

## ETT Patency and Neonates

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### **Clinical Question:**

In intubated infants, what is the effect of instilling NS on maintaining ETT patency and oxygen saturation compared to dry suctioning?

### **Summary of Key Evidence:**

Three sources were appraised to answer the clinical question.

The first study reviewed was published in 1992 by Beerham and Dhanireddy. Its purpose was to evaluate the effect of saline instillation prior to tracheal suctioning on lung mechanics in mechanically ventilated newborn infants. The sample consisted of 18 infants with respiratory distress syndrome (RDS) and meconium aspiration syndrome (MAS). Results concluded that suctioning of infants with or without the use of normal saline has no effects on lung mechanics in newborn infants. The limitation to this study is the small sample size. This evidence will improve clinical practice because it is a reliable and directly addresses the PICO question.

The second study reviewed was conducted by Kinlock in 1999. Its purpose was to describe the effects of NSI into ETT tubes by observing mixed venous oxygen saturation in critically ill adult patients. The sample size was 35 patients that were assigned to 2 groups after coronary artery bypass grafting. 15 subjects received NS with ETT suctioning and 20 subjects did not receive NS with ETT suctioning. Results concluded that SV02 recovery time is adversely affected by the use of NSI and Oxygen saturation was higher overall without the instillation of normal saline. The limitations to this study are a small sample size, the findings are limited to a homogenous population, and there was a 2nd independent variable of the patients smoking status. Although this study pertains to adults, and not infants, the intensive care of critical patients cared for in this study is comparable to infants in the NICU.

The third study reviewed was conducted by Shorten, Bryne, and Jones in 1991. Its purpose was to facilitate the removal of airway secretions, thus preventing obstruction and optimizing oxygen saturation and ventilation. The sample size was 27 newborn

infants. Results concluded that stable neonates tolerate 0.25-0.5 ml of NSI with suctioning. No significant short term changes in HR, BP, and SPO2 were noted. Slight changes in vital signs were seen overall but the study did not see them as significant. More data is needed.

**Bottom Line:**

In conclusion, the evidence shows that further research and data is needed. The recommendation based on the evidence is that a pilot study should be conducted to gather more data and any further changes should be made based on the results of a pilot study. Patients come first, and by furthering our knowledge base we help provide the best care possible. Continuing to better ourselves opens new doors and enhances our care producing better outcomes for everyone.

**Articles:**

Beerham, M., R., & Dhanireddy, R. (1992). Effects of saline instillation during tracheal suction on lung mechanics in newborn infants. *Journal of Perinatology*, 12(2), 120-123.

Kinlock, D. (1999). Instillation of normal saline during endotracheal suctioning: effects on mixed venous oxygen saturation. *American Journal of Critical Care*, 8(4), 231-240.

Shorten, D. R., Byrne, P. J., & Jones R. L., (1991). Infant responses to saline instillations and endotracheal suctioning. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 464-469.