equipment is immediately accessible
- Assemble a 3-6 person team based on patient habitus, medical devices/lines, and stability.
  - Airway expert at the head of the bed, primary RN, and 1-4 additional persons on opposite sides of the bed to perform as "flippers and catchers"

### How to Prone

**Step 1\*** : Pt. flat and arm closest to the vent is tucked underneath the buttock with palm facing anteriorly. Cover patient with an absorbent pad and clean sheet, take the top and bottom sheets and roll them together tightly towards pt.



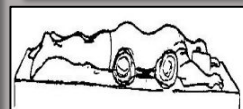
**Step 2:** The person at the head of the bed is the leader, at the leaders direction slide patient away from the ventilator.

**Step 3\***: Confirm lines and airway are stabilized. At the leaders direction tilt patient fully on their side. Pt's front is towards the person(s) in the "catcher" role and towards the ventilator.



**Step 4:** Pull the rolled up sheet away from beneath the patient and turn patient in prone position. Support neck, ensure airway secure, place new EKG leads on back. Ensure lines, tubes, drains are safely positioned.

**Step 5:** Use the bottom sheets to lift the upper body area to place chest bolsters, then lift lower body area to place the pelvic bolsters. Place patient in reverse trendelenberg, 25-30° (Heads up)



\* Pictures from Intensive Care Society Proning Guidelines 2019

### Post-Proning Care

In coordination with COVID cluster care with respiratory therapy, reposition head and arms

- Arms are positioned either bent at elbow and above head or at side to prevent nerve damage, commonly known as swimmers position
- Head turning is done to prevent compression of the eyes and pressure injury



Eyes Care

- If eyes remain open, gently tape closed
- Ensure no direct pressure on eyes or nose

Assess post proning for tolerance:

- Resp rate, effort, and ventilator synchrony, SpO2, ABG and calculation of PaO2/FiO2 ratio

### Supination

Follow the same steps in "how to prone" except:  
Step 2: Side patient towards the ventilator  
Step 4: Turn away from the ventilator to supinate

### Nursing Documentation

Health Information Systems | 10/15/2020 | Penn Medicine | 11:00 AM | 10/15/2020 | 11:00 AM | 10/15/2020 | 11:00 AM

When nurse orders "Prone" in the Patient Position box, the Nurse must also update the Patient Position with the time and date when Prone was documented.

When nurse orders "Supine" in the Patient Position box, the Nurse must also update with the length of time between Prone and Supine documentation.

Time	Prone	Supine
10/15/2020 11:00 AM	10/15/2020 11:00 AM	
10/15/2020 11:00 AM		10/15/2020 11:00 AM

## Figure E2: ICU Dashboard with Prone Positioning Alert

The screenshot below illustrates an example patient as displayed on the ICU Board, a dashboard that displays up-to-date and concise patient information relevant to several processes of care. The dashboard includes alerts to promote evidence-based practices, such as low tidal volume ventilation for patients with acute respiratory distress syndrome (ARDS). The **yellow arrow** indicates the alert that was added to the dashboard to identify patients eligible for prone positioning, prompting clinicians using the dashboard to consider prescribing this evidence-based practice.

The screenshot shows the ICU Board interface for a patient in the ARDS unit. The dashboard is organized into five main sections:

- Patient:** MEDICINE HUP, MICU D2. Cov [redacted] / RN. Admitted 2 days. Alerts: COVID POSITIVE, High Risk Extubation.
- Vent Settings:** ARDS: 16 hrs. Volume And Pressure at Goal. TV ml/kg 4.91 Plat 25. **Prone Eligible for 9 hrs** (highlighted with a yellow arrow). On Vent 20h / Mode VC/CMV. TV 280 / MV 9.3. Set Rate 32 / Actual 32. FiO<sub>2</sub> 50% / PEEP 10.
- Awake (Sedation status):** Sedation. Consider Weaning Sedation. RASS -5 Stable past 18 hours / CAM UTA. Medications: propofol gtt 60 mcg/kg/min, fentaNYL gtt 250 mcg/hr.
- Breathing (SBT status):** NOT SBT READY. Consider Weaning PEEP. DUE TO On **epoprostenol** AND High PEEP **10** AND High Resp Rate **32**. O<sub>2</sub> Sat ...100 > 100 > 100 > 100 > 100 > 100. ● epoprostenol inhalation 50 ng/kg/min. 8 hrs ago.
- Early Mobility:** Baseline: ambulates independently [redacted] /2020. Best Yesterday: Lying in bed, passively exercised [redacted] /2020 7:00 PM. Best Today: Not Documented Since 7 AM. Goal Today: Not Documented Since 7 AM. PT Consult Ordered: [redacted] /2020.