



# Prone Positioning for Ventilated Patients with Refractory Hypoxemia Related to COVID-19 and Acute Respiratory Distress Syndrome.

Claude Roland, MD, Bill Schneider BSN, RN, CCRN, Kristin Makrin BSN, RN, Trish Chartier BSN, RN, CCRN, Paul Colbert PT DPT NCS, Molly Breen OTR-L, Jason Labonte RRT, Peter Jones BSN, RN, CCRN

## Purpose and Background

Early in the COVID-19 pandemic prone positioning of mechanically ventilated patients was recommended by the National Institutes of Health (NIH) and World Health Organization (WHO) to improve oxygenation and reduce mortality in patients with acute respiratory distress syndrome (ARDS) related to COVID-19.

Prior to the COVID-19 pandemic, Adirondack Medical Center had never placed a mechanically ventilated ARDS patient in the prone position. Historically, critically ill ARDS patients were transferred to tertiary care centers, but, as the pandemic overwhelmed these facilities, transferring patients was not an option. Unable to transfer critically ill COVID-19/ARDS patients and considering the prone position is a frontline therapy for refractory hypoxemia related to COVID-19/ARDS, Adirondack Health needed to develop a policy and training for proning mechanical ventilated COVID-19 patients.

A multidisciplinary team of critical care nurses, respiratory therapists, and physical therapists began researching in earnest. Best practices from the nursing literature, the collective experience of Adirondack Health team members, and consultations with colleagues from university teaching hospitals were all leveraged to create a policy and training program to prone ventilated patients for the first time at our facility.

## Objectives

- To improve oxygen saturation/outcomes and reduce mortality for ventilated COVID-19 patients.
- To provide a lifesaving first-line treatment at Adirondack Health that was previously only available at tertiary teaching hospitals.

## Plan Do Check Act

**Plan:** Our initial research found that there were several methods that could be used to safely turn ventilated patients and place them in a prone position. There were several equipment issues to consider as well, such as special pillows for supporting the patient's face in the prone position, and what style of endotracheal tube fixation should be used.

**Do:** Utilizing established protocols, we trialed different methods of proning with team members as the "patient.". This gave us experience from the perspective of a patient and allowed us to find a method that worked best given our resources and available equipment.

**Check:** After the trial period, we moved on to teaching staff the procedure as well as continuing to refine our process, verifying that we had found the best techniques for our institution based on our staffing resources and available equipment.

**Act:** We successfully proned our first patient in the Intensive Care Unit in March of 2020. We further leveraged what we learned about prone positioning to start "awake proning" on COVID-19/ARDS patients who were on high flow nasal cannula or non-invasive ventilation.



## Outcomes

Prone positioning is considered a first-line treatment for intubated COVID-19/ARDS patients suffering from refractory hypoxemia. No patient that met the inclusion criteria for proning at Adirondack Health was denied the intervention. This makes measuring the effect and outcome of our proning program difficult to measure, since no qualifying patients were excluded from treatment.

Adirondack Health had a total of 10 proned and mechanically ventilated COVID-19 patients through 2021. With only three deaths of out 10 patients, we achieved a case fatality rate of 30%, with an estimated ventilator cost savings of \$18,264.00.

### Proned/Ventilated patients CFR



## Lesson Learned

Initially, prone positioning seemed a daunting task for our community hospital. By breaking down a complicated process into manageable pieces, and practicing extensively with our staff, our team improved the quality of care provided.

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