Evidence-based Updates on COVID-19
Special Topics: Early Proning & Effective Communication with Mechanically Ventilated Patients

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COVID-19 Special Topics for Today

1) Early Proning
   (Presenters: Cindy Zellefrow & Cindy Beckett)

2) Effective Communication with Mechanically Ventilated Patients
   (Presenters: Mary Beth Happ & Judith Tate)
Early Proning in COVID-19 Patients

Cindy Zellefrow
Cindy Beckett

COVID-19: The State of the State

AS OF 4/20/20:
WORLDWIDE:
2,258,909 Cases
154,388 deaths
In the U.S.:
792,938 cases
39,083 deaths
The Pathophysiology of COVID-19

- Symptoms of COVID-19 are nonspecific
  - Fever (82%)
  - Cough (61%)
  - Muscle aches (36%)
  - Fatigue (36%)
  - Dyspnea (26%)

  Other symptoms include:
  - Headache
  - Sore Throat
  - Gastrointestinal symptoms

On CT scan—unique ground-glass opacities, septal thickening and parenchymal consolidation = challenges in medical management similar to that of patients with ACUTE RESPIRATORY DISTRESS SYNDROME (ARDS)

Borges de Nascimento et al., 2020

Berlin Definition of Acute Respiratory Distress Syndrome (ARDS)

**Typical Characteristics:**

- Timing—within 1 week of injury or new/worsening respiratory symptoms
- Chest Imaging—bilateral opacities; **unique to COVID 19 are glass-like crystallizations**
- Origin of edema—respiratory failure not fully explained by cardiac failure or fluid overload
- Oxygenation—delineated by \( \text{PaO}_2/\text{FiO}_2 \) (P/F) ratio with PEEP or CPAP
  - \( \text{PaO}_2 \)-partial pressure of oxygen=measurement of oxygen pressure in arterial blood
  - \( \text{FiO}_2 \)-fraction of inspired oxygen of room air; concentration of O2 that a person inhales
  - **Mild:** 200-300 mmHg with >5cm H2O
  - **Moderate:** 100-200 mmHg with >5cm H2O
  - **Severe:** <100 mmHg with >5cm H2O
Proning: Definitions

*Proning*: placing a patient, esp. one with respiratory failure due to ARDS, face down in a prone position 
(Venes, D. & Tabers, C.W., 2017)

*Early proning* (also referred to as *self proning* or *awake proning* in the literature):

- non-mechanically ventilated patients
- patients able to participate in proning
- implemented as soon as a potential diagnosis is made
The Physiology of Proning

Proning:
- Changes pressure within the chest and abdominal cavities by changing the way structures and organs lie within these cavities
- Increases air flow, allowing compressed alveoli to open up
- Improves fluid drainage out of the dorsal lobes
- Increases perfusion to the lungs
- Improves oxygenation

In Juangsu Province, China, survival rates were better than other locations due to early recognition, followed by...

Sun et al. 2020
...early intervention for critical patients with COVID-19!

Search Strategy & Results

**Databases searched:** CINAHL, PubMed, Medline, Medline Plus Full Text, Scopus, Trip Database, Cochrane Library, Google Scholar, Web of Science

**Additional search strategies:** Gray literature, title search

**Search techniques utilized:** key words, MeSH headings, Subject headings, truncation, parentheses, quotation marks

**Boolean Operators:** AND & OR

**Results:** 98 articles reviewed

- 7 "keepers"
- Additional 13 kept for background information including nursing consideration
Levels of Evidence Table

- Level I: 1
- Level IV: 3
- Level VI: 1
- Level VII: 2

🌟 = COVID-19 article

Outcomes Synthesis Table of Early Proning

Legend:
🌟 = COVID-19 article
↑ = increase
↓ = decrease
*green indicates good outcome
### Synthesis Table on Indications for Early Proning

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<td>Respiratory rate &gt; 30/min (on room air)</td>
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<td>FiO2 &gt; or equal to 0.6</td>
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<td>PaO2/FiO2 &lt; 300 mmHg (mild ARDS)</td>
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<td>PaO2/FiO2 &lt; 200 mmHg (moderate ARDS)</td>
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<td>Alveolar collapse—seen on radiography</td>
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### Indications for Early Proning

- Respiratory Rate > 30/min
- Heart Rate > 120/min
- SPO2 < 93% on room air
- FiO2 > or equal to 0.6
- PaO2/FiO2 < 300 mmHg (mild ARDS)
- PaO2/FiO2 < 200 mmHg (moderate ARDS)
- Alveolar collapse—seen on radiography
Contraindications for Early Proning

- Abdominal
- Cardiac
- Bleeding
- Neuro
- Trauma
- Increased intraocular pressure or ocular surgery
- Drainage tubes (chest tubes with anterior leaks; thoracic or abdominal)
- Tracheal surgery or sternotomy
- Asthma
- High dependency on airway and vascular access
- Weight: >135 kg (298); < 40 kg (88 lbs.);
- Height >198 cm (6ft. 6in.)
Synthesis Tables on Clinician Considerations

- Patient Positioning
- Length of time and frequency of proning
- Patient Monitoring
- Resources needed
- Potential complications

Patient positioning
- Alternating swimmers position q 2 hrs. (1 arm up; 2nd arm alongside body)
- Upper limbs alongside body
- Alternate position of head q 2 hrs. from facing right to facing left

Length of time proning  2-5 hours each session as tolerated

Frequency of proning:  average twice daily but as much as tolerated by patient

Patient monitoring
- Heart rate; blood pressure; respiratory rate & effort; capnography; pulse oximetry; oxygen setting; PaO2/FiO2; agitation, central venous pressure (CVP) (if applicable);

Resources
- PPE; foot board; pain meds; extra EKG leads; minimum of 2 staff members; suction; additional pillows, sheets, towels and/or blankets; foam/foam dressings; turning/support frame (i.e. Vollman Prone Positioner)
Clinician Considerations- Complications (continued)

• Pressure ulcers
• Facial, orbital and ocular edema
• Accidental dislodgement or kinking of tubes or drains
• Aspiration
• Eye injury/corneal ulceration; Unilateral blindness; Retinal ischemia
• Nerve damage (pressure neuropathies, hyperextension of the shoulder, nerve injury to arm)
• Wound dehiscence
• Cardiovascular instability, arrhythmia
• Hemodynamic instability

Key points to leave you with…

• Oxygenation has been a difficult issue to manage in COVID 19 patients
• Research supports proning changes the natural mechanics of ventilating the lungs and improves oxygenation
• Literature supports early proning as an easily implemented, cost effective intervention that shows promise of improving outcomes for patients with COVID-19
• Early proning requires staff, patient and family education
• Patients who are early proning must be monitored for changes in condition and potential complications
• More research needs to be done around early proning
Evidence-based Recommendations

- **Implement early proning** as soon as a potential COVID-19 case is identified
- **Train** clinicians, patients and families on early proning:
  - How to prone (human and supply resources needed, proper positioning)
  - How often (at least twice a day but more if tolerated by patient,
  - How long (minimum of 30 minutes but average 2-5 hrs./day or more as tolerated)
  - Monitoring of patients
  - Potential complications
- **Document** details of proning and monitoring in detail
- **Engage QI department** to support tracking and trending outcomes data
- **Engage researchers** to conduct research on early proning

- **Let the evidence guide your journey,**
- **Engage quality improvement,**
- **Engage research**

It's not necessarily the amount of time you spend at practice that counts; it's what you put into the practice.

*Eric Lindros*
Evidence-based Techniques for Effective Communication with Mechanically Ventilated Patients

Mary Beth Happ
Judith Tate

- Communication impairment is a common, frightening condition of mechanical ventilation
- PPE masks are communication barriers
- Families are not present
- Misinterpretation (ex: pants vs. pain) can be dangerous
Common Myths:

• One size fits all
• I’m a good lip reader
• I know the 5 things my patient needs to say
• Family members can interpret
• My patient can’t use a communication tool

Experts in communication disorders science and patient-provider communication research in ICU have developed a set of tips and resources.
Communication Assessment and Intervention Framework – use as clinical decision guide

Provide support for patient comprehension

Use communication tools and techniques – download and print

View training or demonstration videos

Consult the experts – Speech Language Pathologists (SLP) to help


PATIENT ASSESSMENT IS A KEY FIRST STEP

http://go.osu.edu/speacs
1. Get the patient’s attention - lock eyes

Study of Patient-Nurse Effectiveness with Assisted Communication Strategies (SPEACS) NIH grant #5R01 HD043988, M. Happ

Courtesy of Robert Wood Johnson Foundation
2. Vision and Hearing Aids

- Keep glasses and hearing aids or amplifier at bedside
- Label glasses (case) as “distance” or “reading”
- Hearing aid batteries
- Use LARGE Print

3. Establish a consistent YES / NO

- Head nods
- Eyes up for YES, scrunch eyes for NO
- Thumbs up for YES, thumb in fist for NO

- Use tagged yes/no questions to improve comprehension

Pass it on…. Post a Communication Care Plan
4. Use Visual Cues

- Point and gesture deliberately as you talk
- Write key words or pictures

- YOUR OXYGEN IS LOW
- WE WILL TURN YOU ON YOUR STOMACH
- I WILL GIVE YOU MEDICINE FIRST


5. Written Choice Strategy

(Garrett & Beukelman, 1995)

“What music would you like to listen to?”

- Jazz
- Rock
- Classical
- Other
6. Writing Tips

- Use thin – medium point felt-tip pens
- Try simple orthotic aids - pen grips
- Notebooks, Clipboards
- Coach patients to point to previously used phrases
- White boards – dry erase markers
- Finger writing on touch pad

7. Communication Boards

- + Language Translations

Photo courtesy of Vidatak, LLC

Electronic Tablets

Society of Critical Care Medicine
Patient Provider Communication Forum COVID19 Task Force

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Sarah Blackstone, PhD, CCC-SLP
Harvey Pressman, PhD

https://www.patientprovidercommunication.org/
We believe that evidence is an especially powerful tool in a time like this. We hope that putting these evidence-based resources into your hands will help you make the best decisions possible while caring for COVID-19 patients and families.

Helene Fuld Health Trust National Institute for Evidence-based Practice in Nursing and Healthcare

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