

Background

Simulation based learning is a main component of healthcare education and is widely accepted as a method to expedite skill training and learning assessment, allowing for development of skills and decision-making through real life situational experiences without compromising patient safety.¹

Knowledge deficiencies and educational gaps in bronchoscopy training were discovered within the training protocol of the RNFA, including interoperative training for their role in tracheostomy placement and evaluation of the airway during the procurement of lungs for transplantation.

A plan was developed with department educators and simulation learning activities to

- Increase staff knowledge
- Increase tactile competency
- Decrease adverse patient safety events

RNFAs play an integral role in interoperative patient care via diagnostic & therapeutic bronchoscopy allowing for physical examination of the airway prior to donation for transplant or placement of a tracheostomy.

Many teams lack the additional physician personnel to perform bronchoscopy. Following adequate training and demonstration of competency, the RNFA can perform these tasks.

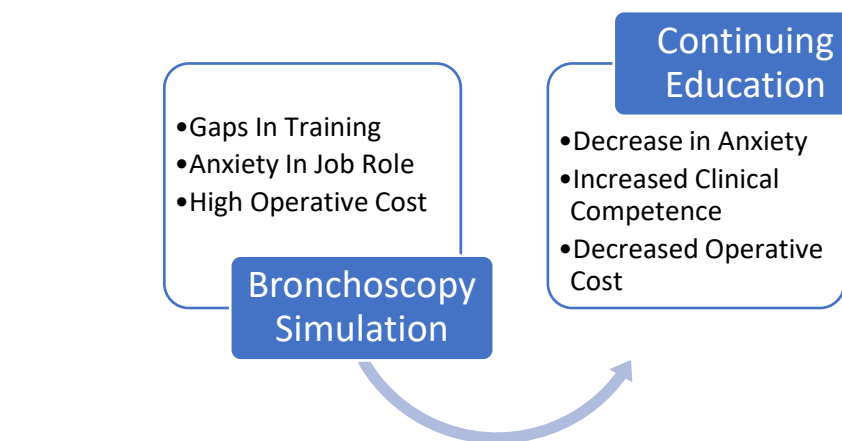
RNFAs performing this function increases the efficiency of donor evaluation. Increasing the process efficiency and safety is important for lung transplants and tracheostomy insertion, therefore bronchoscopy training is an ideal competency to be addressed by simulation-based education.



Objectives and Purpose

Overall objectives of the simulated learning activity were:

1. The ability to evaluate the patient's airway in a non-threatening setting²
2. The ability to demonstrate basic first assistant responsibilities regarding management of the airway during tracheostomy insertion, therapeutic and surveillance bronchoscopy
3. The ability to perform appropriate actions based on RSI protocol and discuss the importance of airway protection in the operative setting



New hires are taught critical skills in a low stress environment before they are expected to perform the function independently on a real patient in an emergent or high stress situation, when competency with the skill is critical.

Ongoing program goals include:

- Utilizing simulation to teach, hone and assess bronchoscopy skill/competency
- Increase staff confidence levels associated with bronchoscopy in a safe, controlled environment
- Evaluate the use of simulation for continuing competency education and training
- Determine the impact of these sessions on the overall costs and time required for bronchoscopic organ evaluation of lung donors

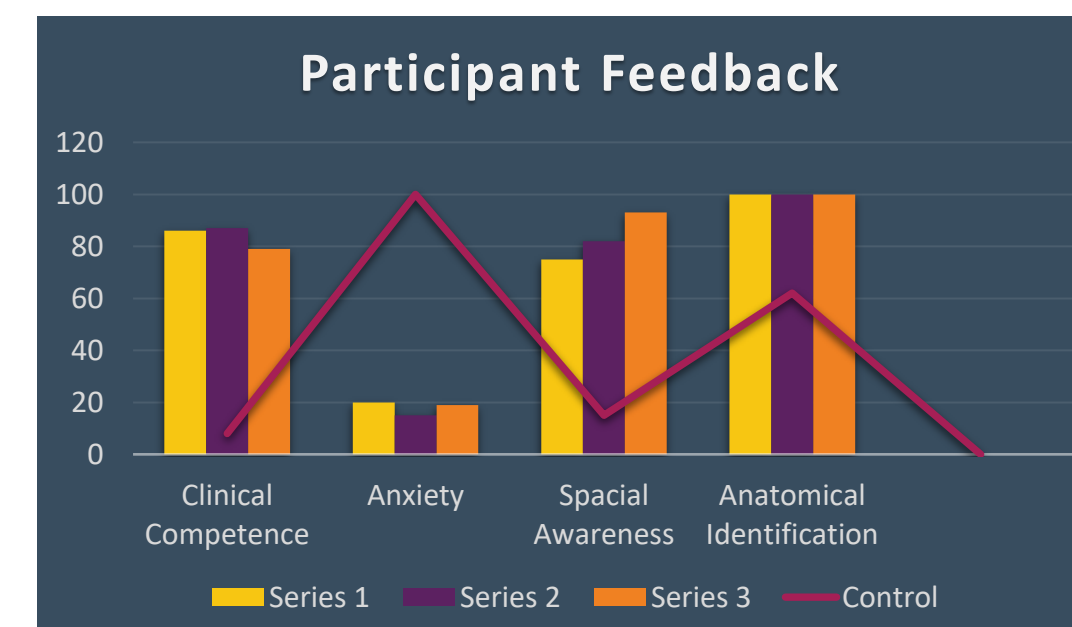
Key learning objectives of individual learners include the identification of airway anatomy; ability to appropriately position a bronchoscope and perform toilet bronchoscopy/BAL; to navigate the airway without unnecessary contact with the mucosa.

Critical actions of participants:

1. Identify the carina, left and right bronchus, lobes and subsegments
2. Perform tasks associated with RSI protocol – cricoid pressure, toilet bronchoscopy
3. Effectively perform actions associated with percutaneous tracheostomy insertion; management of endotracheal tube/scope

Methods

The simulations are demonstrated with bronchoscopes utilizing advanced airway task trainers and through virtual bronchoscopy. Task trainer imaging and the learning session are recorded, and progress is logged via individual learner profiles. These recordings and printable score cards can be used during debriefing. Virtual bronchoscopy provides immediate learner feedback scores to aid in discovering additional educational opportunities and areas of improvement.



Outcomes

Preliminary results have been positive. RNFAs reported an increased confidence in their ability to perform a bronchoscopy after completing the educational session when compared to their skills prior to the simulation. Furthermore, participants noted that the simulation experience not only built an understanding of related clinical concepts, but also provided an atmosphere which made them more comfortable to perform a bronchoscopy on live patients.

Considerations

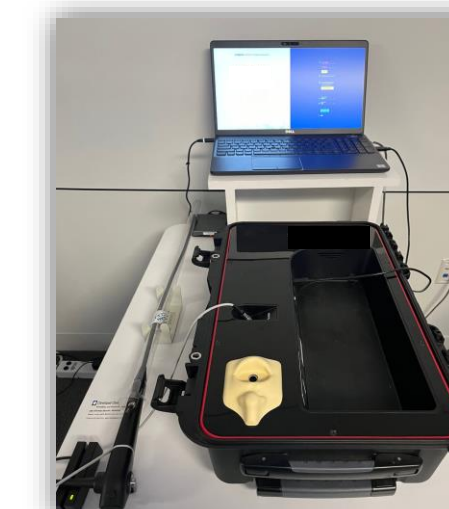
Learners gain knowledge in airway anatomy as well as confident and purposeful scope control post simulation exercises. This allows them to assist more effectively in procedures requiring bronchoscopy, such as:

Thoracic Surgery

- Tracheostomy insertion
- Assistance in placement of DLETT
- Evaluation of airway pre- and post-surgery for anatomical abnormalities such as:
 - Mass
 - Thermal injury
 - Fistula

Lung Transplantation

- Each segment of each lobe of each lung is examined³ for:
 - Mucosal abnormalities
 - Foreign bodies
 - Recurrent or purulent secretions
 - Evidence of aspiration⁴



Conclusion & Future Work

Future work includes the continuation and expansion of simulation-based learning, continuing education curriculum and competence assessments. Future sessions will focus on procedural skills. Ideally the results will help identify the most effective educational approach for a particular objective. This could aid in the most efficient use of instruction, competency assessment, learner growth and resources.



References

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