Are the Emergency Department's Front-line Staff Aware of Tracheostomy Emergencies?

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BACKGROUND

- There is an increasing number of patients with tracheostomies and laryngectomies in the community, who can often experience complications and emergencies involving their airway leading to their presentation to emergency departments (ED). The competency of the front-line emergency staff is therefore crucial in identifying and managing these time-critical emergencies.
- The National Tracheostomy Safety Project (NTSP) is an initiative that has developed accessible bed-head signs and modified ALS algorithms for tracheostomy emergencies to improve the quality of care of such patients.

AIMS

- To survey and subsequently improve the current level of confidence and knowledge of ED staff in The Royal Wolverhampton NHS Trust in managing common tracheostomy emergencies according to the national guidelines.

METHODS

- NTSP guidelines were used as the audit standard, which is also recommended by the *Intensive Care Society Standards* document.
- A questionnaire was devised with 3 sections on levels of **confidence**, **training** and **knowledge**. This was distributed to all ED staff over a period of a month in March-April of 2018, ensuring a range of grades are represented (*figure 1*).
- The questionnaire consisted of (*figures 2-4*):
 - x5 questions on their level of **confidence** designed using a five-point Likert scale;
 - x5 questions on any **relevant training** that they have had;
 - x6 MCQs with an additional short-answer question testing their **knowledge**.

Figure 1: Grade of Respondents

TRACHEOSTOMY AWARENESS AUDIT – INITIAL SURVEY

Job title: _____
Grade: _____
Department/Ward: _____

Level of confidence – Please circle:

1. How confident are you in managing an upper airway emergency whilst awaiting senior help?
(not confident) ← 1 2 3 4 5 → (very confident)

2. How confident are you in identifying stridor or stertor?
1 2 3 4 5

3. How confident are you in managing airway and breathing emergencies in a patient with tracheostomy?
1 2 3 4 5

4. How confident are you in distinguishing between tracheostomies and laryngectomies?
1 2 3 4 5

5. Do you know how to perform a cricothyroidotomy? Yes / No
If yes, have you done it before? Yes (on a patient) / Yes (on a model) / No

Level of training

1. Which of the following courses have you done?
BLS ILS ALS ATLS APLS CCrISP
Any other airway training? Yes / No – If yes, please specify: _____

2. Have you ever been involved in the care of a patient with tracheostomy? Yes / No
If yes, have you ever encountered a tracheostomy emergency or complication? Yes / No

3. Do you feel that access to concise information on this topic (such as the modified ALS algorithms for tracheostomies and local Trust guidelines) would be helpful to you? Yes / No / Unsure

4. Do you know where the emergency airway equipment is kept in your department? Yes / No

5. Do you feel that access to concise information on this topic (such as the modified ALS algorithms for tracheostomies and local Trust guidelines) would be helpful to you? Yes / No / Unsure

Would you be interested in taking part in local training sessions on tracheostomies? Yes / No

Please comment if you have any other suggestions for improving the knowledge of the staff: _____

TRACHEOSTOMY AWARENESS AUDIT – INITIAL SURVEY

Knowledge

1. A patient with **tracheostomy** is brought in ED desaturating with respiratory distress. She has signs of life and is breathing, but with difficulty. What is the first action that should be taken?

a) Suction the tracheostomy tube
b) Apply oxygen to tracheostomy stoma
c) Apply oxygen to the face
d) Give oxygen via both the face and the tracheostomy stoma
e) Don't know

2. A patient with **laryngectomy** is brought in ED desaturating with respiratory distress. She has signs of life and is breathing, but with difficulty. What is the first action that should be taken?

a) Suction the laryngectomy tube
b) Apply oxygen to laryngectomy stoma
c) Apply oxygen to the face
d) Give oxygen via both the face and laryngectomy stoma
e) Don't know

3. How would you administer oxygen to a patient with tracheostomy in an emergency?

a) Via a non-rebreather mask over mouth and nose and the tracheostomy stoma
b) Via a LMA or paediatric facemask over tracheostomy stoma
c) Via LMA over tracheostomy stoma and non-rebreather mask over mouth and nose
d) Via a non-rebreather mask over tracheostomy stoma
e) Via non-rebreather mask over mouth and nose

4. How would you assess the patency of a tracheostomy?

a) Remove inner tube and wait to see if breathing improves
b) Remove inner tube and attempt passing a suction catheter
c) Remove the tracheostomy tube, then ventilate the stoma
d) Replace the tracheostomy tube and wait to see if breathing improves
e) Don't know

5. What is the first action that should be taken during CPR of a patient with a cuffed undisplaced tracheostomy who is not breathing?

a) Deflate the cuff, then ventilate via the mouth and nose
b) Inflate the cuff, then ventilate the stoma
c) Remove the tracheostomy tube, then ventilate the stoma
d) Remove the tracheostomy tube, then intubate the stoma using a 6.0 ETT
e) Don't know

6. What time frame should a displaced tracheostomy tube be replaced within?

ASAP 4 hours 12 hours 24 hours Don't know

MANY THANKS FOR YOUR TIME.

RESULTS

- Forty-seven of the ED staff participated. Surprisingly, almost all of the 47 respondents had been involved in care of a tracheostomy patient (87.2%) with 57.5% having experienced tracheotomy-related emergencies. Despite this, mean confidence levels and knowledge scores were only 3 out of 5 and 2.7 out of 6 respectively. Junior trainees and nurses expressed lower confidence levels, which were also reflected in their lower knowledge scores.
- Most (76.6%), including all (100%) of the foundation trainees, felt that they had inadequate airway training to help them manage tracheostomy emergencies. About half of the respondents (51%) knew how to perform a cricothyroidotomy, albeit all except two had only done it on a model.
- The lowest knowledge scores were on questions relating to oxygen administration. Only 5 (10.6%) chose the correct equipment (*figure 4*) and only 14 (29.8%) knew the correct anatomical placement.
- In contrast, majority (74.5%) recognised that displaced tracheostomies should be considered an emergency.
- Almost all (92%) felt that access to concise Trust guidelines and emergency algorithm flowcharts would be beneficial to them, and 94% would be interested in taking part in local training sessions.

Figure 4: Knowledge scores (%)

DISCUSSION

- There have been a number of studies¹⁻⁶ in the literature that have surveyed the knowledge of various healthcare professionals on tracheostomies. The survey by Darr A, et al.¹ in 2012 resembled this study in terms of its settings the most. However, their survey only included 3 questions on knowledge, whereas our questionnaire was devised to be more comprehensive with an improved ability to identify specific training needs. Furthermore, this is the first survey that will be utilised to complete a closed loop audit.
- The immediate interventions will be delivery of departmental teachings for ED trainees and presentation of departmental posters. Moreover, the Trust's tracheostomy guidelines are under development, and the critical care outreach team has developed free local tracheostomy care training days open to all staff in the hospital.

CONCLUSION

- There is a concerning lack of confidence and knowledge regarding tracheostomy-related emergencies amongst ED staff.
- Most of the staff felt that they have had inadequate training on tracheostomy-related emergencies. To address this issue, Trust-wide tracheostomy training days have been introduced. Trust guidelines, departmental teachings, and display of the NTSP emergency algorithms are additional interventions to be implemented.

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