

# ENT and airways in the emergency department: national survey of junior doctors' knowledge and skills

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## Abstract

**Background:** Given the urgent nature of ENT emergencies, appropriate knowledge is required amongst front-line staff. Junior doctors account for almost one quarter of emergency department doctors. It has been shown that undergraduate coverage of ENT is variable. This study therefore aimed to determine whether emergency department junior doctors were confident in dealing with ENT emergencies, with special focus on the airway.

**Method:** An online survey was circulated to junior doctors working in emergency medicine, at the discretion of their training co-ordinators.

**Results:** A total of 104 responses were received. Junior doctors were not confident in managing patients who have undergone tracheostomy or laryngectomy. Management of stridor varied, with 51 per cent giving oxygen and only 77 per cent referring such patients as an emergency to ENT. Most training on the management of airway emergencies was not provided through hospital induction.

**Conclusion:** Training should be provided to junior doctors starting work in the emergency department. We suggest mandatory multidisciplinary induction training for such staff.

**Key words:** Education; Otolaryngology; Accident and Emergency Department

## Introduction

Given the time-critical and specialised nature of ENT emergencies, knowledge of relevant anatomy, pathophysiology and initial management is important amongst front-line staff. Within the emergency department, this is particularly important in centres without 24-hour onsite ENT cover. In such centres, adequate knowledge and basic skills amongst emergency department staff may determine patient outcomes.

Knowledge of common or important ENT emergencies is expected amongst emergency medicine middle-grade and senior staff. Such knowledge and associated skills are accrued through post-graduate experience and exams. Conversely, basic knowledge amongst junior emergency department staff must initially be assumed to have been attained from medical school.

However, it has previously been shown that coverage of otolaryngology in medical school is variable.<sup>1</sup> A survey of UK graduates in 2011 revealed that 15.8 per cent of respondents had no formal undergraduate ENT teaching.<sup>2</sup> Of those with formal exposure, the average total time for both pre-clinical and clinical teaching was 8.4 days. Similar results were found in a

2012 survey of medical students, consultant ENT surgeons and medical school deans, with an average of 8 days of undergraduate exposure.<sup>3</sup> That study also showed that over three quarters of the consultants asked did not feel that medical school graduates were 'proficient in dealing with common ENT problems that do not require referral'.

This problem is not new (JF Neil, in his presidential address to the Royal Society of Medicine, Section of Laryngology, expressed his concern regarding the underrepresentation of otolaryngology in the undergraduate curriculum in 1979<sup>4</sup>), and it is not isolated to the UK (in Canada, only 4.6 days on average of training are provided at the undergraduate level<sup>5</sup>).

Accordingly, junior staff starting work in the emergency department may not have sufficient working knowledge to adequately assess ENT patients. If this is the case, onus should be placed on introducing appropriate induction training sessions for junior doctors.

We aimed to determine the level of knowledge and confidence amongst emergency department junior doctors nationally with regard to the diagnosis and

initial management of common or important ENT conditions, with particular focus on airway emergencies.

## Materials and methods

An online survey was created, with questions covering demographics and working arrangements, anatomy, ENT pathology, practical skills, and knowledge regarding airway emergencies. Questions included Likert-type and visual analogue scales, multiple-choice and free text formats.

The questionnaire was circulated to training coordinators around the UK, who forwarded it to their trainees working in emergency medicine, at their discretion. No personal data were collected from respondents. Results were analysed using Microsoft Excel®.

## Results

### Demographics and working arrangements

A total of 104 responses were received from junior doctors working in 48 different hospitals throughout the UK. Trainees ranged in seniority from foundation year one to senior house officer grade or equivalent. Of those surveyed, 15 per cent were intending to pursue a career in emergency medicine. Eight per cent of junior doctors had previous experience of working in ENT and 20 per cent had previous anaesthetics experience.

Forty-two per cent of hospitals had onsite, 24-hour ENT cover. Of the remaining hospitals, 34 per cent had no onsite ENT cover and 24 per cent had onsite cover during working hours only. In those hospitals without onsite ENT cover, 64 per cent of patients requiring specialty input were transferred to another hospital, 27 per cent of patients required offsite ENT middle-grade staff or consultants to be called in, and for 9 per cent of patients cross-cover was provided by other onsite surgical specialties.

### Anatomy

Fifteen per cent of junior doctors felt they could identify the full range of basic head and neck anatomy. Respondents most commonly felt able to identify the anterior and posterior triangles of the neck (77 per cent and 71 per cent respectively). Forty-nine per cent of junior doctors did not feel confident in identifying the location of the cricothyroid membrane.

Overall, junior doctors did not feel confident in describing the upper airway anatomy in a patient who had undergone tracheostomy or laryngectomy (Figures 1 and 2). Furthermore, confidence levels were low regarding differentiation between laryngectomies and tracheostomies (Figure 3).

### ENT pathology

Three per cent of junior doctors felt confident in diagnosing a full range of common or important ENT conditions. One respondent did not feel able to identify any of the conditions listed.

Thirty-six per cent of junior doctors did not feel confident in identifying peritonsillar abscesses, 58 per cent did not feel confident in identifying posterior epistaxis, 66 per cent did not feel confident in identifying post-tonsillectomy bleeds and, importantly, 14 per cent did not feel confident in identifying stridor (Figure 4).

Seventy per cent of junior doctors said they would refer post-tonsillectomy bleeding to ENT as an emergency (i.e. not to a casualty clinic) and only 77 per cent said they would refer stridor patients to ENT as an emergency (Figure 5).

### ENT skills

Fifteen per cent of junior doctors would not attempt any of a range of basic ENT procedures in the emergency department. Junior doctors most commonly would attempt anterior nasal packing for epistaxis (79 per cent), followed by attempted removal of foreign bodies in the nose (68 per cent) and ear (64 per cent). Twenty-seven per cent of junior doctors would

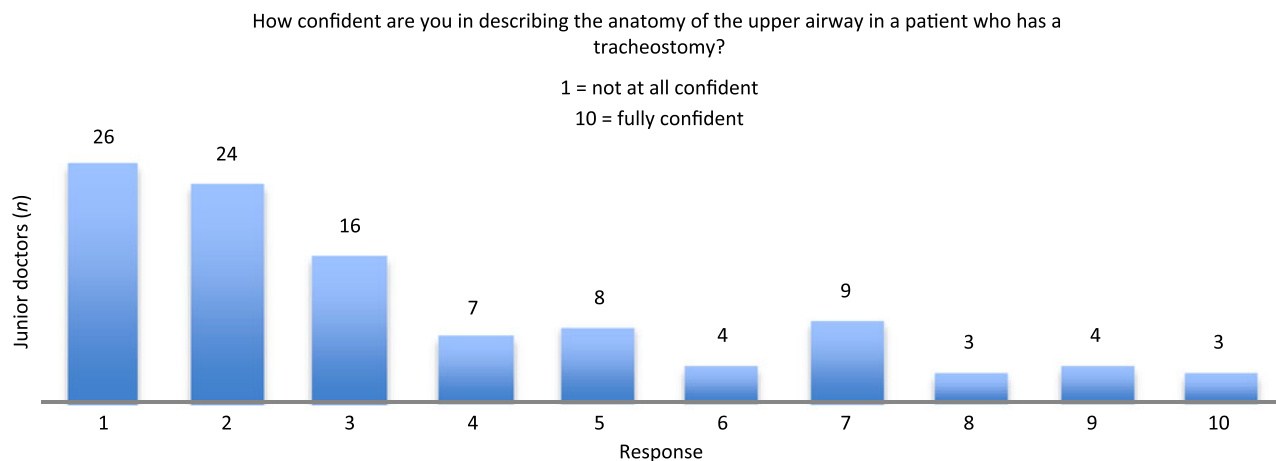


FIG. 1

Junior doctors' confidence in describing upper airway anatomy in tracheostomy patients.

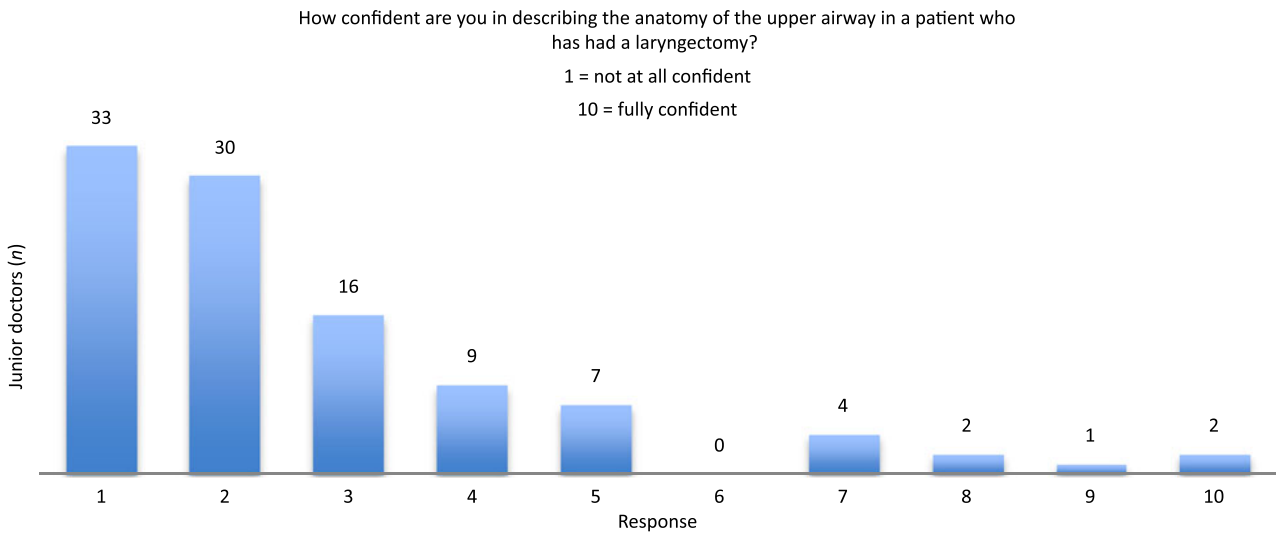


FIG. 2  
Junior doctors' confidence in describing upper airway anatomy in laryngectomy patients.

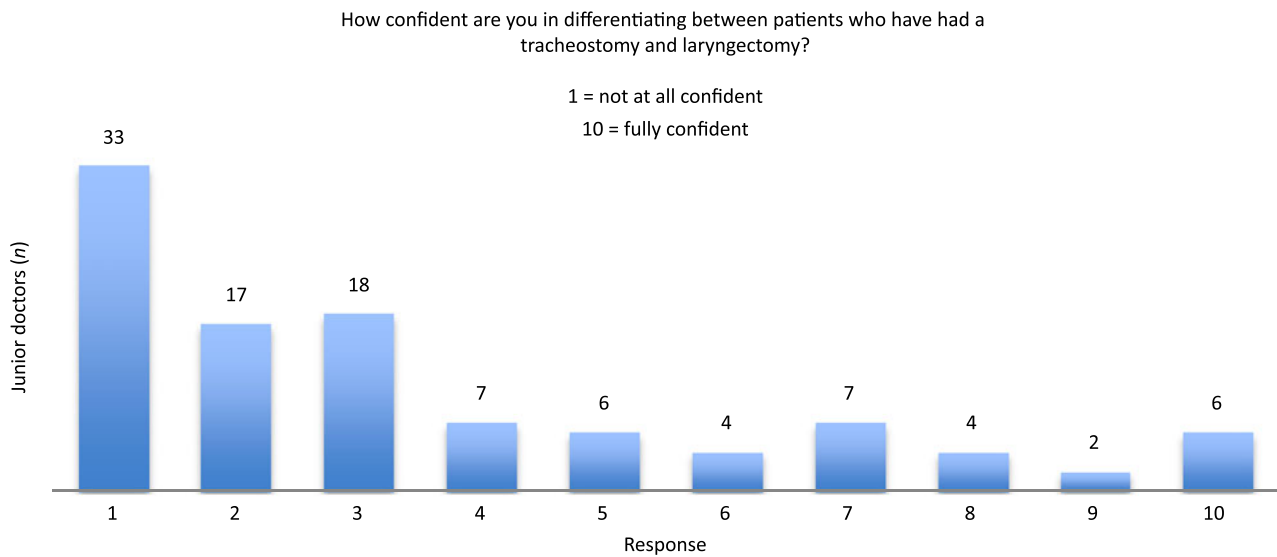


FIG. 3  
Junior doctors' confidence in differentiating between laryngectomies and tracheostomies.

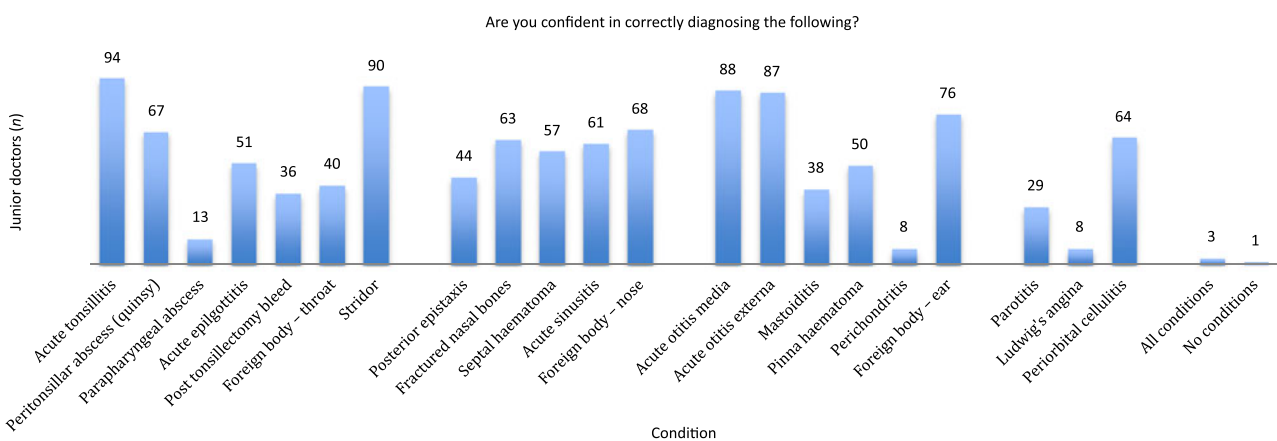


FIG. 4  
Junior doctors' confidence in correctly diagnosing ENT conditions.

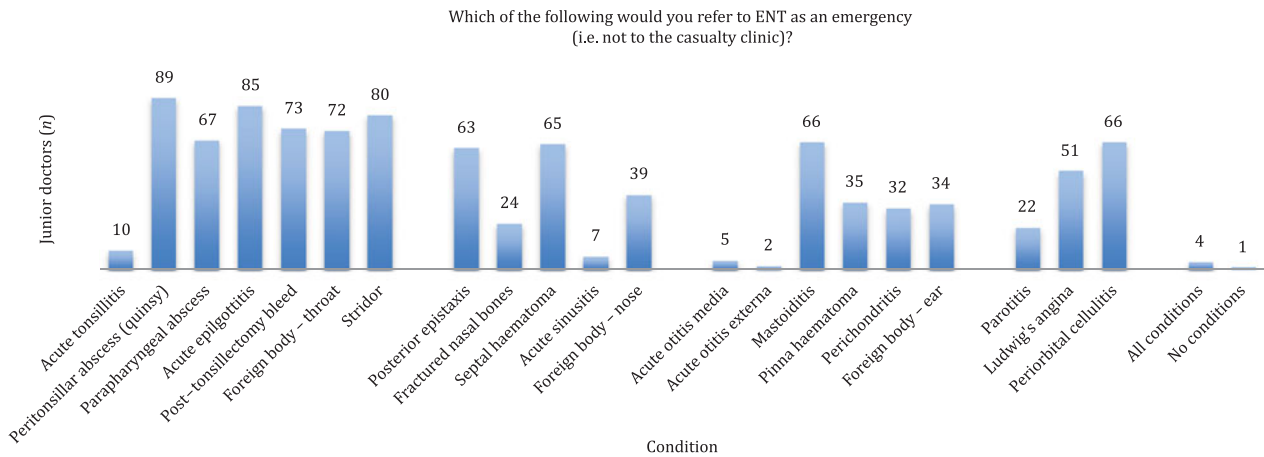


FIG. 5

Conditions that junior doctors would refer to ENT as an emergency.

attempt to suture a pinna laceration and 24 per cent would attempt to suture a laceration of the nose (Figure 6).

*Airway emergencies*

Seventy-eight per cent of junior doctors had not received any training on airway assessment of a patient who has undergone tracheostomy or laryngectomy. Of those who had received such training, this was most commonly through external courses (31 per cent), or through anaesthetics (26 per cent) or ENT (21 per cent) teaching sessions. Only 3 per cent had received such teaching through hospital induction sessions or emergency department teaching sessions.

When asked what initial steps the junior doctors would take (whilst waiting for help to arrive) for a stridorous patient, answers and apparent knowledge varied markedly. As could be expected, those with previous ENT or anaesthetics experience generally performed better in this question. Overall, 20 per cent of junior

doctors said that they would give nebulised adrenaline and 15 per cent would give steroids. However, only 49 per cent of respondents said that they would give oxygen.

When asked how they would manage a blocked tracheostomy tube, 19 per cent said they would remove the inner tube, 65 per cent said they would attempt suction and only 15 per cent said they would give oxygen.

When asked how they would manage a blocked laryngectomy tube, junior doctors answered in a similar way as for tracheostomy tubes. They were, however, less assured in their answers, and more frequently responded with ‘don’t know’ or ‘unsure’, or stated that they would simply wait for help to arrive (though the question had specified that help was not immediately available). The most commonly cited intervention was again suctioning (41 per cent) and an even smaller proportion said they would give oxygen (10 per cent). One junior doctor said that they would

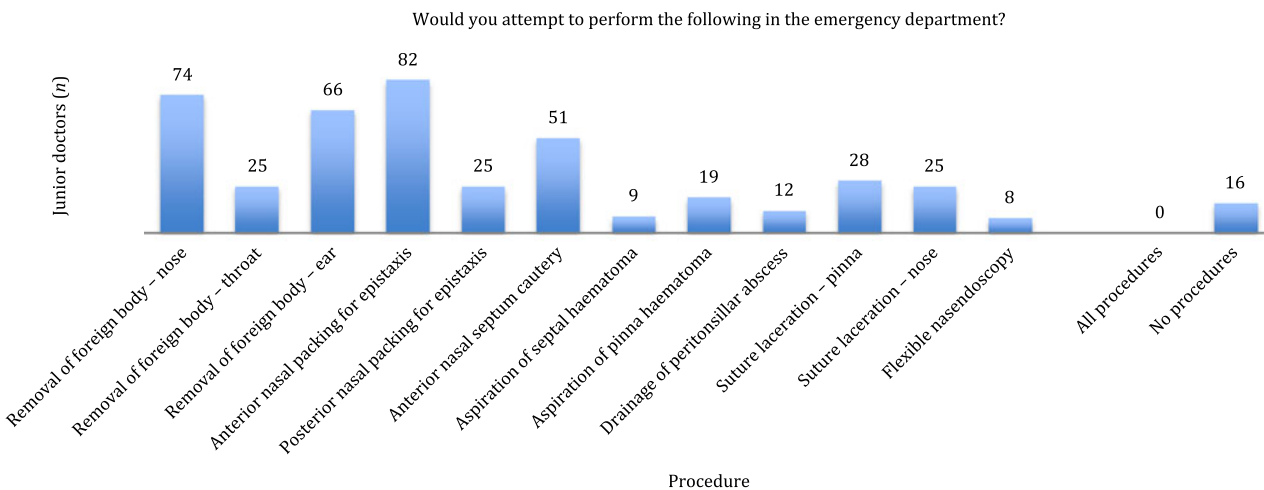


FIG. 6

ENT basic procedures that junior doctors would attempt in the emergency department.

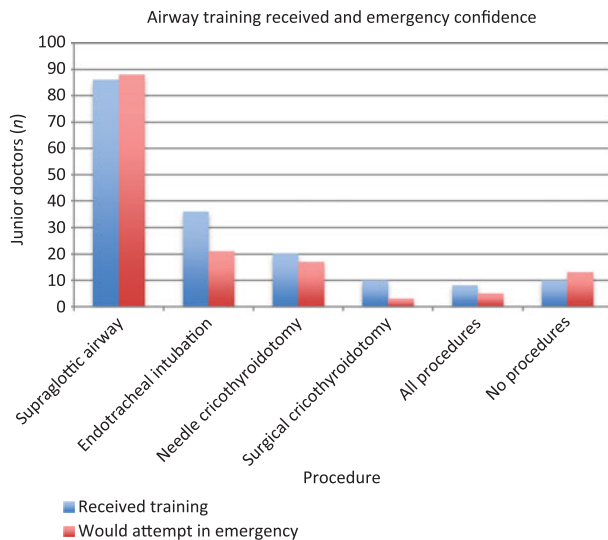


FIG. 7

Junior doctors' training and confidence in performing emergency airway procedures.

perform tracheostomy in the event of a blocked laryngectomy tube. Only 2 per cent of respondents said that they would remove the laryngectomy tube.

With regard to emergency airway procedures for patients who have not undergone laryngectomy or tracheostomy, junior doctors had most commonly been trained in the use of a supraglottic airway device such as the i-gel<sup>®</sup> (83 per cent). Consequently, this was the intervention respondents were most confident performing in an emergency (where help was not available). Training in endotracheal intubation and needle and surgical cricothyroidotomy was less common, and confidence in performing these procedures was accordingly low (Figure 7). Emergency airway intervention training was most commonly gained through advanced resuscitation courses rather than 'in house' training.

## Discussion

This is the first survey of its kind. We have shown that ENT knowledge and confidence amongst junior doctors working in the emergency department is low, particularly with regard to airway emergencies.

Otorhinolaryngology is considered by many to be a niche specialty. This is reflected in the level of coverage at the undergraduate level, as described in the introductory section of this paper. However, pathology of the head and neck is a commonly presenting theme in several post-graduate specialties, including general practice, anaesthetics, paediatrics and emergency medicine.

In 2014, there were 1471 junior doctors working in emergency medicine, of whom 1365 were foundation year 1 or 2 doctors.<sup>6</sup> This equates to almost one quarter of the total medical staff (doctors) working in this specialty in the UK. A recent survey of emergency medicine senior house officers showed that, on

average, eight ENT patients are seen per doctor per day (range, 2–20 patients).<sup>7</sup> In each case, the patient was reviewed independently prior to any referral. Therefore, one may conclude that a significant number of ENT patients are seen by emergency department junior doctors.

Whilst it can be safely assumed that junior doctors are closely supervised in UK emergency departments, their independent knowledge and skills may be important in two situations: firstly, where an ENT condition is not recognised as requiring senior input or specialty referral; and, secondly, in time-critical emergencies where help is slow to arrive.

Regarding the former of these two situations, our results showed that 66 per cent of junior doctors did not feel confident in identifying post-tonsillectomy bleeding, and 30 per cent of these doctors would not refer this condition to ENT as an emergency. Whilst death from post-tonsillectomy bleeding is rare (estimated at 1 in 12 000–15 000<sup>8,9</sup>), it is widely accepted amongst the ENT community that small, seemingly insignificant 'herald' bleeds can lead to large volume and potentially life-threatening bleeding, and that such patients therefore require admission for observation. If a junior doctor is unaware of this, one can understand why they might feel that a patient in whom a small volume bleed has stopped spontaneously can be discharged without senior review.

More worryingly, 14 per cent of junior doctors did not feel confident in identifying stridor. Furthermore, only 77 per cent said they would refer stridulous patients to ENT as an emergency. The free text answers on management of stridor revealed that several junior doctors believed this to be a condition managed either solely by anaesthetists or in conjunction with the on-call medical team. It is vitally important that the referral of patients with obstructed upper airways is made as early as possible, especially when ENT cover is provided by non-resident middle-grade staff and consultants. The 4th National Audit Project of The Royal College of Anaesthetists showed that approximately 60 per cent of emergency cannula cricothyroidotomies fail.<sup>10</sup> They went on to suggest that cannula cricothyroidotomy may be 'intrinsically inferior to a surgical technique', thereby highlighting the importance of early referral to ENT for prompt establishment of definitive surgical airways, where required. Appropriate education of junior doctors to ensure early referrals is therefore of the utmost importance.

In situations where help is slow to arrive, junior doctors' knowledge regarding airway anatomy and emergency airway management is vital. Correct identification and referral of stridulous patients notwithstanding, with regard to the initial management of such patients, there was a wide range in the quality of free text responses received in this survey. Junior doctors with previous ENT or anaesthetics experience performed better in this question, as did those junior doctors wishing to pursue a career in emergency

medicine. However, junior doctors' knowledge of the basic steps seemed generally lacking: only 20 per cent would administer nebulised adrenaline, 15 per cent would administer steroids and, most worryingly, only 51 per cent would administer oxygen.

Training and confidence in the performance of emergency airway procedures was also poor, with the exception of supraglottic airway devices such as the i-gel (83 per cent had been trained in using this device and 85 per cent would attempt to do so in an emergency). Only 19 per cent had been trained in performing a needle cricothyroidotomy. Just under half of respondents felt confident that they could identify the anatomical location of the cricothyroid membrane. Despite this, only 16 per cent of junior doctors would be willing to attempt a needle cricothyroidotomy in an emergency. In general, it appeared that the proportion of junior doctors willing to attempt a particular airway emergency procedure reflected the proportion who had received training in this procedure, underscoring the importance of such training.

With regard to difficult airways, junior doctors were not confident in their knowledge of the upper airway anatomy in patients who had undergone tracheostomy or laryngectomy. Furthermore, they did not feel confident in differentiating between such patients. When asked how they would manage a blocked tracheostomy tube, less than a quarter of respondents said they would remove the inner tube, and only 15 per cent would give oxygen either via the face or stoma. Responses regarding the management of blocked laryngectomy tubes was worse, with only 10 per cent stating that they would give oxygen acutely and a large proportion of junior doctors merely saying they 'didn't know what to do' in this situation. Only 3 of 104 respondents said that they would remove the blocked tube, which underlines the junior doctors' lack of anatomical knowledge regarding laryngectomy patients.

- Junior doctors make up almost one quarter of those working in UK emergency departments
- This study showed that junior doctors working in UK emergency departments lack confidence in their knowledge of ENT emergencies, especially those involving the airway
- Mandatory, multidisciplinary teaching on ENT and airway emergencies should be provided to all doctors commencing work in an emergency department

It is estimated that around 600 laryngectomies and 12 000 tracheostomies (surgical and percutaneous) are performed in the UK each year.<sup>11</sup> Patients in whom tracheostomy tubes become blocked or displaced are at a significant risk of harm, with deaths occurring in up to 50 per cent of cases according to the 4th

National Audit Project of The Royal College of Anaesthetists audit. The National Tracheostomy Safety Project was established in the UK following a number of adverse incidents in the North West. This project identified lack of training and knowledge regarding upper airway anatomy and appropriate management strategies as significant contributory factors in adverse outcomes.<sup>12</sup> In 2012, simple algorithmic guidelines were introduced for the management of tracheostomy and laryngectomy airway emergencies.<sup>12</sup> Though several junior doctors quoted Difficult Airway Society guidelines in this survey, none specifically mentioned the National Tracheostomy Safety Project guidelines. Furthermore, knowledge reflecting the content of such guidelines was lacking.

The results of this survey show that junior doctors working in the emergency department lack knowledge and confidence in the recognition and initial management of common and important ENT and airway emergencies. We argue that proactive training should be provided to this cohort, and indeed all front-line staff, to avoid potential adverse events in the future in situations where help is slow to arrive. Such training should be a multidisciplinary responsibility, shared between ENT, anaesthetics and emergency medicine services. We suggest mandatory, regional and multidisciplinary induction teaching days for new doctors and front-line staff.

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