USING MULTI-DISCIPLINARY IN-SITU SIMULATION TO IMPROVE MANAGEMENT OF AIRWAY EMERGENCIES ON AN INTENSIVE CARE UNIT

L Dymore-Brown, R Gravell, V Sathianathan, R Russai, M O'Connor
Northwick Park Hospital, London North West University Healthcare NHS Trust

Introduction

Airway emergencies in the Intensive Care Unit (ICU) are strongly associated with life-threatening sequelae (De Jong et al., 2013). The Fourth National Audit Project (NAP4) demonstrated airway emergencies on ICU are associated with increased morbidity and mortality and have been attributed to a lack of education and training (Cook et al., 2016). Simulation has been shown to be useful in the teaching the management of airway emergencies (Komasawa et al., 2017). There is a paucity of evidence describing the feasibility and utility of in- situ simulation (ISS) specifically in the management of airway emergencies on the ICU.

Methods and Materials

A survey was sent to all junior doctors and nurses working on the ICU over a 4 month period to identify perception of confidence in managing airway emergencies, familiarity with specialist equipment and ability to locate equipment. Following the ISS, participants completed a second survey to evaluate the effectiveness of the training.

A low fidelity basic-life support mannequin with supplemental tracheostomy model was set-up in an ICU bed space. The SimMon app was used to simulate patient monitoring for the scenario. A waters circuit was connected to the ventilator tubing to demonstrate real-life changes of the ventilator as made by the participant. Each scenario included a junior and senior nurse, two senior house officers and a registrar. After the simulation, there was a structured debrief led by an ICU consultant.

Results

Three key findings were identified:

1. Difficulties in finding vital airway equipment.

Only 62% of participants could locate a video laryngoscope and only 75% could find a water's circuit bag.

2. Perceived utility of the simulation.

The majority of participants had no prior experience of ISS (81%)., and of those that did, only 65% found it useful. Following ISS, 100% of participants rated the programme helpful, with 96% very helpful.

3. Increased confidence in managing airway emergencies:

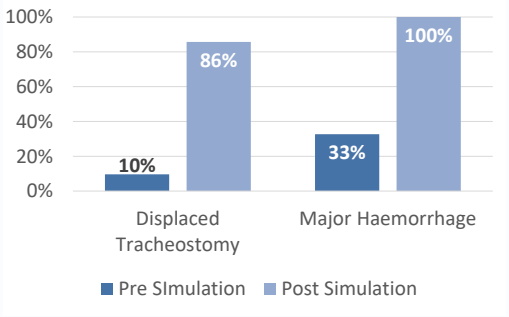

Figure 1. Respondents confidence in managing two airway emergencies pre and post simulation

Quotes from participants:

A really useful and enjoyable activity – should be a mandatory thing for all ICU staff

No suggestions for improvement – just would like more sessions!

I loved it. It was a very realistic and useful learning platform. I would feel way more confident dealing with the scenario in a real life emergency

Interventions implemented following in-situ simulation

Induction	*An enhanced induction programme for all junior doctors starting their ICU rotation, with targeted ISS sessions*
In-situ simulation	*The design and implementation of a regular multi-professional ISS programme on ICU, using different scenarios*
'Airway Zones'	*The creation of dedicated and accessible areas for airway equipment including video laryngoscope and bronchoscope*

Conclusions

Simulation has been shown to be an effective educational tool in teaching the management of airway emergencies. This review demonstrated that ISS on the ICU is a feasible and effective method of improving familiarity with specialized equipment, as well as promoting confidence in managing scenarios. A change in perception and understanding has been demonstrated, however further work is required to evaluate the impact on clinical practice to demonstrate a positive impact at a higher level of Kirkpatrick's (1994) model of evaluation.

A limitation of this work was low survey response-rate. In future, we would like to run sessions involving more members of the MDT team

References

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