

Prevention of airway complications in a cardiac ICU using a simulation based learning approach

Sarah Sibley, Practice Educator

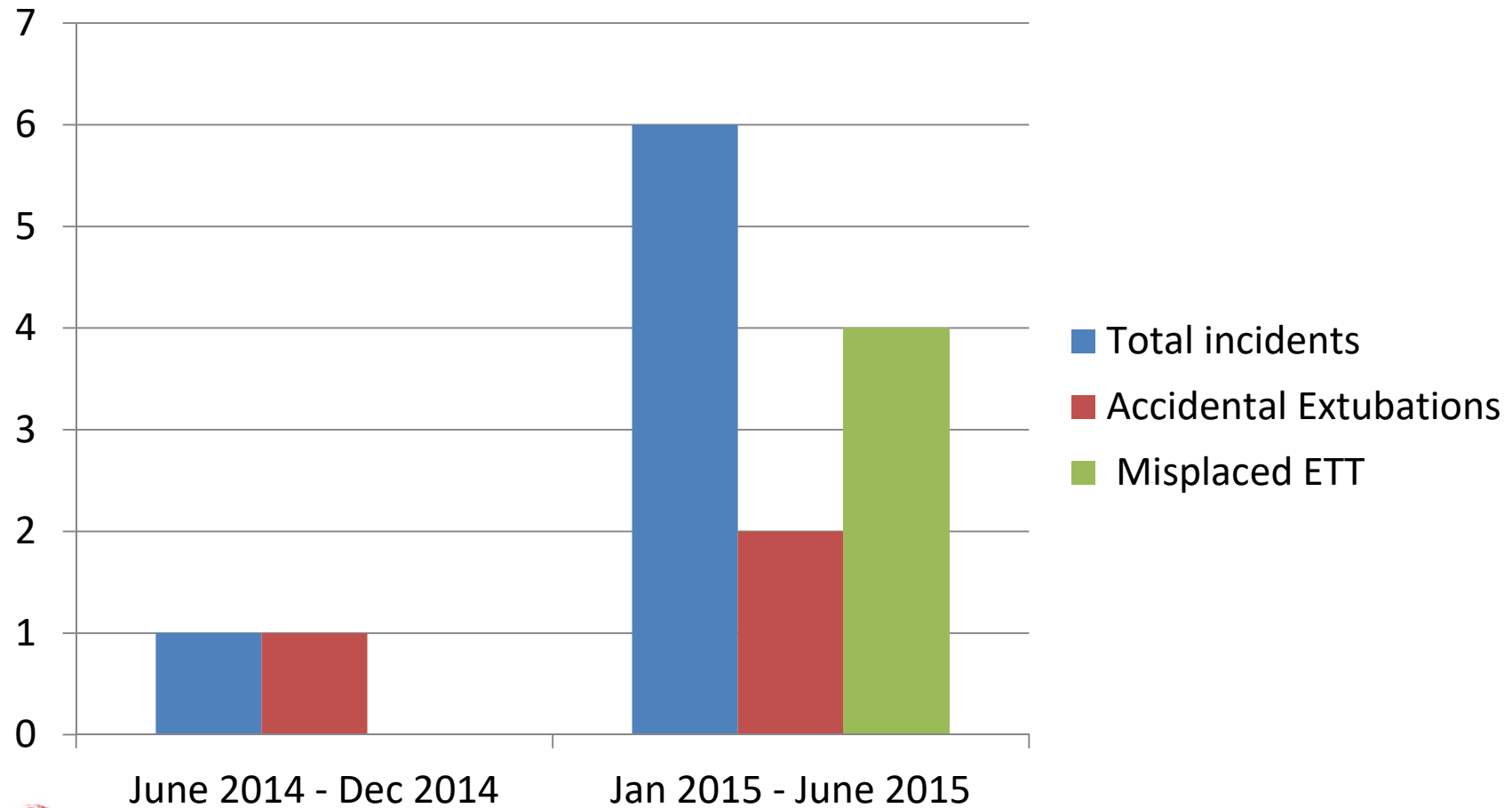
Janet Kew, Sister

CICU, Bristol Heart Institute

Background

- Airway complications involving endotracheal tubes (ETT), (*Husain et al., 2012 and Kiekkas et al., 2012*) and tracheostomy patients (*Morris, Whitmer and McIntosh, 2013*) are relatively common in critical care.
- Increase in the amount of emergency airway incidents reported on a cardiac ICU

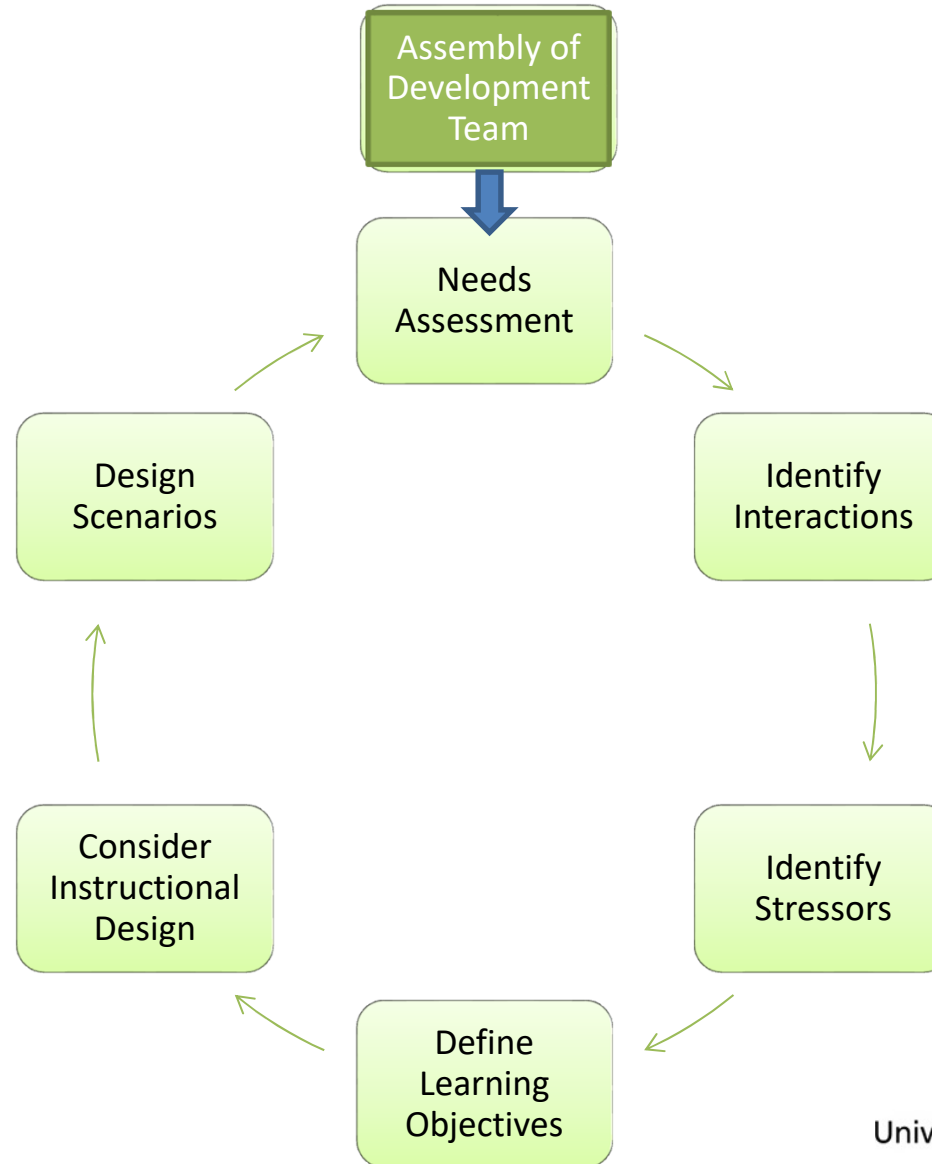
Reported Incidents



Education & development plan

- To develop an educational package to address the learning and development needs of nurses relating to incidents involving airway complications
- Simulation based training to help staff manage emergency airway situations more effectively.
- Reduce number of reported airway incidents.
- Maintain patient safety and improve patient outcomes

Course Development Cycle



Development team

- MDT approach
- CICU Team
 - Janet Kew, Sister CICU
 - James Hillier, Anaesthetic Consultant Lead CICU
- BMSC Faculty
 - Sarah Sibley, Lead Nurse Educator
- Lead Educator Cardiac Services
 - Mark Wilford, Educational Specialist

Stressors and Interactions

Incidents reported involved

- Accidental extubation
- Dislodged ETT
- Dislodged tracheostomy
- Delays in obtaining emergency intubation equipment and drugs.

Aims & Learning Objectives

Aim:

- To ensure nurses receive training and achieve competence in airway management of the CICU patient.

Learning objectives:

1. Recognise signs of airway complications in the ventilated patient.
2. Demonstrate immediate airway management following dislodgment of the ETT or tracheostomy.
3. Undertake appropriate care of a patient with an ETT or tracheostomy to prevent dislodgment.
4. Demonstrate immediate management of tube obstruction for a patient with a tracheostomy.
5. Demonstrate appropriate skills to assist in emergency intubation.
6. Familiarisation with difficult airway intubation equipment - 'Unanticipated Difficult Intubation Strategy - 'Call for help' (Dr Nicholas Wharton, consultant Anaesthetist BRI)

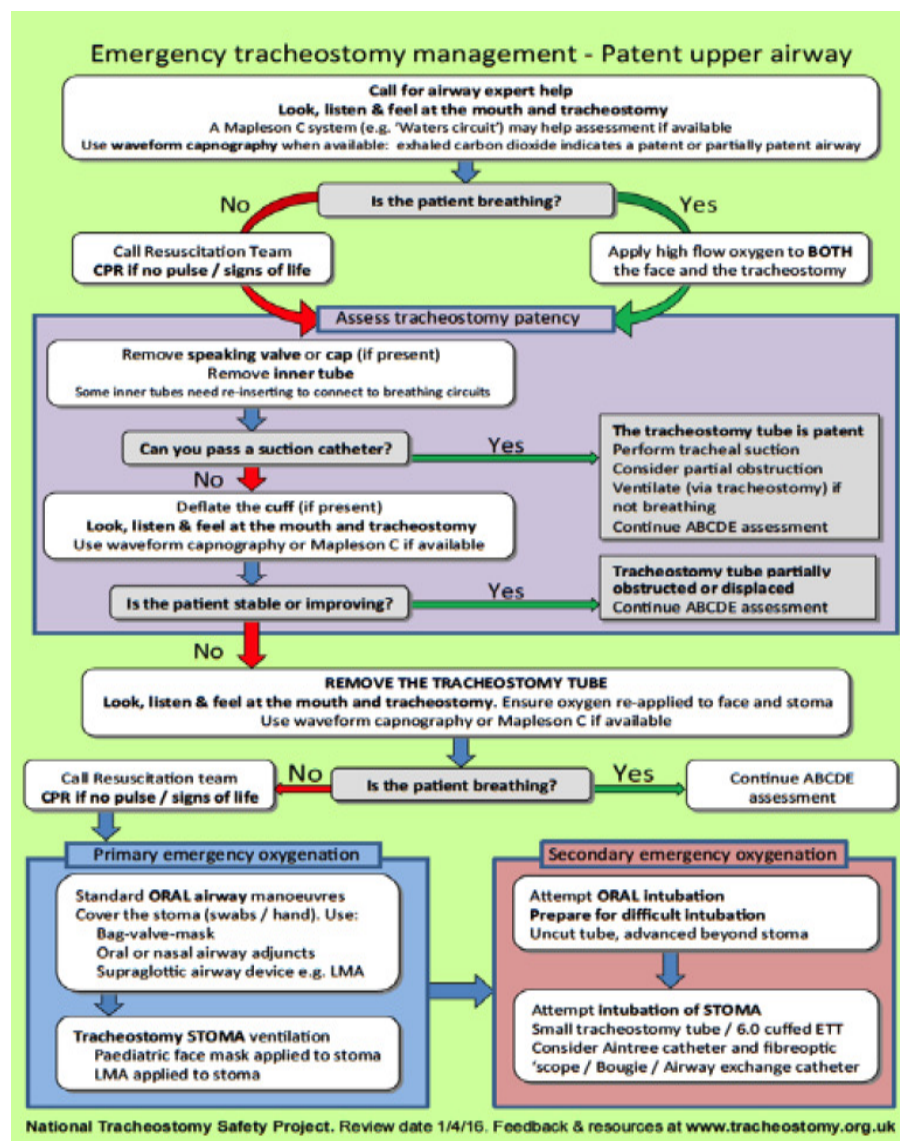
Training Sessions

- Airway workshop
- Five emergency airway simulated clinical experiences.
- 15 sessions were delivered, 5/6 nurses attended per session
- A total of 76 CICU nurses have attended the training



Scenarios

- Patient Self-extubation
- **Blocked Tracheostomy**
- Misplaced Endotracheal Tube
- Dislodged Tracheostomy Tube
- Emergency Re-Intubation



Scenario design

Target audience:

Objectives:

- 1.
- 2.

Storyboard:

Resources:

Props

Consumables

Faculty

Manikin

Scenario briefing:

Info for candidate:

Info for facilitator:

Escape routes:

Debrief points:

- 1.
- 2.

Scenario scripting

Target audience: Band 5 Nurses working in ICU

Objectives:

1. Recognise the signs of airway complications of the ventilated patient
2. Demonstrate immediate airway management of a patient with a blocked Tracheostomy tube

Storyboard: Morris Evans 68 yrs

3/52 post CABG x 4 and AVR. Failure to wean from ventilator. Tracheostomy 2/52 ago. He has been weaned from the ventilator but his trachea has not been removed as his swallow is still unsafe and he is intermittently agitated and not complying with physio. He is still regularly coughing up large amounts of thick, yellow sputum. IVAB. PMH: CHD – Angina 10years, Diabetic – Type 2, Hypertension

Resources: MetiMan manikin, Sternotomy wound, peripheral line, catheter, tracheostomy tube (blocked), humidified oxygen (trachy mask) ICU chart, ABG results, Emergency tracheostomy airway equipment at bedside, Resuscitation trolley, emergency airway trolley, anaesthetic drugs, emergency drugs, Emergency airway management for patients with a tracheostomy guidelines. Confederate ICU Nurse caring for Mr. Evans and Anaesthetist.

Scenario scripting

Scenario briefing:

Info for candidate:

You are caring for a level 2 patient in CICU and you hear a commotion in the next bedspace which you go in to investigate.

Info for facilitator:

CICU nurse needs to recognise the tracheostomy is blocked, Call for help, deflate cuff, recognise patient continues to deteriorate, remove tracheotomy and cover stoma, ventilate patient with BVM via facemask, prepare emergency equipment & drugs for re-intubation.

Escape routes:

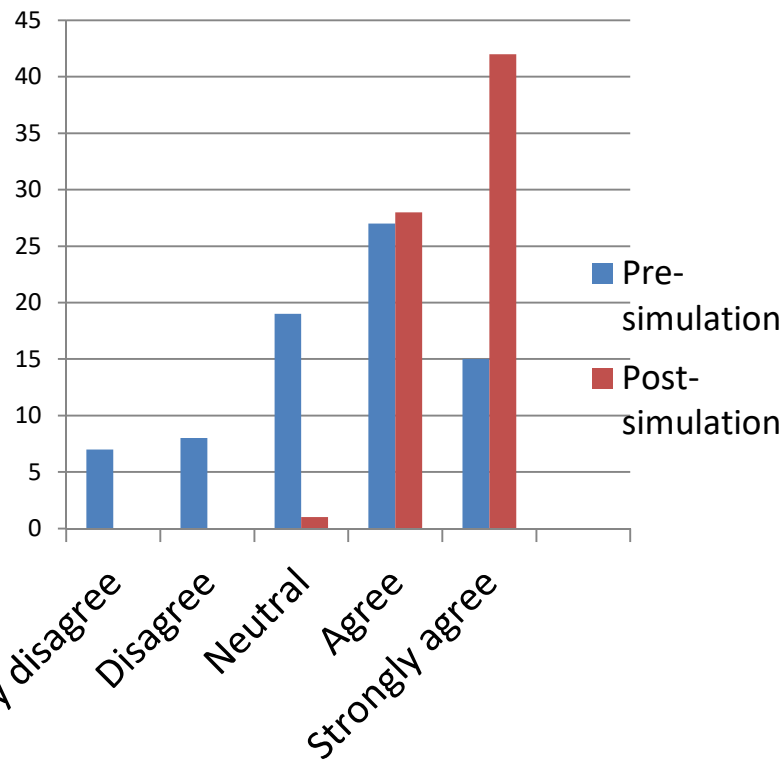
If the nurse struggles to manage the situation, confederate nurse will present tracheostomy guidelines

Debrief points:

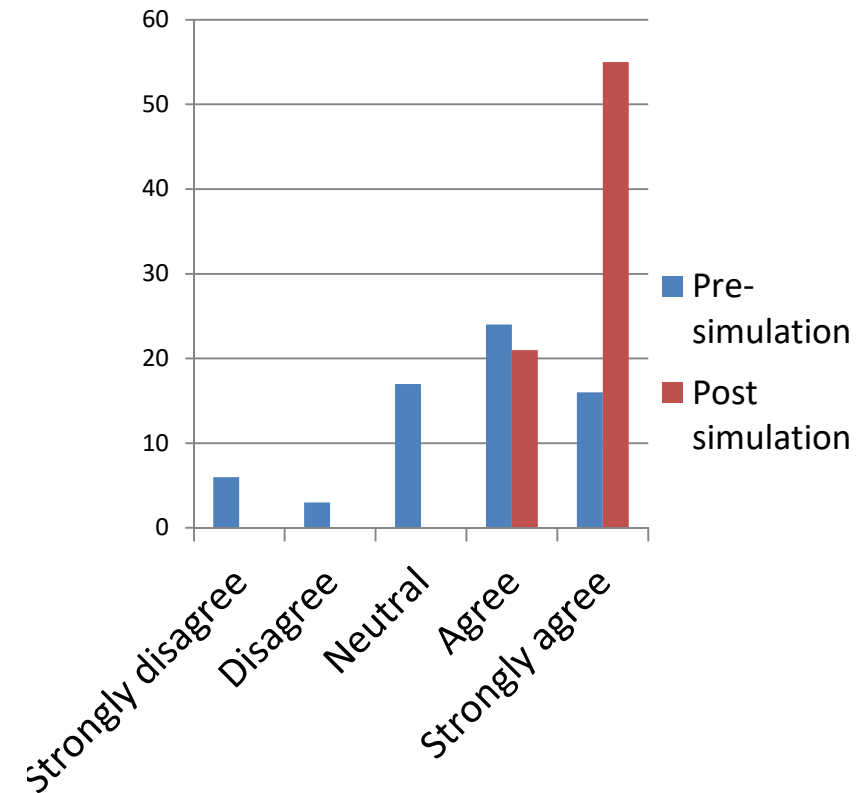
1. Recognition of blocked tracheostomy tube
2. Management of blocked tracheostomy tube following the clinical guidelines
3. Communication – SBAR
4. Teamwork – Getting help, emergency airway equipment and drugs

Confidence Scores

Confidence levels in managing a patient who self-extubates.

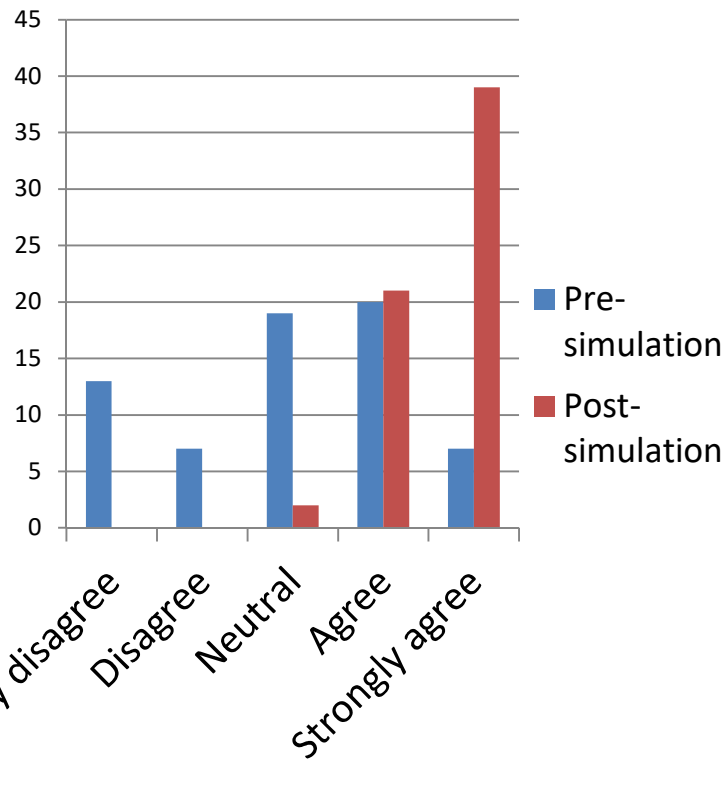


Confidence levels in managing a patient with a misplaced ETT

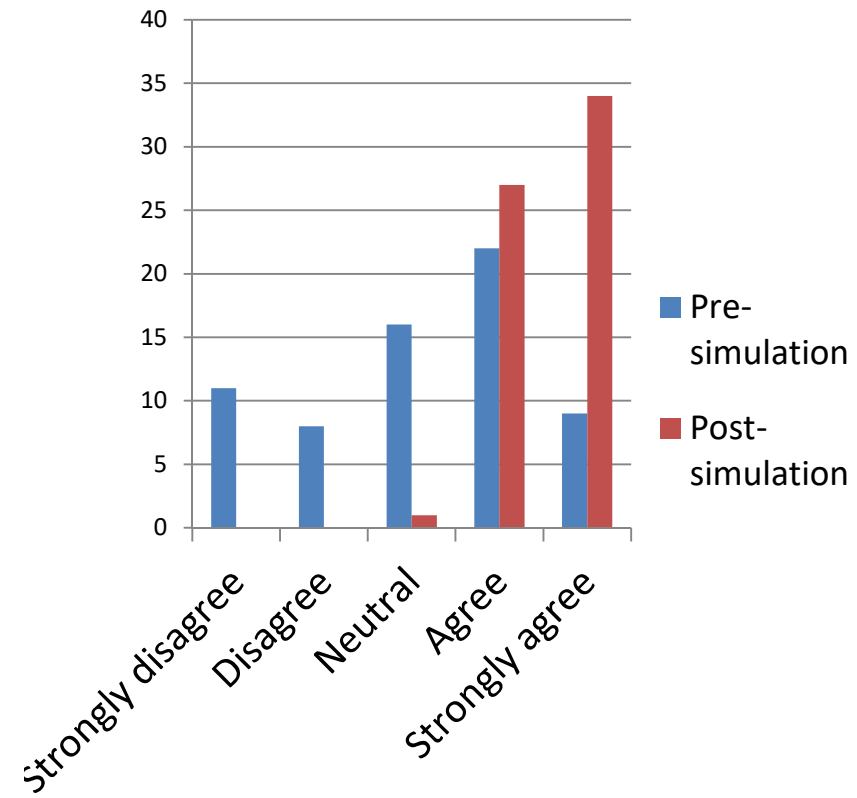


Confidence Scores

Confidence levels in managing a patient with a blocked tracheostomy.

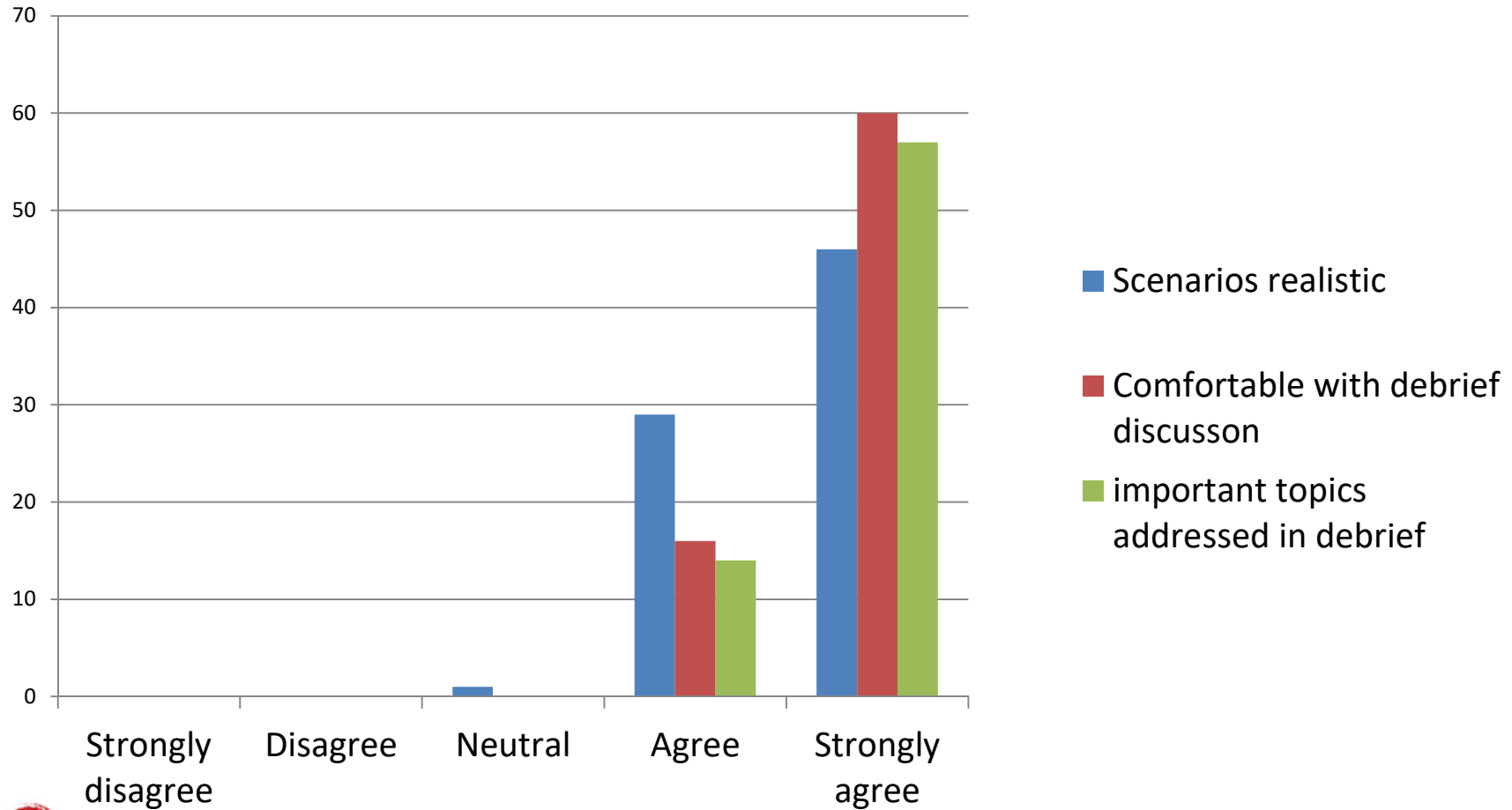


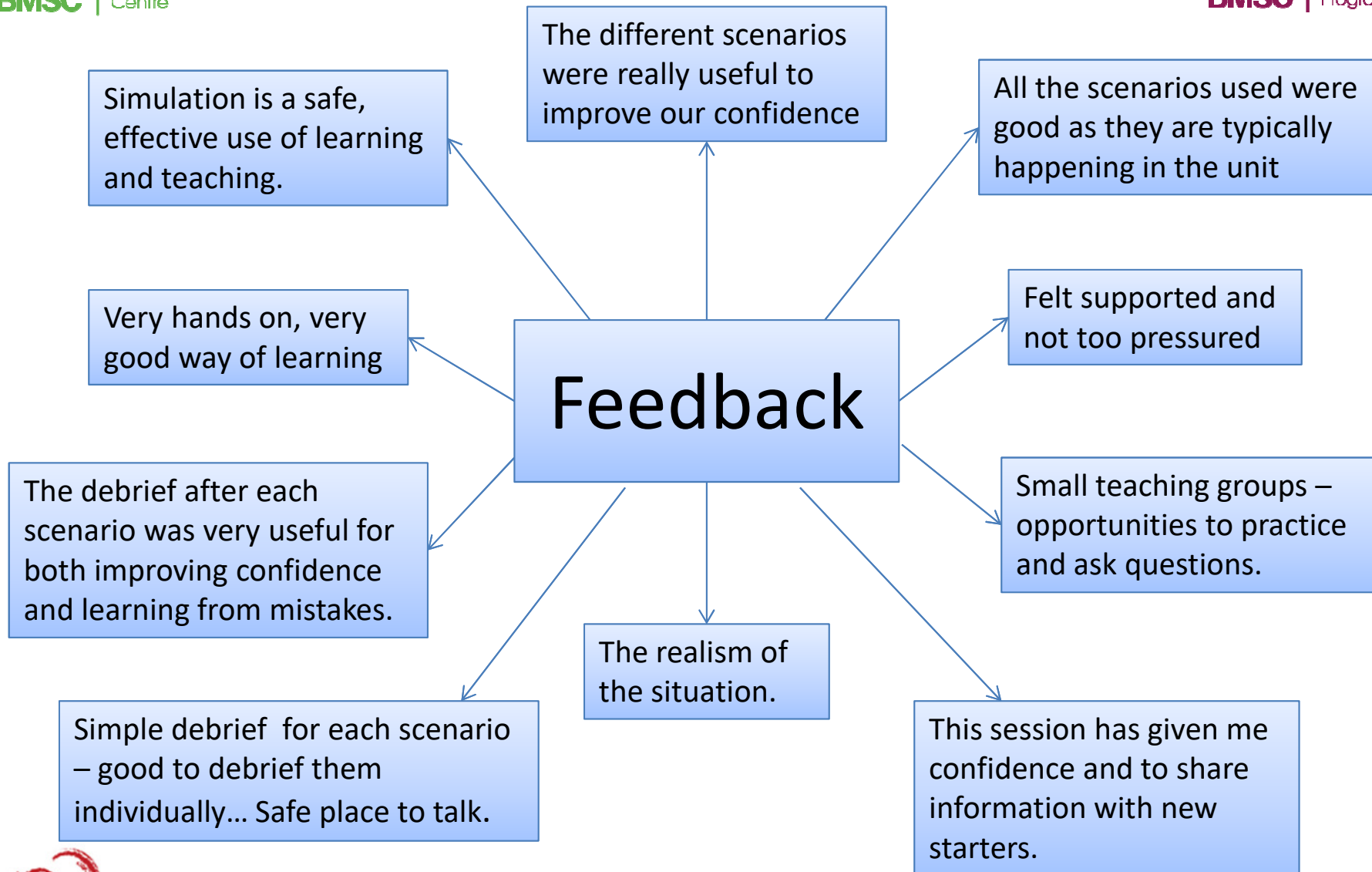
Confidence levels in managing a patient with a dislodged tracheostomy.



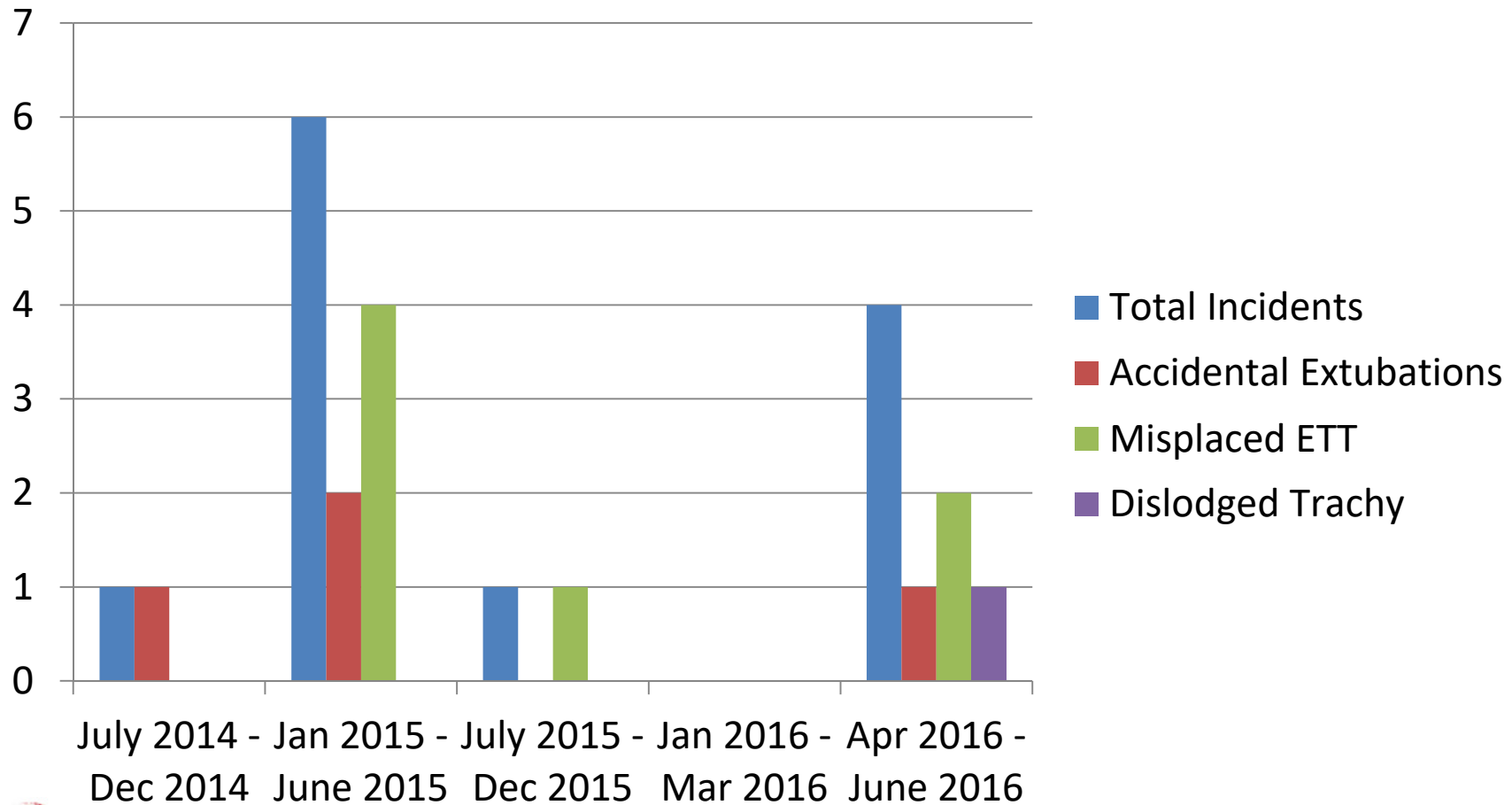
Feedback

98% agreed or strongly agreed it was an effective way to learn

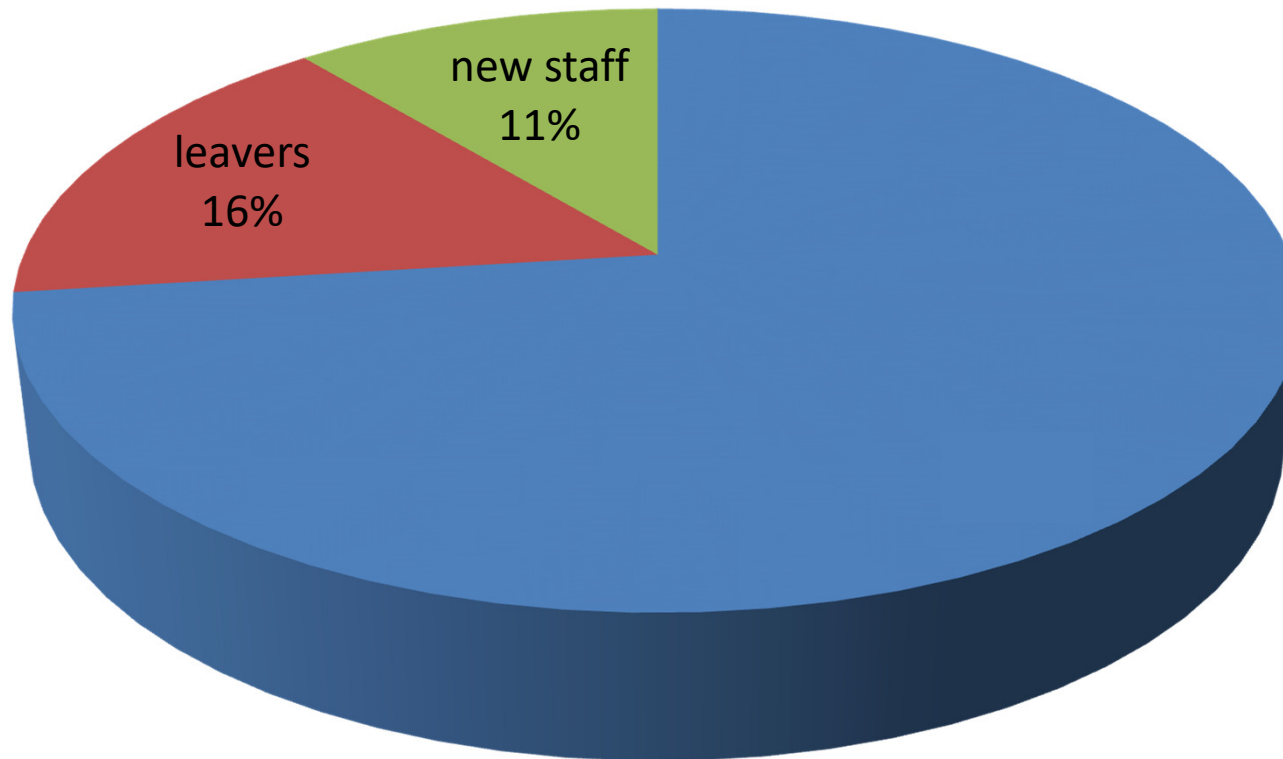




Reported Incidents



Total staff trained = 76



Summary

- Initial emergency airway incidents reported significantly reduced on CICU, following a simulation based training program
- Recent increase in reported incidents April – June 2016
- Learner's confidence levels increased following the training.
- Feedback from staff suggests they would like more simulation training.

Future plans

- Education and Simulation based learning for all new starters to CICU
- Regular updates using a simulation based learning approach - 6 month
- Future development of simulation based training sessions for nursing staff on CICU.
- Plans to extended training for the band 6 and band 7's

Tracheostomy Care

This patient has a

TRACHEOSTOMY

There is a potentially patent upper airway (Intubation may be difficult)

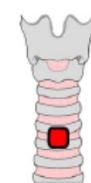

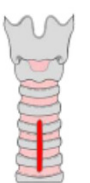
Surgical / Percutaneous

Performed on (date)

Tracheostomy tube size (if present)

Hospital / NHS number

Notes: Indicate tracheostomy type by circling the relevant figure.
 Indicate location and function of any sutures.
 Laryngoscopy grade and notes on upper airway management.
 Any problems with this tracheostomy.

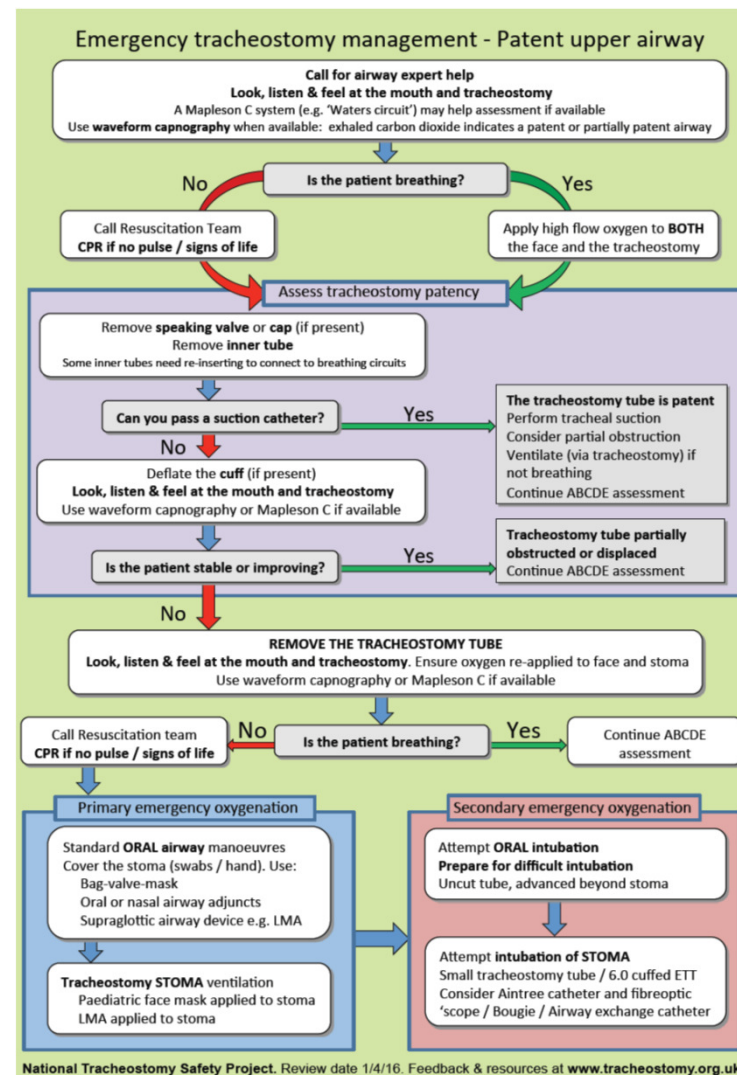




Percutaneous Björk Flap Slit type

Emergency Call:
Anaesthesia
ICU
ENT
MaxFax
Emergency Team

www.tracheostomy.org.uk

www.tracheostomy.org.uk



Questions?

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References:

- Husain, T., Gatward, J.J., Hambidge, O.R.H., Asogan, M. and Southwood, T.J. (2012) 'Strategies to prevent airway complications: A survey of adult intensive care units in Australia and New Zealand', *British Journal of Anaesthesia*, 108(5), pp. 800–806. doi: 10.1093/bja/aes030
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- Morris, L.L., Whitmer, A. and McIntosh, E. (2013) 'Tracheostomy care and complications in the intensive care unit', *Critical Care Nurse*, 33(5), pp. 18–30. doi: 10.4037/ccn2013518