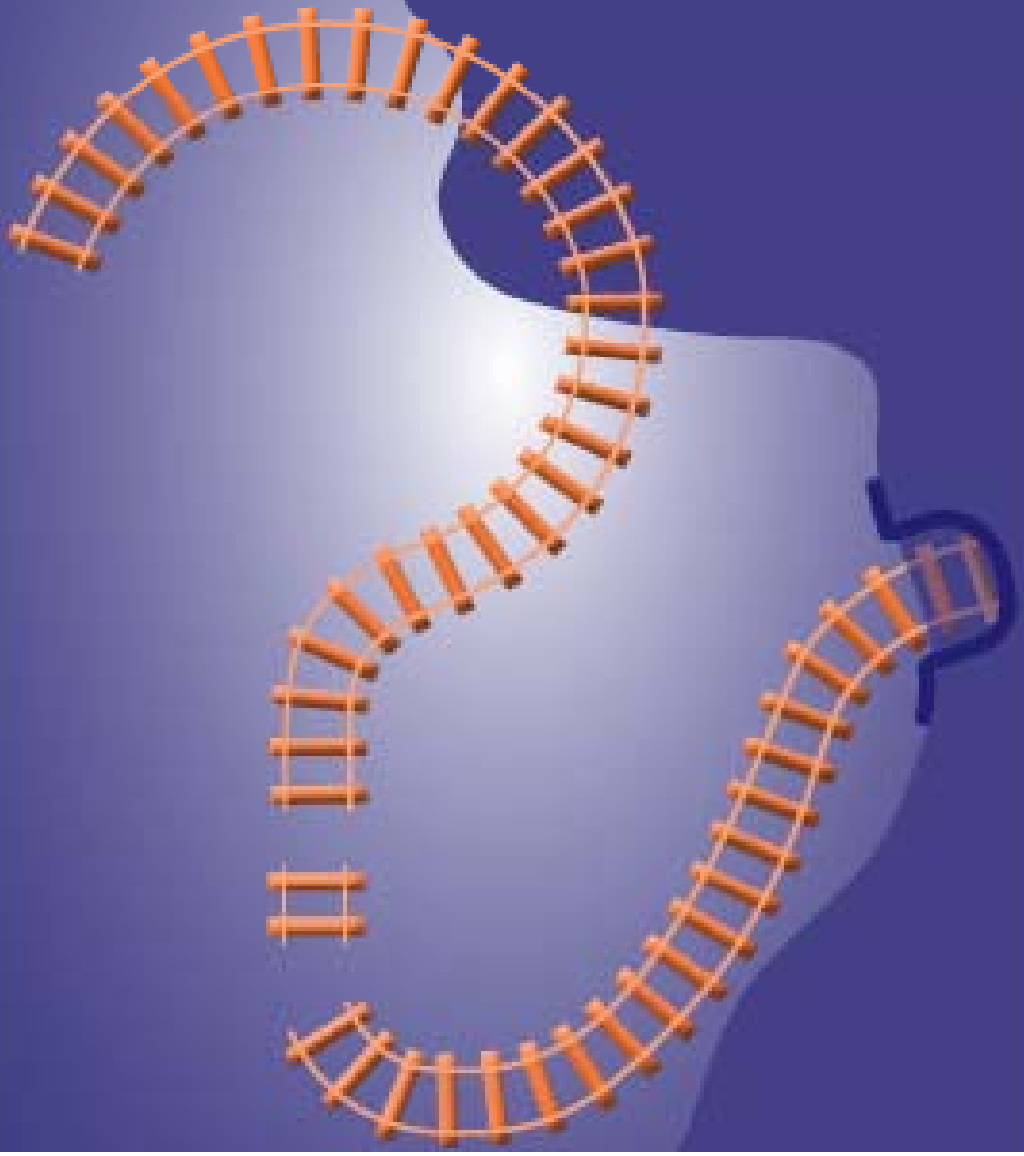
NCEPOD audit pack

On the Right Trach?

A review of the care received by patients who underwent a tracheostomy



NCEPOD

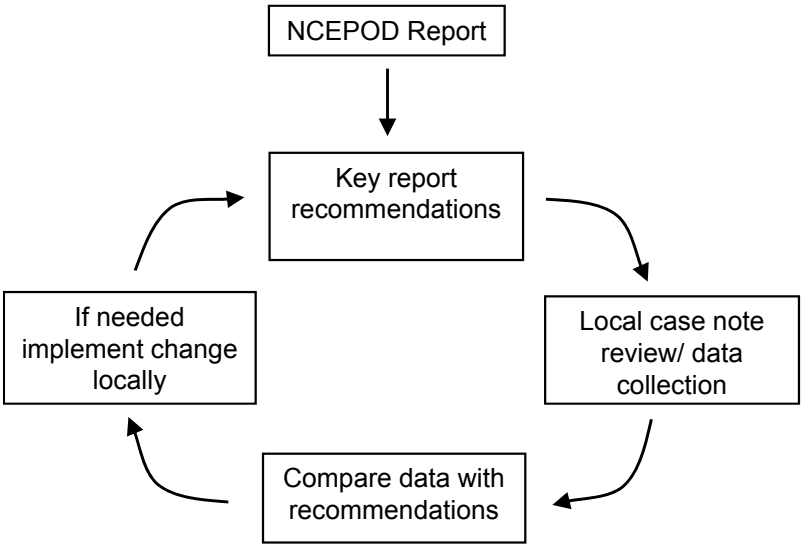
What is clinical audit?

The National Institute for Clinical Excellence (NICE) endorsed definition of clinical audit is: 'A quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, processes, and outcomes of care are selected and systematically evaluated against explicit criteria. Where indicated, changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery'. Please refer to HQIP www.hqip.org.uk for more details.

NCEPOD – "Improving the quality of medical and surgical care".
The overall aim of NCEPOD is to assist in maintaining and improving standards of medical and surgical care.

This is achieved by undertaking confidential questionnaire and peer review based studies, the findings of which are disseminated back to the medical profession and wider audience in the form of a report. Each NCEPOD report makes a number of key recommendations related to both clinical and organisational aspects of care. It is only when these recommendations are implemented that NCEPOD realises its function and overall aim.

The purpose of the NCEPOD audit pack is to provide clinicians with a tool to carry out local audits based on the findings of specific NCEPOD reports. Where appropriate report recommendations have been adapted to become more relevant to front line clinicians and case note review.



Introduction

Historically tracheostomy has been used to remedy upper airway obstruction, to avoid the laryngeal complications of prolonged tracheal intubation and the continued need for the protection and maintenance of the airway in patients with severe neurological injury. It is also now often planned relatively early in the stay of patients on critical care to improve patient comfort, and facilitate weaning of sedation when there is a need for a longer period of ventilation, and the number of temporary tracheostomies has greatly increased in recent years. The development and refinement of the percutaneous technique, improved equipment and the increasing number of critical care physicians trained to perform the procedure have all enabled a temporary tracheostomy to be placed as a bedside procedure. Alongside these developments there has been initiatives such as the National Tracheostomy Safety Project (NTSP)[1] and guidance on best practice[2] which have provided clearer standards of care for the patient.

From 2005 to 2007 the National Patient Safety Agency (NPSA) collected data submitted from 150 Trusts which showed that 53/1085 (5%) of airway incidents reported related to tracheostomies.[3] Fourteen of the 53 incidents were classed as major or life threatening, and it was recognised by the authors that it was likely that only around 10% of all incidents were reported. The fourth National Anaesthesia Audit Project[4] was specifically set up to examine the frequency and characterise the importance of serious airway related complications, and reported from all age groups and in all hospital locations across the UK over a 12 month period. Many different airway devices were implicated in these events, but in critical care the most serious incidents frequently related to tracheostomy. In half of all airway-related deaths and cases of brain damage in critical care the airway problems were attributed to tracheostomy complications.

UK data published after the NCEPOD study had commenced has shown that there is no improvement in long term outcomes in patients who have a tracheostomy placed at an early or late stage on critical care.[5] Therefore whilst performing a tracheostomy is generally considered a safe procedure with a low complication rate with important benefits such as greater patient comfort, there is still some controversy over the timing and risks of insertion in the critically ill patient. It is important to acknowledge that the alternative (longer term endotracheal intubation) is not itself without complications.

Whilst the basis for national competences for tracheostomy care exist, it is clear that they are not yet fully integrated into mandatory training programmes for all health professionals. The emergence of the Global Tracheostomy Collaborative[6] acknowledges that tracheostomy care is an important priority for many modern health care systems, with a membership which ranges from medical students to Harvard professors. Both this initiative and the NTSP also recognise the very important needs of children as well as the very much larger adult population with tracheostomies, and the importance of professionals working collaboratively to share knowledge and expertise.

In parallel the multidisciplinary team in the hospital caring for any patient with a tracheostomy remains large. Part of the challenge of this report has been to carefully consider all the levels of expertise and to provide a useful summary of what is a very large data set and prioritising the recommendations which have emerged (many of which have been already made by other organisations). Ultimately we have provided six key recommendations which we hope will resonate with all those involved in the care of tracheostomy patients, as well as patients

Introduction

themselves, and on which action is most likely to result in significant improvements in care. This study was undertaken to help identify the difficulties in the pathway of care for patients with a tracheostomy and in various hospital settings. The NCEPOD report has also highlighted many of the broader issues which impact upon the care of sick and complex patients. These are not unexpected and include the greater numbers of overweight and obese patients that require critical care, as well as revealing the pressure to admit and discharge relatively complex patients at all times of the day and night.

Method

Expert group
A multidisciplinary group of experts comprising health care professionals from intensive care medicine, anaesthesia, respiratory medicine, critical care nursing, ear, nose and throat surgery, maxillofacial surgery, physiotherapy, speech and language therapy, and a lay representative contributed to the design of the study and reviewed the findings.

Aim
The primary aim of this study was to explore factors surrounding the insertion and subsequent management of tracheostomies in both the critical care unit and ward environments by:
- Exploring (percutaneous and surgical) tracheostomy-related complications following insertion in the operating theatre or the critical care unit
- Exploring remediable factors in the care of adult patients (aged 16 and over) undergoing the insertion of a surgical or percutaneous tracheostomy tube
- Assessing the number and variability of percutaneous tracheostomies performed annually in the critical care unit
- Making recommendations to improve future practice.

Objectives
The expert group identified a number of areas of tracheostomy care to be explored in more detail. These included:
- Insertion of the tracheostomy
  - Indications for the tracheostomy
  - Cautions and contraindications
  - Consent
  - Delays
  - Equipment and monitoring
  - Staffing
  - Anaesthesia
- Environment in which the tracheostomy tube was inserted and cared for
- Routine care
  - Essential equipment
  - Cuff management
  - Humidification
  - Suctioning
  - Inner cannulae
  - Dressings
  - Swallowing
  - Oral care
  - Communication needs
- Changing tracheostomy tubes
- Emergencies, common complications and their management
- Decannulation and long term (30 day) follow up
- Facilities
  - Staff capacity
  - Staff competency
  - Number of patients cared for
  - Training
  - Facilities available
  - Policies and procedures

Hospital participation
Data were collected from all hospitals where the insertion of a tracheostomy tube was undertaken in England, Wales, Northern Ireland, the Channel Islands and the Isle of Man. Data were collected from both the National Health Service (NHS) and the Independent sector where applicable.

Within each hospital, a named contact, referred to as the NCEPOD Local Reporter, acted as a link between NCEPOD and hospital staff, facilitating case identification, dissemination of questionnaires and data collection.

Method

Population
Patients who underwent a new tracheostomy insertion or a laryngectomy between 25th February – 12th May 2013, were included in the study. Patients were identified at the time of tracheostomy insertion or laryngectomy on the critical care unit or in theatre. Data were collected on both surgical and percutaneous tracheostomies. Where available, the following OPCS codes were used to identify patients.

- E29 – Excision of larynx
  - E29.1 - Total laryngectomy
  - E29.6 - Laryngectomy not elsewhere classified
  - E29.8 - Other specified
  - E29.9 - Unspecified
- E42 – Exteriorisation of trachea
  - E42.1 - Permanent tracheostomy
  - E42.3 - Temporary tracheostomy
  - E42.8 - Other specified
  - E42.9 - Unspecified

Exclusions
Only patients who underwent the creation of a new tracheostomy were included in the study. Therefore patients who were coded with the following OPCS codes were excluded:

- E42.2 - Cricothyroidostomy
- E42.4 - Revision of tracheostomy
- E42.6 - Replacement of tracheostomy
- E42.5 - Closure of tracheostomy
- E42.7 - Removal of tracheostomy tube

Patients aged 15 and younger were not included in the study.

Case Identification and Data Collection
Patients were identified at the point of tracheostomy insertion either on the critical care unit or in theatre.

A study contact was set up in the critical care unit and in theatre, and one of their main roles was to identify cases and notify the details of the cases to NCEPOD (either directly or via the Local Reporter).

Once a patient was identified as having undergone a tracheostomy insertion, data were collected up to the point of decannulation on, or discharge from, critical care (with a tracheostomy still in place); decannulation, discharge from or day 30 on a general ward; or death. To assist with this, a study contact was also set up to help collate data from the general wards.

Data were subsequently collected in two ways. Questionnaires were either returned directly to NCEPOD and the case details recorded on the database, or case details were notified to NCEPOD using a data collection spreadsheet, and then these details were uploaded to the study database.

Where data were submitted to NCEPOD via a spreadsheet, this was maintained by the Local Reporter (or other nominated study contact) and was sent to NCEPOD on a regular basis in order to track case load (new insertions and discharge from the critical care unit and the ward). This was followed by a request for the prompt return of questionnaires.

Where the data (spreadsheets and/or questionnaires) were not returned reminders were sent.

Method

Questionnaires
Five questionnaires were developed to collect data for this study:

Organisational questionnaire by hospital
This was sent out at the start of the study to all hospitals to identify wards where patients with tracheostomy tubes could be cared for, and to gather data about the approximate number of tracheostomy insertions undertaken; this was to help determine the sampling period required. This questionnaire collected data around staffing capacity and competency, training and hospital policies and procedures.

Organisation of ward care questionnaire
This questionnaire collected organisational data at a ward level rather than at a hospital level. Questions were asked about the number of tracheostomy patients cared for on a monthly basis, and the equipment and facilities available. Data collection for this questionnaire was undertaken on-line.

Tracheostomy insertion questionnaire
A questionnaire was completed at the time of tracheostomy insertion (Figure 1.1) by the consultant/clinician responsible for the procedure or by the most appropriate person. The same questionnaire was used to gather data for both surgical and percutaneous tracheostomy insertions.

Critical care questionnaire
This questionnaire was completed at the time of discharge from the critical care unit to the ward, tracheostomy removal or death, for all patients who were admitted to (or remained on) the critical care unit following their tracheostomy insertion. This included patients who had a tracheostomy inserted whilst in the critical care unit and patients who went to the critical care unit following the insertion of a tracheostomy in theatre. As well as collecting clinical data and information about complications, this questionnaire also collected data about the facilities for tracheostomy care in the critical care unit.

Ward questionnaire
This questionnaire was completed for all patients admitted to a ward either from the critical care unit (both surgical and percutaneous) or directly from theatre. This was completed at the time of tracheostomy removal, death, discharge from the ward with the tracheostomy in situ, or 30 days post transfer to ward. Again, as well as collecting clinical data and information about complications, This questionnaire collected data about the ward facilities available.

The clinical questionnaires were sent out in packs; each pack contained an insertion, critical care and ward care questionnaire, and also the instructions for completion. Because not all patients had a critical care stay or a general ward stay with a tracheostomy in situ, the completion of all three questionnaires was not required for each patient. These study packs were sent out at the beginning of the study based on the number of insertions undertaken annually at each hospital, so they could be completed at the time of tracheostomy insertion.

Method

Case notes
Photocopied case note extracts were requested for two cases per hospital and these were randomly selected by NCEPOD. The requested extracts included:

- Inpatient annotations (main case notes)
- Nursing/speech and language therapy/ physiotherapy notes
- Intensive Care (Level 3)/High Dependency (Level 2) Unit notes
- Anaesthetic records
- Surgical/operation notes
- Observation charts
- Tracheostomy care records
- Ward discharge summaries

Case notes were requested for the time period up to:

- Successful decannulation (either on the critical care unit or a general ward); or
- Death (on the critical care unit or a general ward); or
- Discharge with the tracheostomy in situ from the hospital; or
- Day 30 following admission to a general ward,

whichever occurred first.

Advisor group
A multidisciplinary group of Advisors was recruited to undertake peer review of the case notes and associated questionnaires. This group of Advisors comprised clinicians from a number of specialties including critical care medicine, anaesthetics, general medicine, respiratory medicine, oral and maxillofacial surgery, ear, nose and throat (ENT) surgery, plastic surgery, nursing (critical care, critical care outreach, tracheostomy and ENT), physiotherapy and speech and language therapy (SLT). This group also peer reviewed the findings of the larger questionnaire dataset.

Key findings and recommendations

Tracheostomy insertion

Key findings

728/1491 (48.8%) patients had consent taken for a percutaneous tracheostomy, compared with 611/638 (95.8%) undergoing a surgical insertion.

239/1490 (16%) patients undergoing a percutaneous tracheostomy had a WHO type (surgical) checklist used.

Adjustable length tracheostomy tubes were used in only 185/1825 (10.1%) of patients. Inner tubes were used in 1661/1931 (86%) of patients.

566/1910 (29.6%) patients included in the study were obese or morbidly obese, but adjustable flanged tubes were only used in 96/510 (18.8%) of patients.

Capnography to assess tube placement documented in 144/266 (54.1%) of patients.

Post-insertion endoscopy was used in 137/266 (51.5%) of patients.

Recommendations

6. Consent and WHO type (surgical) checklists should be adopted and used prior to tracheostomy insertion, wherever it is performed. *(Medical Directors and Clinical Directors)*

7. The diameter and length of the tube used should be appropriate for the size and anatomy of the individual patient, *(Consultant Operators, Theatre and Critical Care Managers and Professional Health Care Bodies)*

8. Confirmation of tube placement must be obtained using capnography. This should be readily available and the events documented. *(All Health Care Professionals)*

9. Appropriate positioning of the tube should be made using airway endoscopy. This should be readily available and the events documented. *(All Consultants)*

Key findings and recommendations

Tube care in the patient with a tracheostomy

Key findings

27% (113/419) of tubes were changed for the first time in the critical care unit at a point less than 7 days from insertion and 11.7% (49/419) more than 30 days.

21/41 patients with an unplanned tube change before day 7, had a BMI of ≥30.

57/113 (50.4%) patients in the critical care unit who had unplanned tube changes had them in the first 7 days, before a clear tract from skin to trachea had had time to form.

30/379 (7.9%) patients did not have tubes with an inner cannula present as part of the replacement tube at first tube change on critical care.

41.3% (128/310) of patients reviewed by Advisors and where data were available had problems with secretion clearance.

88.3% (302/342) of tubes were replaced with one of a standard length despite many of this population being overweight or obese (a total of 63%).

95% (551/580) of patients were discharged from the critical care unit with a cuffed tracheostomy tube still in place and in 72.6% (360/496) the cuff was still inflated at discharge.

28% (130/464) of tubes on the ward were left continuously inflated and cuff pressure was not measured in 25.4% (105/414) of ward patients.

In just 211/396 (53.3%) of the peer reviewed cases was there information available on cuff pressure available in the case notes.

Recommendations

10. When changing a tracheostomy tube factors that increase the risk of obstruction or loss of airway should be considered. These include tube size/ configuration and length. This is particularly important in the obese/high BMI patient. *(All Consultants)*

11. Unplanned tube changes pose additional risks. All unplanned tube changes should be reported locally as critical incidents and investigated to ensure that lessons are learned and reduce the risk of future events. *(All Health Care Professionals and Risk Managers)*

12. Particularly careful consideration should be made at discharge from the critical care unit as to whether a cuffed tube is still indicated, and reasons must be documented. If it is, then there must be equipment and competences available on the ward for cuff pressure measurement. *(Critical Care Consultants and Tracheostomy Leads)*

13. Tube data should be more clearly recorded and made available for review at the bedside and hereafter facilitated by a ‘passport’ for each patient, with all data included. *(Medical Directors, Directors of Nursing and Health Care Commissioners)*

14. All hospitals should adhere to recommendations already made by the National Tracheostomy Safety project to maintain an essential box of equipment which is sufficiently portable to be moved around with the patient. *(Clinical Directors and Tracheostomy Leads)*

Key findings and recommendations

The multidisciplinary care of tracheostomy

Key findings

67.1% (318/474) of ward patients with a tracheostomy were discussed at an MDT meeting.

Composition of the MDT varied and dietetics and critical care outreach were relatively poorly represented (included in 42.7% (93/218) and 58.8% (153/260) of MDTs respectively).

Physiotherapy was not included in 12% (33/276) of patient MDTs.

96/168 57.1%) of patients with a swallowing difficulty had an early referral to Speech and Language Therapy (within 48 hours).

42/168 (25%) patients with a swallowing Difficulty waited longer than 48 hours for referral to Speech and Language Therapy.

In cases reviewed by Advisors there were 32/223 patients (14.3%) where it was felt that attention to swallowing difficulty was insufficient, and this related mainly to a lack of Speech and Language Therapy input.

The advice of SLT was sought in only 456/1693 (26.9%) patients with a new tracheostomy on the critical care unit.

Recommendations

15. In order to facilitate decannulation and discharge planning multidisciplinary care needs to be established as part of the routine pathway for ALL tracheostomy patients. Whilst on the critical care unit where there will be at least daily reviews, key additional team members should be involved at an early stage. The team composition should be flexible to properly reflect the patient's needs and provide excellent continuity of care. There are several key team members who one would expect should always participate, e.g. physiotherapy, speech and language therapy, outreach nurses and dietitians. Hospitals need to provide adequate staff to ensure this happens routinely and in a timely manner. *(Clinical Directors and Critical Care Managers)*

16. Involvement of Speech and Language Therapy in critical care needs to be facilitated particularly for more complex patients and to assist clinicians with high quality communication strategies as well as day to day ward care and according to patient needs. *(Clinical Directors and Speech and Language Therapists)*

18. There needs to be improved recognition of the incidence of swallowing difficulty in tracheostomy patients at all points in the care pathway. Early referrals to Speech and Language Therapy with specific competences are recommended. *(All Consultants and Speech and Language Therapists)*

Key findings and recommendations

Complications and adverse events

Key findings

23.6% (461/1956) of patients had complications whilst in the critical care unit.

31.3% (173/553) of patients had complications whilst on the ward.

The most serious complications in patients during and after tracheostomy insertion in both critical care and the ward, were accidental tube displacement, obstruction, pneumothorax and haemorrhage. Consultant involvement in the management of these complications was high.

Accidental tube decannulation/displacement occurred in 35/553 (6.3%) of patients in the ward and in 80/1956 (4.1%) patients in critical care.

174/216 hospitals (80.6%) had a policy for the management of blocked or displaced tubes.

27.9% (48/172) of hospital sites did not provide staff training in the management of blocked and displaced tubes.

Recommendations

19. Bedside staff who care for tracheostomy patients must be competent in recognizing and managing common airway complications including tube obstruction or displacements and as described by the National Tracheostomy Safety Project algorithms. *(Medical Directors and Directors of Nursing)*

20. Emergency action plans must clearly reflect the escalation policy in order to summon senior staff in the event of a difficult airway event. Equipment including capnography must be always available, checked and utilised in patient care and in training scenarios. This reinforces the recommendation in the NAP4 guidance. *(Clinical Directors)*

Key findings and recommendations

Outcomes of care in tracheostomy patients

Key findings

18% (161/910) of patients underwent decannulation in under 7 days in the critical care unit.

85/141 patients who had an early decannulation did not undergo a trial of extubation before tracheostomy insertion. 68 of these were percutaneous insertions.

157/503 discharges of patients from the critical care unit occurred after 18.00 in the evening and before 08.00 in the morning. 165/348 (47.4%) ward admissions occurred after 18.00 and before 08.00.

46 patients were discharged from a critical care unit to a ward or different critical care unit area after 21.00 at night and before 06.00 in the morning.

5/156 patients were discharged out of hours from the critical care unit to locations which were not designated to provide routine tracheostomy care.

341/466 (73.2%) of patients had a comprehensive risk assessment carried out prior to ward admission.

90.9% (541/595) of patients had a discharge summary provided when they left the critical care unit, but 460/541 (85%) summaries did not contain several important elements such as weaning plans for the tracheostomy and who had responsibility for decisions about the tracheostomy.

27 patients were discharged home from a ward area and 5 to community care facilities.

Discharge from ward areas to other hospital locations and to community care occurred outside the normal working day in 11 cases.

Recommendations

21. In patients undergoing a tracheostomy without a trial of extubation the reason should be clearly documented. *(All Health Care Professionals)*

22. Unplanned and night time critical care discharge is not recommended, particularly in patients with a newly formed tracheostomy and/or patients recently weaned from respiratory support. This reinforces the Intensive Care Society's general recommendation about night time discharges. *(Clinical Directors and Risk Managers)*

23. Wards accepting tracheostomy patients should be in a state of readiness in terms of equipment and competences. *(Clinical Directors and Directors of Nursing)*

24. Multidisciplinary agreement about minimum airway assessments prior to decannulation needs to be established including availability of equipment and competences. *(Professional Health Care Bodies)*

25. Quality of discharge documentation should be improved. A structured and detailed summary must be provided between wards and between hospitals and the community at the point of transfer. *(All Health Care Professionals and Tracheostomy Leads)*

References

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