

11-2012

Instillation of Normal Saline in Endotracheal Suctioning

Natalie Spears

Cedarville University, nspears@cedarville.edu

Natie Cook

Cedarville University, ncook0729@cedarville.edu

Krystal Garcia

Cedarville University, kwooliver@cedarville.edu

Follow this and additional works at: [http://digitalcommons.cedarville.edu/
pharmacy_nursing_poster_session](http://digitalcommons.cedarville.edu/pharmacy_nursing_poster_session)

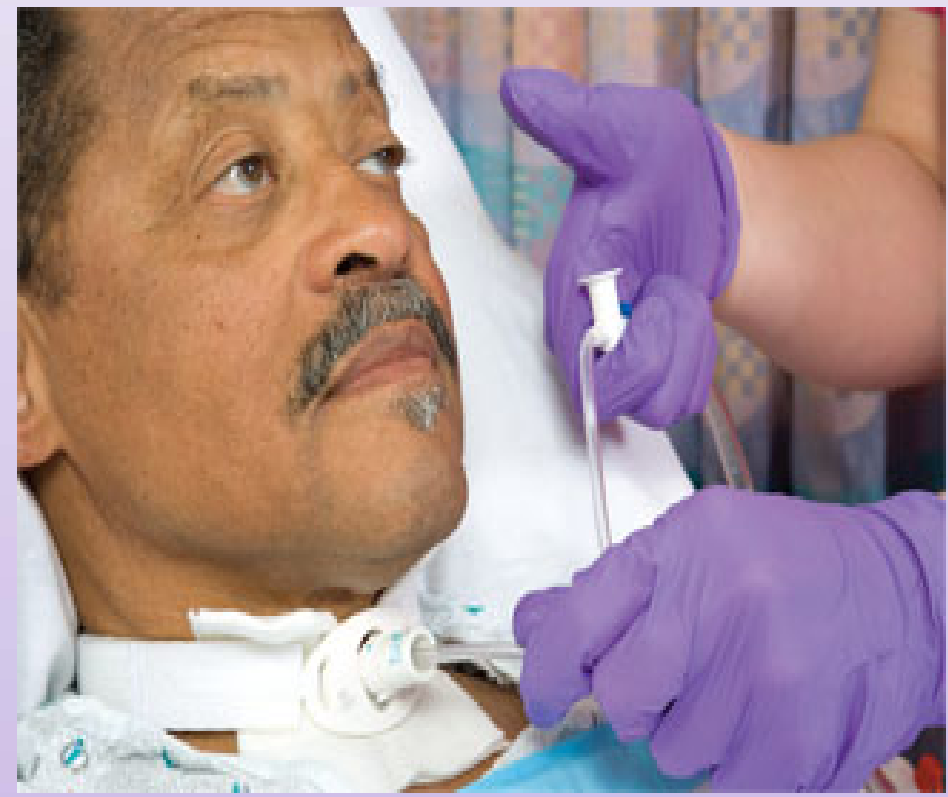


Part of the [Nursing Commons](#)

Recommended Citation

Spears, Natalie; Cook, Natlie; and Garcia, Krystal, "Instillation of Normal Saline in Endotracheal Suctioning" (2012). *Pharmacy and Nursing Student Research and Evidence-Based Medicine Poster Session*. Paper 15.
http://digitalcommons.cedarville.edu/pharmacy_nursing_poster_session/15

This Poster Session is brought to you for free and open access by DigitalCommons@Cedarville, a service of the Centennial Library. It has been accepted for inclusion in Pharmacy and Nursing Student Research and Evidence-Based Medicine Poster Session by an authorized administrator of DigitalCommons@Cedarville. For more information, please contact digitalcommons@cedarville.edu.



Instillation of Normal Saline in Endotracheal Suctioning

Natalie Spears, Natalie Cook, Krystal Garcia
Cedarville University School of Nursing



PATIENT CARE ISSUE

“Suctioning is one of the most common procedures in the ICU and high dependency wards; its aim is to remove respiratory tract secretions, thus maintaining airway patency and preventing complications of secretion retention” (Paratz, 2009 p. 1).

An important and debated part of this care is whether the use of normal saline (at a delivery of 2cc-10cc) before suctioning of an endotracheal tube causes more harm than good.

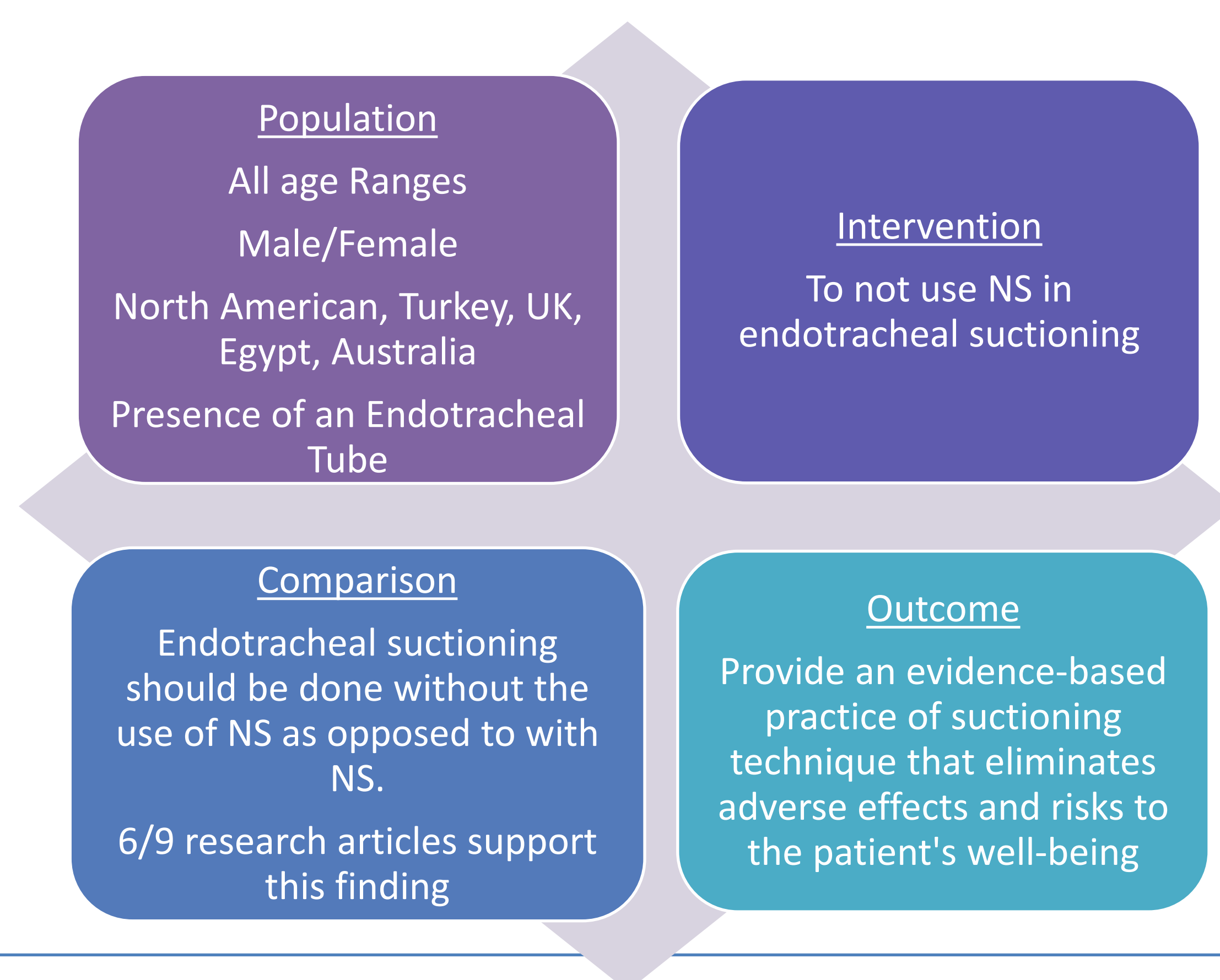
An intubated or mechanically ventilated patient may need to be “suctioned between three and twenty-four times a day” (Zahran, 2011, pg. 31) Due to the many physiological effects already endured by these patients, it is important to determine if the use of NS potentiates harmful effects.

SYNTHESIS OF EVIDENCE

A total of 9 studies meeting these criteria were found; 2 articles were not used because they did not meet the 5 year criteria (Akgul, 2002) and were of clinical reference (Celik, 2006). These two articles were only used for discussion and recommendation purposes.

- Three out of the seven articles found that patients experienced an increase of dyspnea with the use of NS before endotracheal suctioning
- Four out of the seven articles noted impaired or inadequate gas exchange after the instillation of NS
- Three out of the seven articles found that the instillation of NS before endotracheal suctioning lead to feelings of anxiety, dread & increased pain
- Three out of the seven articles agree that there is an increased sputum recovery with the use of NS
- There are conflicting views on whether normal saline is beneficial in eliciting a cough reflex. The AARC states that it enhances the clearance of secretions, while Halm notes that it increases the risk of ICP and arterial pressure
- Three of the seven articles discuss potential processes effected by the instillation of NS such as pH, BP, HR, saline entrapment & risk for infection

EVIDENCE-BASED PRACTICE QUESTION



RESULTS

There is inadequate evidence based practice to show the benefits of the use of Normal Saline with endotracheal suctioning.

There is inadequate evidence based practice to show the benefits of endotracheal suctioning with versus without saline instillation.

EVIDENCE-BASED PRACTICE RECOMMENDATIONS

The use of Normal Saline during endotracheal suctioning is not recommended. Instead, “adequate hydration and humidification, mucolytic agents and effective mobilization should be used.”(Zahran, 2011, pg. 23)

Using Normal Saline during suctioning could potentially subject patients to:

- Dyspnea
- Compromised oxygenation status
- Increase in anxiety and discomfort
- Physiological stressors

REGISTERED NURSE INTERVIEW

Dayton Children’s Hospital Policy Notes: Instillation of NS during endotracheal suctioning is not recommended.

Nursing Implementation at Dayton Children’s: Samantha Shepherd BSN at Children’s Medical Center in Dayton, OH, states “Nurses in the ICU and PICU use NS during endotracheal suctioning often; Nurses use NS when secretions are extra sticky or hard to loosen”, says Shepherd (personal communication, October 16, 2012).

METHODS

Databases

- MEDLINE
- PUBMED
- CINAHL

Keywords

- Endotracheal
- Suctioning
- Normal Saline

Years

- 2007-2012

LIMITATIONS

- Small sample size
- Insufficient amount of current research

REFERENCES

- Akgul, S., & Neriman, A. (2002). Effects of normal saline on endotracheal suctioning. *Journal of Clinical Nursing*, 11(6), 826-830.
- American Association for Respiratory Care. (2010). AARC Clinical Practice Guidelines: Endotracheal suctioning of mechanically ventilated patients with artificial airways 2010. *Respiratory Care*, 55(6), 758-764.
- Burns, N., & Grove, S. (2011). *Understanding nursing research: Building an evidence-based practice* (5th ed.). Maryland Heights, MO: Saunders.
- Celik, S. A., & Kana, N. (2006). A current conflict: use of isotonic sodium chloride solution on endotracheal suctioning in critically ill patients. *Dimensions of Critical Care Nursing Journal*, 25(1), 11-4.
- Christensen, R. D., Henry, E., Baer, V. L., Hoang, N., Snow, G. L., Rigby, G., Burnett, J., Wiedmeier, S. E., Faix, R. G., & Eggert, L. D. (2010). A Low-Sodium Solution for Airway Care: Results of a Multicenter Trial. *Respiratory Care*, 55(12), 1680-1685.
- Giakoumidakis, K., Kostaki, Z., Patelarou, E., Baltopoulos, G., & Brokalaki, H. (2011). Oxygen saturation and secretion weight after endotracheal suctioning. *British Journal of Nursing* 20(21), 1344-1351.
- Halm, M. A., & Krisko-Hagel, K. (2008). Instilling normal saline with suctioning: Beneficial technique or potentially harmful sacred cow? *American Journal of Critical Care: An Official Publication, American Association of Critical-Care Nurses*, 17(5), 469-472.
- Overend, T. J., Anderson, C. M., Brooks, D., Cicutto, L., Keim, M., McAuslan, D., & Nonoyama, M. (2009). Updating the evidence-base for suctioning adult patients: A systematic review. *Canadian Respiratory Journal: Journal of the Canadian Thoracic Society*, 16(3), e6-17.
- Paratz, J. D., & Stockton, K. A. (2009). Efficacy and safety of normal saline instillation: A systematic review. *Physiotherapy*, 95(4), 241-250.
- Reeve, J. C. (2009). Instillation of normal saline before suctioning reduces the incidence of pneumonia in intubated and ventilated adults. *The Australian Journal of Physiotherapy*, 55(2), 136.
- Roberts, F. E. (2009). Consensus among physiotherapists in the united kingdom on the use of normal saline instillation prior to endotracheal suction: a Delphi study. *Physiotherapy Canada*, 61(2), 107-115.
- Zahran, E. M., & Abd El Razik, A. A. (2011). Tracheal suctioning with versus without saline instillation. *Journal of American Science*, 7(8), 23-32.