The Effects of Chest Physiotherapy in Reducing Ventilator-Associated Pneumonia

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Introduction

Chest physiotherapy (CPT) is a debatable, adjunctive therapy used in the mechanically ventilated population. In our practice we have seen CPT done inconsistently, varying between nurses in frequency and intensity. This has lead us to question the appropriateness of CPT in our units. Ventilator-associated pneumonia (VAP) is a nurse sensitive indicator and we strive to be educated on the best ways to decrease complications in our patients. Therefore, we decided to research the benefits of CPT in reducing VAP in mechanically ventilated patients in the ICU and IMC.

PICO

P: Mechanically Ventilated adult patients in the ICU and IMC

I: CPT

C: No CPT

O: decreased rate of VAP

Question: Does CPT decrease rate of VAP in mechanically ventilated adult patients in the ICU and IMC?

Methods

A literature search was conducted using the following databases:

- CINAHL, PubMed, Ovid

The search terms include:

- Chest physiotherapy and ventilation
- Chest physiotherapy and pneumonia
- High frequency chest wall oscillation

Article	Methods	Results
Pattanshetty, R. B., & Gaude, G. S. (2010)	Sample size of 101 patients. The control group received manual hyperinflation and suctioning. The study group received manual hyperinflation, suctioning, positioning and chest wall vibrations twice daily.	The mortality rate was 49% in the control group compared to 24% in study group. There was no statistical significance in the development of VAP between groups.
Pattanshetty, R. B., & Gaude, G. S. (2011)	Sample size of 220 patients. Patients in the study group received chest physiotherapy, suctioning, manual hyperinflation, head of bed elevated at 30-45 degrees. The control group received manual hyperinflation and suctioning.	Patients in control group had a complication rate of 61.6% compared to 26.4 % in the study group. VAP was a major complication in both groups, but with no statistical significance.
Ntoumenopoulos, G., Presneill, J. J., McElholum, M., & Cade, J. F.	Sample size of 60 patients. Patients in the study group chest physiotherapy including gravity assisted drainage, a set number of expiratory chest wall vibrations and airway suctioning. The control group received no chest physiotherapy treatments.	VAP occurred in 39% of the control group and 8% of the study group.

http://copd.about.com/od/chronicbronchitis/tp/chronicbronchitistreatment.htm

http://biomedicalism.blogspot.com/2012/05/medical-ventilation-machine.html

Results

Several articles were found related to chest physiotherapy and mechanical ventilation. Three articles were relevant to the PICO question.

Conclusions

Two of the three studies we reviewed suggested that CPT was not a significant factor in reducing the rate of VAP in the mechanically ventilated population. Since VAP is one of the many complications associated with the mechanically ventilated population, we are not able to draw a clear conclusion into whether CPT should be a standardized therapy for our patients in the ICU and IMC. Further research is needed on the relationship between CPT and VAP.

References

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Pattanshetty, R. B., & Gaude, G. S. (2011). Effect of multimodality chest physiotherapy on the rate of recovery and prevention of complication in patients with mechanical ventilation: A prospective study in medical and surgical intensive care units. *Indian Journal of Medical Sciences, 16(5),* 175-185. doi: 10.4103/0019-5359.106608

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