

Lehigh Valley Health Network  
**LVHN Scholarly Works**

---

Patient Care Services / Nursing

---

## Prepared to Prone

Sarah Fye BSN, RN

*Lehigh Valley Health Network, Sarah.Fye@lvhn.org*

Alexandria Kleine BSN, RN

*Lehigh Valley Health Network, Alexandra\_E.Kleine@lvhn.org*

Alexander Prudente BSN, RN

*Lehigh Valley Health Network, Alex\_M.Prudente@lvhn.org*

Follow this and additional works at: <https://scholarlyworks.lvhn.org/patient-care-services-nursing>



Part of the [Nursing Commons](#)

## Let us know how access to this document benefits you

---

### Published In/Presented At

Kleine, A., Prudente, A., Fye, S. (2015, July 8). *Prepared to Prone*. Poster presented at LVHN UHC/AACN Nurse Residency Program Graduation, Lehigh Valley Health Network, Allentown, PA.

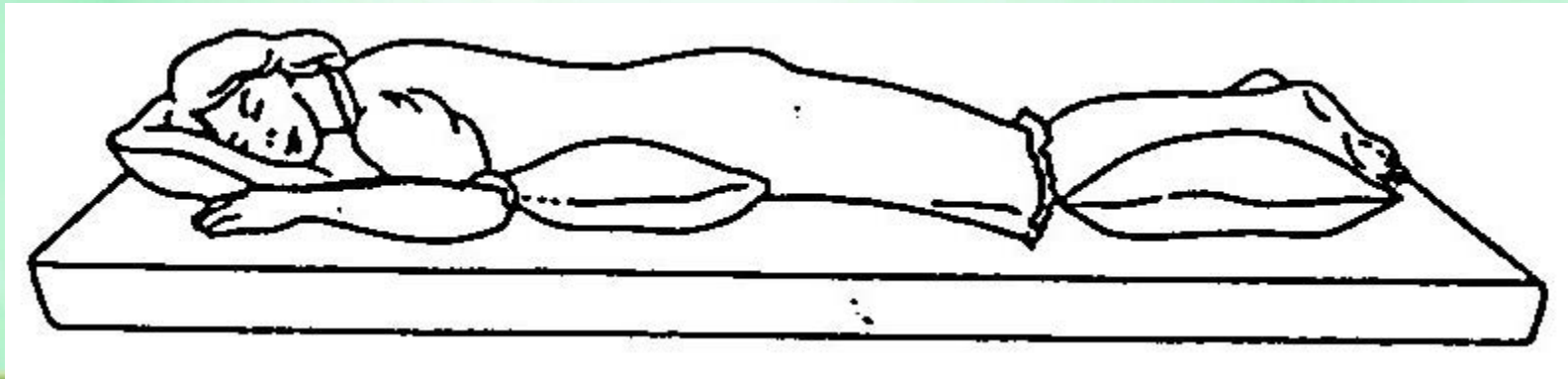
This Poster is brought to you for free and open access by LVHN Scholarly Works. It has been accepted for inclusion in LVHN Scholarly Works by an authorized administrator. For more information, please contact [LibraryServices@lvhn.org](mailto:LibraryServices@lvhn.org).

# Prepared to Prone

**Alexandra Kleine, RN BSN**

**Alexander Prudente, RN BSN**

**Sarah Fye, RN BSN**



# PURPOSE

**To develop a standardized prone protocol to provide safe and effective therapy to patients**

# PICO QUESTION

**In adult ICU patients with ARDS, will the use of prone positioning improve respiratory outcomes when compared to standard supportive therapy?**

# PRONE POSITIONING

## What is the benefit?

- It is used as a short-term supportive therapy in an attempt to improve gas exchange in patients with severely compromised lungs
- Greater than 70% of patients with ARDS will show a 20% increase in PaO<sub>2</sub> within two hours of placement in the prone position



# ARDS

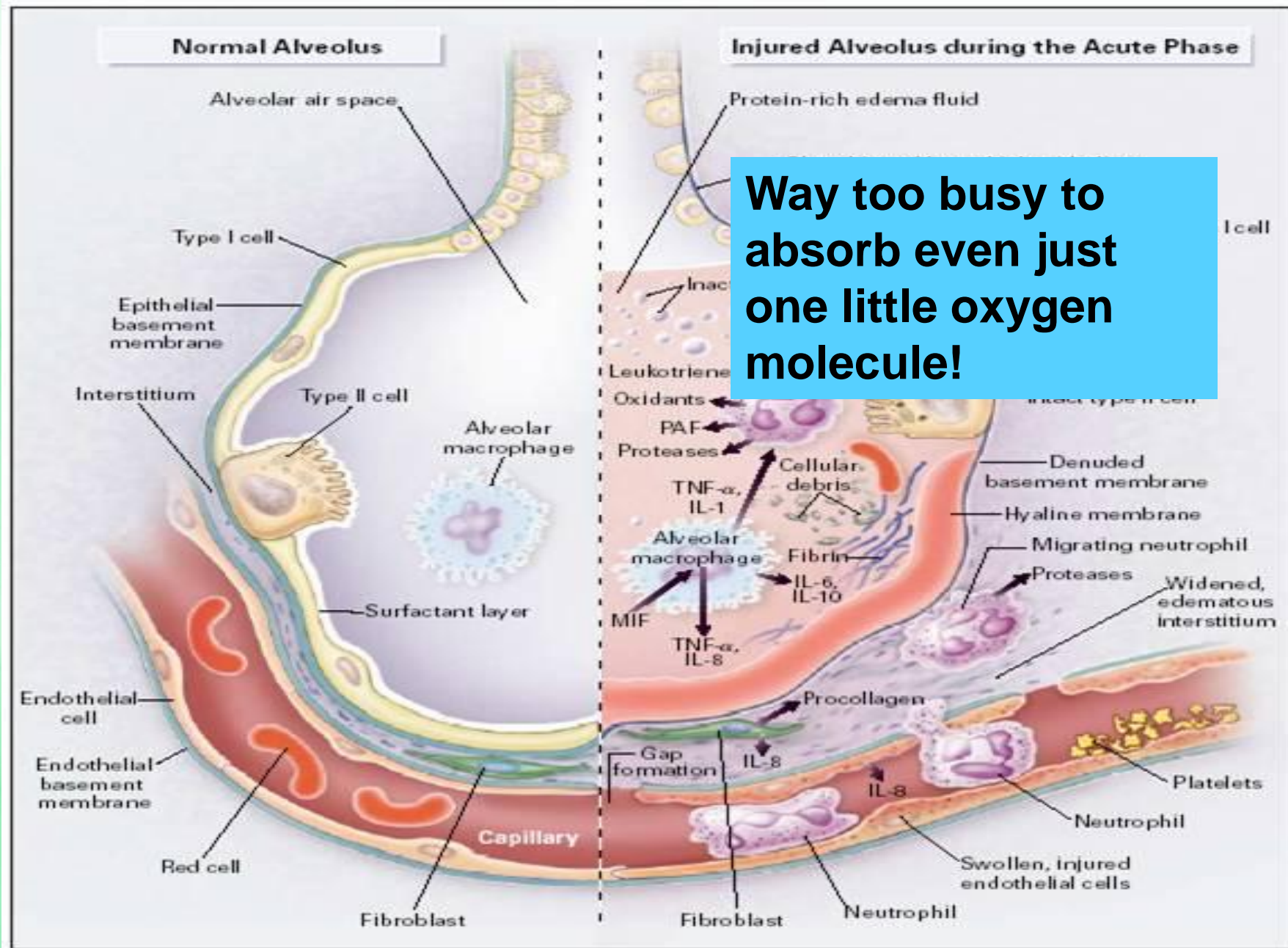
## PATHOPHYSIOLOGY

### Acute Respiratory Distress Syndrome

- It occurs either as a result of direct or indirect lung injury
  - Known causes include sepsis, trauma, surgery or other serious illnesses
- Results in severe hypoxemia refractory to conventional treatment
- Mortality rate of 35 to 45 percent

# ARDS DEFINITION

- **Occurs within one week of known insult or new or worsening respiratory syndrome.**
- **Bilateral infiltrates on chest xray**
- **Respiratory failure not explained by cardiac failure or fluid overload**
- **Hypoxemia**
  - **Mild**
  - **Moderate**
  - **Severe**



**Way too busy to absorb even just one little oxygen molecule!**



# SUPINE PERFUSION

- When a patient is supine lung perfusion occurs in tissue that is injured resulting in less than adequate oxygenation



# ARDS TREATMENT OPTIONS

- **Supportive therapy including:**
  - ARDS Net Ventilation
    - Small tidal volume ventilation
  - Volume Diffusive Respiration
  - Prone Positioning
  - ECMO

# ARDS VENTILATOR THERAPY



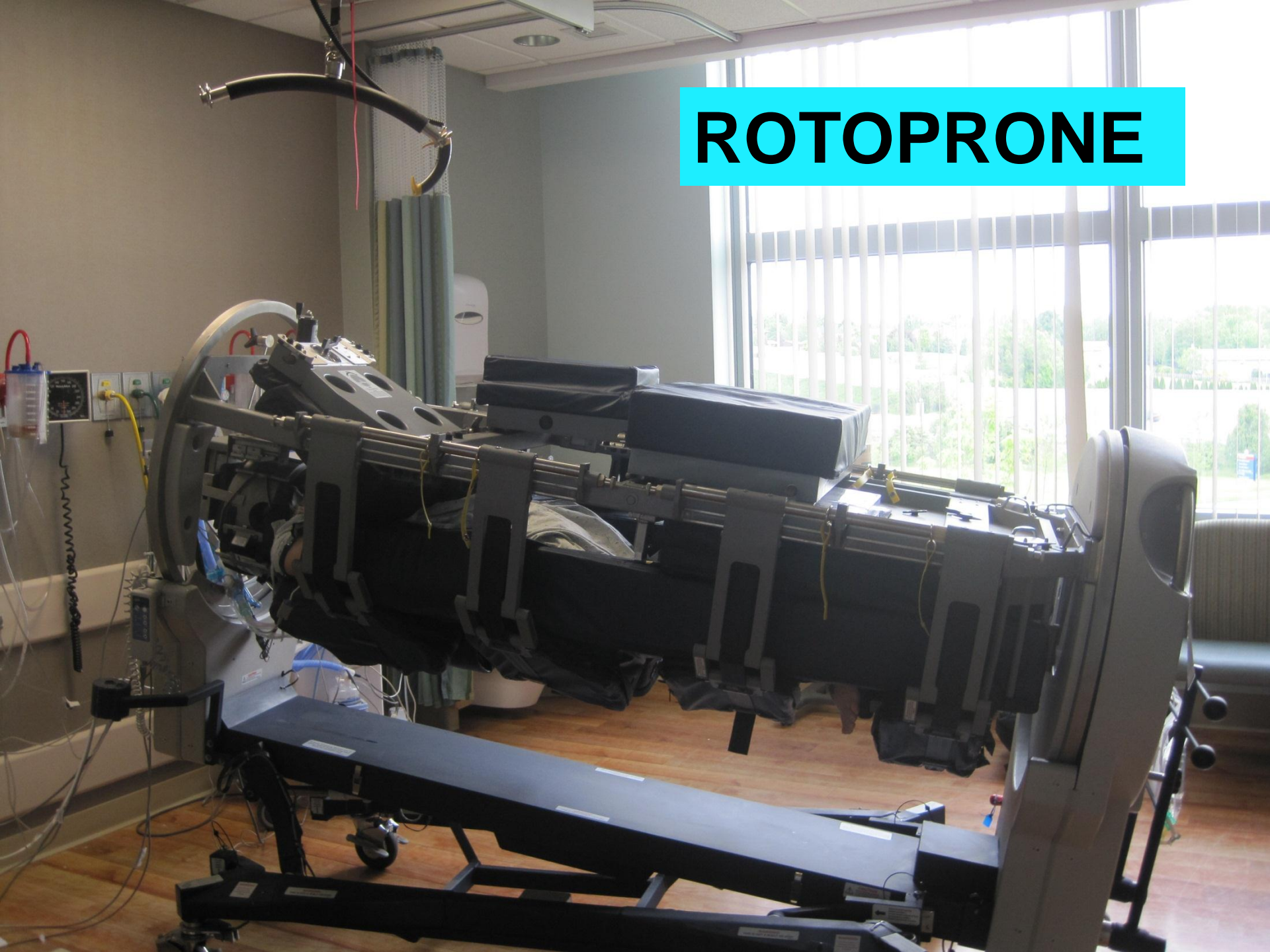


# OPTIONS FOR PRONING

- Rotoprone-rental bed, self contained unit with programmable turn system; limited availability
- Triadyne-air bed with proning cushions
- Manual Turn-patient is turned on existing surface
- Tortoise Prone Positioner-new product



# ROTOPRONE





# TRIADYNE PROVENTA WITH PRONING CUSHIONS



# Tortoise Positioner





# **SURVIVING SEPSIS CAMPAIGN**

## **Recommendations on Proning**

- **We suggest prone positioning in sepsis-induced ARDS patients with a PaO<sub>2</sub>/FIO<sub>2</sub> ratio  $\leq$  100 mm Hg in facilities that have experience with such practices (grade 2B).**



# EVIDENCE

- Fernandez, R. et al. (2008)
- RCT investigated positioning patient supine versus prone up to 20 hours/day with initial positioning event within 48 hours post diagnosis of ARDS.
  - Supine: n= 19; Prone: n= 21.
  - 15% lower mortality in prone group (38%) compared to supine group (53%).

# EVIDENCE

- **Wright, A. and Flynn, M. (2011). Using the Prone Position...(lit review)**
  - **Prone positioning of ventilated patients first used in the 1970's**
  - **While positioning helped improve oxygenation, overall mortality did not improve.**
  - **Inconsistent use continued; further studies revealed**
    - **Prone positioning is best applied in multiple episodes for long periods, using a reverse trendelenberg position with a free abdomen.. However...**
      - **Evidence is not robust**
      - **Studies have variations in designs**
      - **More research is needed**

**THE STUDY THAT  
STARTED IT ALL  
AGAIN!**

# EVIDENCE

- Guerin, C. et al. (2013) RCT investigated positioning patients supine versus prone for at least 16 hours/day with initial positioning event within 12-24 hours post diagnosis of ARDS.
- Supine: n= 229; Prone: n= 237.
- 28 day mortality for prone group was 16%, for supine group was 32.8% ( $P < 0.001$ ).
- 90 day mortality for prone group was 23.6% and for supine group was 41% ( $P < 0.001$ ).

# BARRIERS & STRATEGIES

- **Barrier:**
  - Complexity of manually proning a patient, potential risks to patient when prone (i.e. disruption of invasive lines, skin breakdown, etc.).
  - No physician consensus on which therapy to use
  
- **Strategy to Overcome:**
- Educate staff on: pathophysiology of ARDS, benefits of proning in treatment of ARDS, maneuvers to manually prone, importance of thorough/frequent skin assessment and care. Practice implementing manual proning maneuvers with mannequin.



# EXPECTED OUTCOMES

- **Clinical practice guideline for prone therapy**
- **Standardized proning procedure**
- **Bed surface identification**

# PROJECT PLANS

- =
- =
- =
- =
- =

# References

- Fernandez, R. et al. (2008). Prone positioning in acute respiratory distress syndrome: a multicenter randomized clinical trial. *Intensive Care Med.* 2008 Aug;34(8):1487-91.
- Guerin, C. et al. (2013). Prone positioning in severe acute respiratory distress syndrome. *New England Journal of Medicine* 368:2159-2168
- Lippincott Williams & Wilkins (2014). Prone Position. *Current Opinion.* (20[1]).
- Wright, A. and Flynn, M. (2011). Using the Prone Position for Ventilated Patients with Respiratory Failure: A Review. *Nursing in Critical Care.* (16) 1 19-27.

# Make It Happen



Cedar Crest



17th Street



Muhlenberg



Health Centers