Evaluating the Educational Outcomes of Avtrach, a Device to Educate Providers on How to Suction a Tracheostomy Tube Safely

Kelly Cunningham1, Maria Colandrea2, Mary Holtschneider1, Stanola Stanley1, Nancy Sullivan1, Carol Maragos1, Vinciya Pandian1
Johns Hopkins School of Nursing, Baltimore, MD1
Durham Veterans Affairs Medical Center, Durham, NC2

Background

• Nursing education uses various forms of simulation to teach principles and skills of patient care to better prepare healthcare providers entering the workforce (McGaghie et al., 2010).
• It is believed that exposure to low to moderate stressors in simulation provide novice healthcare providers with an opportunity to develop resilience to stress and improve self-efficacy and stress management (Fergus and Zimmerman, 2005).
• The current standard for simulation uses high-fidelity manikins (HFM).
• Standardized patients are trained actors specifically prepared to take on the role of the patient and provide an alternative to HFM, although they are limited to non-invasive procedures.
• Improved tracheostomy suctioning training as students will make novice nurses more comfortable when caring for patients with tracheostomies.

Purpose

• This study will compare the educational benefit of training nursing students with the Avtrach compared to the traditional high fidelity manikin (HFM). This study may lead to reform in nursing education to train nursing students to be more prepared and competent in tracheostomy suctioning upon graduation and entering the nursing workforce.
• They will also be able to provide better care and suctioning, preventing patients from developing mucus plugs and impairing respiration.

Materials and Methods

Subjects
Inclusion Criteria—Participants must be novice nurses at the Johns Hopkins Hospital or the Durham Veterans Affairs Medical Center.
Exclusion Criteria—Novice nurses who have suctioned a tracheostomy patient or family member more than three times in the past twelve months.
Sample Size—The minimum sample size is 60 participants.

Results

• Nursing education uses various forms of simulation to To date 31 students have been enrolled, 18 in the intervention group and 13 in the control group (Figure 2).
• Students trained using Avtrach and HFM both improved from session 2 to session 3 (Figure 3).
• Both groups scored lower in the clinical setting (session 4) than during simulation (session 3), but novice nurses trained on Avtrach had a smaller drop in score (0.1) than those in the HFM group (1.8).

Conclusions

• Training with Avtrach appears to improve tracheostomy suctioning skill retention in novice nurses more than traditional HFM simulation training.
• Avtrach may provide a more effective training tool to ensure proper tracheostomy suctioning by novice nurses.

Limitations

• Study is in progress and more novice nurses have been randomized into the intervention group than into the control group at this time.
• The length of time between training sessions and clinical sessions varied between novice nurses.

References:

Acknowledgements: Funding provided by the Science Center QED proof of Concept Award and the University of Delaware.
Figure 2: Avtrach

Figure 3: Average suctioning competency scores

<table>
<thead>
<tr>
<th></th>
<th>Session 2 (n=17)</th>
<th>Session 3 (n=17)</th>
<th>Session 4 (n=10)</th>
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</thead>
<tbody>
<tr>
<td>Avtrach</td>
<td>20.2</td>
<td>28.1</td>
<td>28.0</td>
</tr>
<tr>
<td>HFM</td>
<td>19.1 (n=11)</td>
<td>28.5 (n=11)</td>
<td>26.7 (n=7)</td>
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Figure 3: Recruited participants