

MOH NURSING CLINICAL PRACTICE GUIDELINES 2/2010

Nursing Management of Adult Patients with Tracheostomy

July 2010

STATEMENT OF INTENT

This set of guidelines aims to guide healthcare workers who are involved in caring for adult patients with tracheostomy.

The recommendations are based on best available evidence and existing evidence-based guidelines. There are, however, many aspects of tracheostomy care in which evidence-based research is lacking. In such circumstances, we rely on a consensus of expert opinions in this field.

Every healthcare worker must exercise clinical judgement in the care of adult patients with tracheostomy. Whilst these guidelines allude to best practices, due consideration must be given to individual patient circumstances, overall treatment goals, resource availability, institutional policies and other care options available.

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FOREWORD

Nurses play a vital role in providing effective tracheostomy care. Learning to care for a patient with tracheostomy requires the support and individual attention of the whole health care team.

With healthcare advancement, tracheostomy care has become part of the routine care in both the acute and long term care units. Good tracheostomy management has a significant impact on the patient's general well-being and quality of life. It is therefore important that nurses are equipped with appropriate skills and knowledge to care for patients safely and competently and to avert possible complications. Inadequate knowledge, variation in practices and poor suctioning technique may lead to nosocomial infections, prolonged hospitalisation, airway complications and even death. This set of practice guidelines will augment existing knowledge for nurses and health care providers carry out competent and consistent practice in the care of a patient with tracheostomy.

This set of evidence-based guidelines has been written as an educational resource and guide for health providers caring for adult patients with tracheostomy. I encourage you to adopt these best practices.

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1 INTRODUCTION

1.1 Background

A tracheostomy is an opening created by a surgical incision into the anterior wall of the trachea to make an exterior opening or stoma. This procedure is called a tracheotomy. A tracheostomy tube is inserted at the time of surgery to maintain a patent airway. The aim of tracheostomy is to bypass obstruction in the upper airway; to aid prolonged and assisted ventilation; and to facilitate the removal of respiratory secretions. Tracheostomy can be a temporary solution or a long-term measure.

Caring for a patient with tracheostomy requires the nurse to have a thorough understanding of airway management, and maintain an ongoing assessment of the patient's respiratory function. Critical situations would require immediate intervention to ensure that respiratory arrest is avoided.

1.2 Definitions

Preoxygenation – refers to the administration of oxygen before suctioning.

(Oh and Seo, 2003)

Hyperoxygenation – refers to the administration of oxygen at a concentration higher than the amount the patient usually receives or requires.

(Oh and Seo, 2003)

Humidification – defined as increasing the moisture content of the inspired air.

(St George's Healthcare NHS Trust, 2000)

Heat Moisture Exchanger (HME) – a cylindrical device (passive humidifier) that is attached to the tracheostomy tube to trap heat and moisture from the patient's exhaled gas and a proportion of it delivered during inspiration.

(St George's Healthcare NHS Trust, 2000)

1.3 Scope of the Guidelines

These clinical practice guidelines are primarily tools for guiding the delivery of nursing care to adult patients with tracheostomy. The guidelines do not cover the care of children with tracheostomy.

2 DEVELOPMENT OF GUIDELINES

2.1 Training and Guidance

Members of the workgroup attended a two-day workshop conducted by Dr Edwin Chan & Dr Miny Samuel of the then Clinical Trials & Epidemiology Research Unit, to learn and discuss the theory and practical issues of developing evidence-based guidelines.

2.2 Strategy and Literature Review

The workgroup performed the literature search systematically using the key words 'tracheostomy', 'tracheostomy tube', 'endotracheal intubation', 'suctioning', 'airway', 'weaning', 'decannulation', 'humidification', 'catheter' in the following electronic databases: CINAHL, MEDLINE, and the Cochrane Library. National Guideline Clearinghouse was searched for related guidelines. The Joanna Briggs Institute for Evidence Based Nursing and Midwifery website was also searched for any relevant evidenced-based systematic reviews and guidelines. Personal communication with the Royal Free Hampstead NHS Trust was also sought to make reference to the guidelines they had developed.

2.3 Evaluation of Evidence and Grading of Recommendations

We have adopted the revised Scottish Intercollegiate Guidelines Network (SIGN) system which gives clear guidance on how to evaluate the design of individual studies and grade each study's level of evidence (see 2.3.1 and 2.3.2); and how to assign a grade to the recommendation after taking into account external validity, result consistency, local constraints and expert opinion (see 2.3.3). For areas where available evidence was inconsistent or inconclusive, recommendations were made based on the clinical experience and judgement of the workgroup or expert committee reports.

2.3.1 Individual Study Validity Rating

All primary studies and reviews addressing a particular topic were appraised using a SIGN checklist appropriate to the study's design. These were individually rated for internal validity using the system below:

Rating	Description
++	All or most of the criteria have been fulfilled. Where they have not been fulfilled the conclusions of the study or review are thought very unlikely to alter.
+	Some of the criteria have been fulfilled. Those criteria that have not been fulfilled or not adequately described are thought unlikely to alter the conclusions.
-	Few or no criteria fulfilled. The conclusions of the study are thought likely or very likely to alter.

2.3.2 Levels of Evidence

Each study is assigned a level of evidence by combining the design designation and its validity rating using the system below:

Level	Type of Evidence
1 ⁺⁺	High quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias.
1 ⁺	Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias.
1 ⁻	Meta-analyses, systematic reviews, or RCTs with a high risk of bias.
2 ⁺⁺	High quality systematic reviews of case-control or cohort or studies. High quality case-control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal.
2 ⁺	Well-conducted case-control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal.
2 ⁻	Case-control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal.
3	Non-analytic studies e.g. case reports, case series.
4	Expert opinion.

2.3.3 Grades of Recommendation

The detailed results of each study and mitigating local circumstances were considered in formulation of each recommendation which was then graded using the system below:

Grade	Recommendation
A	At least one meta-analysis, systematic review, or RCT rated as 1 ⁺⁺ , and directly applicable to the target population; or A body of evidence, consisting principally of studies rated as 1 ⁺ , directly applicable to the target population, and demonstrating overall consistency of results.
B	A body of evidence, including studies rated as 2 ⁺⁺ , directly applicable to the target population, and demonstrating overall consistency of results; or Extrapolated evidence from studies rated as 1 ⁺⁺ or 1 ⁺ .
C	A body of evidence including studies rated as 2 ⁺ , directly applicable to the target population and demonstrating overall consistency or results; or Extrapolated evidence from studies rated as 2 ⁺⁺ .
D	Evidence level 3 or 4 ; or Extrapolated evidence from studies rated as 2 ⁺ .

2.3.4 Interpretation of the D/4 grading

The grading system emphasises the quality of the experimental support underpinning each recommendation. The grading D/4 was assigned in cases where:

- it would be unreasonable to conduct a RCT because the correct practice is logically obvious;
- recommendations were derived from existing high quality

evidence-based guidelines. We alert the user to this special status by appending the initials of their source e.g. D/4 – American Association for Respiratory Care, 1992 (AARC, 1992); Centers for Disease Control and Prevention (CDC, 2004); Joanna Briggs Institute (Thompson, 2000) refer to as (JBI, 2000).

2.4 Guidelines Review and Revision

Drafts of the guidelines were circulated to healthcare institutions for peer review on validity, reliability and practicality of the recommendations.

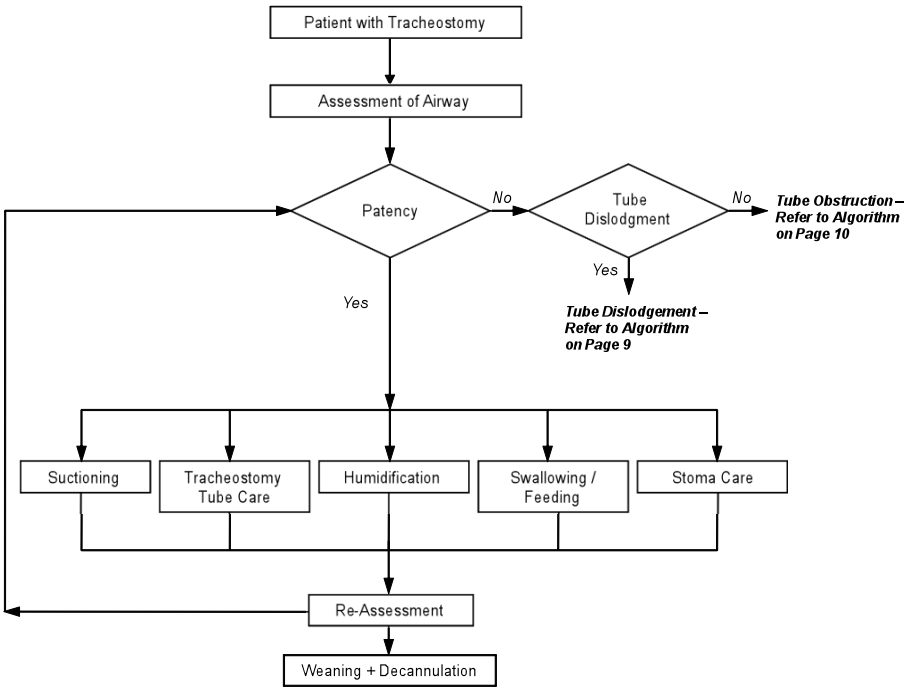
These guidelines will be reviewed and revised periodically to incorporate the latest relevant evidence and expert clinical opinion.

2.5 Limitations

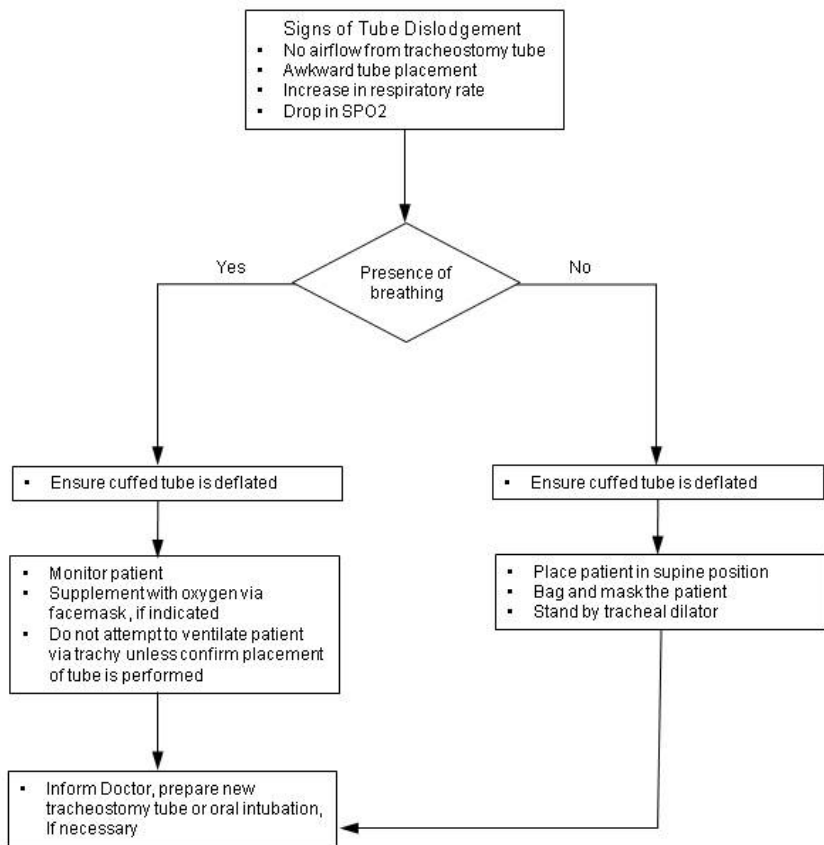
These guidelines offer recommendations that are based on available scientific evidence and professional judgement. They are not intended as the legal standard of care.

Users of these guidelines should determine the appropriate and safe patient care practices based on assessment of the circumstances of the particular patient, their own clinical experiences and their knowledge of the most recent research findings.

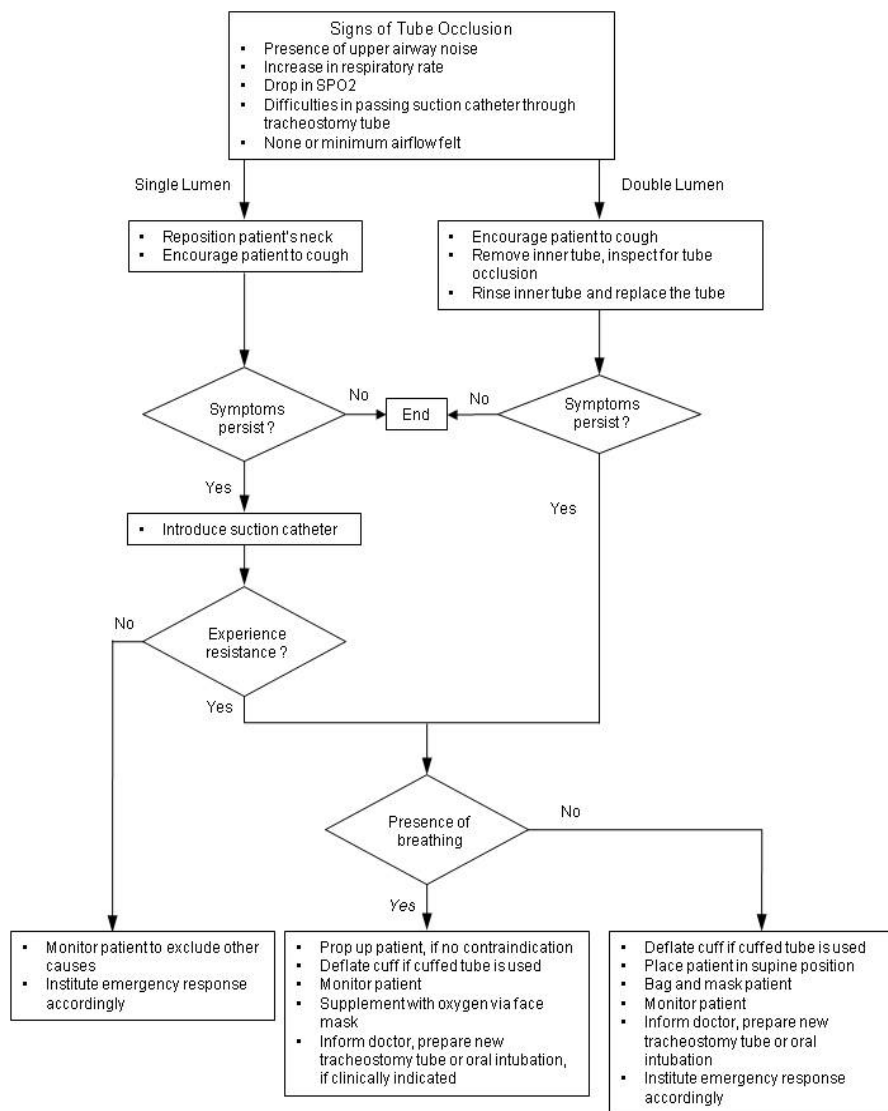
3 ALGORITHM FOR NURSING MANAGEMENT OF ADULT PATIENT WITH TRACHEOSTOMY



4 ALGORITHM FOR MANAGEMENT OF EMERGENCY - TUBE DISLODGE MENT



5 ALGORITHM FOR MANAGEMENT OF EMERGENCY - TUBE OBSTRUCTION



6 ASSESSMENT

6.1 Clinical Assessment of Airway

- Assess all patients with tracheostomy for airway patency which include the absence of the following:
 - abnormal breath sounds such as 'whistling', crepitus or diminished sounds
 - irregular breathing patterns
 - increase in coughing / inability to cough
 - cyanosis / deterioration in oxygen saturation

(D4)

Rationale:

Early detection of any change in respiratory status will ensure early intervention to prevent complication related to the artificial airway.

(Griggs, 1998; Kim and Julie, 2003)

7 SUCTIONING

7.1 Frequency of Suctioning

- Perform tracheostomy suctioning at predetermined time points is to be avoided. (D/4 - JBI, 2000)

Rationale:

A thorough assessment of the respiratory status should be done to establish need for tracheal suctioning. Suctioning should be performed based on the patient's respiratory status, the consistency of secretion and patient's ability to cough and clear secretions from his or her airway.

(Griggs, 1998; Hooper, 1996)

Applying suction is potentially a harmful procedure, which may cause hypoxaemia, bronchospasm, arrhythmias, bleeding, infection or trauma. It should be performed when clinically indicated.

(JBI, 2000; Kim and Julie, 2003)

7.2 Asepsis

- Apply aseptic technique when performing tracheostomy suctioning. (D/4 - JBI, 2000)

Rationale:

Bacteria can be introduced during tracheostomy suctioning. This can lead to tracheitis, pneumonia and fistula formation.

(Griggs, 1998; JBI, 2000)

7.3 Suction Catheters

7.3.1 Choice of Catheter

- Use multiple-eyed catheters. (D/4 - JBI, 2000)

- Use closed system suction catheter for patients on ventilators. (D/4)

Rationale:

Catheters with multiple side holes appear to invaginate mucosa less frequently than single side-hole catheters. (JBI, 2000)

Multiple-eyed catheter causes less damage to the tracheal mucosa than the single-eyed catheter because it dissipates the focus of suction pressure, making it less likely for the mucosa to be suctioned into the side holes. (Griggs, 1998)

Closed system suction catheters allow ventilator pressures to be maintained during suctioning of the critically ill patients. (Griggs, 1998)

7.3.2 Size of Catheters

- Determine catheter size using the following formula:
 - Divide the tracheostomy tube inner diameter by two (2) which gives the external diameter of the suction catheter. Multiply this result by three (3) to obtain the French gauge (FG).

$$\frac{\text{Tracheostomy size (inner diameter)}}{2} \times 3 = \text{FG of suction catheter}$$

(D/4 – St James’s Hospital/Royal Victoria Eye & Ear Hospital, 2000)

Rationale:

This ensures that the suction catheter is equal or less than half of the internal diameter of the tracheostomy tube. (St James’s Hospital/Royal Victoria Eye & Ear Hospital, 2000)

Change in negative pressure in the lungs can be related to the ratio of diameter of the suction catheter to the inside diameter of tube.

(JBI, 2000)

Catheter size should be determined appropriately to reduce the risk of total occlusion of tracheostomy tube during suctioning. A large catheter will occlude the tracheostomy tube which may cause hypoxia.

(The Royal Free Hampstead NHS Trust, 2002)

7.4 Suctioning Pressure

- Regulate the suction pressure for adults between 100 mmHg and 120 mmHg.

(D/4 - The Royal Free Hampstead NHS Trust, 2002)

Rationale:

High pressure can cause atelectasis, mucosal damage and catheter collapse.

(Serra, 2000; Carroll, 2003; Griggs, 1998)

7.5 Suctioning Duration

- Perform suctioning for not more than 15 seconds.

(D/4 - JBI, 2000)

Rationale:

Prolonged suctioning increases the risk of hypoxia and trauma.

(The Royal Free Hampstead NHS Trust, 2002;
JBI, 2000; Kim and Julie, 2003)

7.6 Preoxygenation

- Preoxygenate patient prior to performing suctioning if necessary.

(D/4 - JBI, 2000)

Rationale:

Preoxygenation prior to suctioning may potentially minimise suctioning induced hypoxaemia.

(JBI, 2000)

7.7 Normal Saline Instillation

- Do not instil Normal Saline routinely to liquefy secretion.

(D/4 - JBI, 2000)

Rationale

Normal Saline instillation provides no physiological benefits in removing thick and tenacious secretions. Administering a bolus of Normal Saline to liquefy secretion is not substantiated in the literature.

(JBI, 2000)

Suctioning should be done with the intention to maximise the quantity of secretions removed and minimize the hazards associated with the procedure. Normal Saline does not help to loosen and dislodge secretions. Rather it stimulates cough thus dislodging secretion.

(Raymond, 1995)

8 HUMIDIFICATION

8.1 Devices

- Humidify the inspired gas using one of the following devices:
 - Humidifier system – heated or non-heated
 - Heat Moisture Exchanger (HME) Filter

(D/4)

Rationale:

These devices provide humidification so as to enhance normal respiratory tract function and facilitate easy removal / clearance of secretions.

(The Royal Free Hampstead NHS Trust, 2002;
St James's Hospital/Royal Victoria Eye & Ear Hospital, 2000)

8.1.1 Methods of Humidification

- Use the following criteria to determine the methods of humidification:
 - Heated Humidifiers – recommended for patients with:
 - New tracheostomy tubes
 - Dehydration
 - Immobility
 - Tenacious secretions
 - Prolonged mechanical ventilation (>7 days)
 - Hypothermia

- Heat Moisture Exchanger (HME) – recommended for patients with:
 - Adequate hydration
 - Mobility
 - Less copious secretions
 - Anticipation for discharge

- Contraindications for HME – Not suitable for patients with:
 - Thick, copious or bloody secretions
 - An expired tidal volume less than 70% of delivered tidal volume and patients with COPD condition
 - Weak respiratory muscles, who will be difficult to wean off the ventilator

(D/4)

Rationale:

Thick, copious or bloody secretions increases risk of occlusion of airway. There is an increased risk of augmented airway resistance and dead space for patients with COPD as they have weak respiratory muscles and reduced lung reserve.

(St James’s Hospital/Royal Victoria Eye & Ear Hospital, 2000)

8.2 Heat Moisture Exchanger

- Change HME daily, and whenever visibly soiled or according to manufacturer’s recommendation.

(D/4)

Rationale:

Secretions inside the HME can block the filter and increase the work of breathing.

(St George’s Healthcare Trust NHS, 2000)

8.3 Heated Humidification

- Check, empty and discard condensate along the tubing of the heated humidification system. Do not drain condensate into the humidifier reservoir.

(D/4)

Rationale:

Condensation along the tubing can obstruct the airflow and is considered an infectious waste.

(AARC, 1992; CDC, 2004)

8.4 Humidifier Water

- Use only sterile water to fill reservoir of humidifier or use single reservoir unit with closed water feed system.

(D/4 - CDC, 2004)

Rationale:

The use of sterile water is to prevent introduction of infection.

(CDC, 2004)

8.5 Humidifier Circuit Tubing

- Change the circuit when it is visibly soiled.

(D/4 - CDC, 2004)

Rationale:

Soiled condensate in the circuit can be a reservoir for infection.

(CDC, 2004)

9 TRACHEOSTOMY TUBE CARE

9.1 Cuff Tubes

9.1.1 Cuff Pressure

- Check the cuff pressure using a hand pressure gauge every shift or a minimum of eight-hourly. Maintain the cuff pressure between 15-25 cm H₂O, unless medically indicated.

(D/4)

Rationale:

Constant unchecked cuff pressure may cause mucosal necrosis or stenosis.

(Kim and Julie, 2003)

Over inflation of the cuff can cause trauma to the tracheal mucosa. Under inflation of the cuff fails to make an adequate seal and the patient is at risk of aspiration.

(St George's Healthcare NHS Trust, 2000)

9.1.2 Cuff Inflation

- Inflate cuff of tracheostomy tube only if medically indicated (e.g. on positive ventilation or high risk for aspiration).

(D/4)

Rationale:

Cuff inflation may reduce risk of aspiration.

(Oxford Radcliffe NHS Hospital Trust, 2005)

9.2 Inner Cannula Care

- Inspect the inner cannula at least six-hourly to ensure patency.

(D/4)

- Clean the inner cannula using sterile water or as according to manufacturer's instruction prior to reinsertion.
(D/4 - CDC, 2004)

Rationale:

The inner cannula is inspected at least six hourly to reduce the risk of tube obstruction due to a build up of secretions.
(Kim and Julie, 2003)

Respiratory equipment is not recommended to be rinsed under tap water due to the risk of contamination and increased risk of nosocomial pneumonia.
(CDC, 2004)

10 STOMA CARE

10.1 Frequency of Dressing Change

- Keep the dressing dry, change stoma dressing and tapes daily and/or whenever soiled.

(D/4)

Rationale:

Dressings and tapes are changed daily or whenever soiled to prevent maceration of the skin, maintain skin integrity and minimise the risk of infection.

(Oxford Radcliffe NHS Hospitals Trust, 2005)

10.2 Stoma Infection

- Observe for the following signs and symptoms of stoma infection:
 - excessive leakage of secretion
 - foul smell
 - erythema around the stoma site
 - erosion of stoma site

(D4)

Rationale:

Early detection of stoma infection will help to maintain integrity of the skin and thus preventing infection.

11 WEANING

11.1 Weaning must be planned, clearly documented and regularly evaluated by the members of the multi-disciplinary team.

- Wean the patient under the following criteria:
 - Reversal of the medical condition that originally necessitate intubations
 - Adequate ventilatory reserve
 - Patent upper airway
 - Adequate nutritional state
 - Ability to cough and clear airway secretions
 - Absence of respiratory infection
 - Presence of psychosocial support

(D/4)

Rationale:

A planned weaning is critical for successful weaning and preventing weaning-related complications.

A number of criteria are used to predict the patient's readiness for weaning. The decision to wean a patient should be taken by the multi-disciplinary team.

(Elizabeth, 1999)

11.2 Carry out weaning gradually according to manufacturers' instruction and institutions' protocol.

(D/4)

Rationale:

Increasing the time period builds up patient's confidence and respiratory muscle strength.

(St George's Healthcare NHS Trust, 2000)

Gradually increase patient's respiratory muscle strength, avoids over exertion and facilitates breathing through the upper airway without losing access to the airway if patient's condition deteriorates.

(St George's Healthcare NHS Trust, 2000)

- 11.3 Observe for any signs of increased respiratory distress such as noisy breathing, excessive gurgling sounds and hypoxia during the weaning procedure.

(D/4)

Rationale:

Vigilant monitoring of the patient's oxygen saturation is to detect early indication that patient's airflow may be restricted.

(St George's Healthcare NHS Trust, 2000)

12 SWALLOWING / FEEDING

12.1 Swallowing Assessment

- Refer tracheostomised patient with swallowing difficulty to speech therapist for assessment before commencing oral feeding.

(D/4)

Rationale:

The presence of a tracheostomy can adversely affect swallowing function in patients. A speech therapist will be able to perform in-depth investigations such as dysphagia screening. This is to reduce the risk of aspiration, which may lead to aspiration pneumonia.

(St George's Healthcare NHS Trust, 2000)

13 TRACHEOSTOMY EMERGENCY

13.1 Tube Dislodgement

'Tube dislodgement is displacement of tracheostomy tube by unintentional and unplanned tube removal. The displacement or dislodgement can be a partial or complete tube come out of the stoma or out of the trachea into the soft tissue of the neck' (The Royal Free Hampstead NHS Trust, 2002).

- Establish presence of spontaneous breathing when tube dislodgement is confirmed.
- If breathing is present, ensure cuffed tube is deflated and provide patient with supplement oxygen via facemask.
- Emergency oral intubation may be indicated if reinsertion of a new tracheostomy tube fails.

(D4 – The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)

Rationale:

Accidental tube dislodgement is a clinical emergency especially if it occurs within the first 7 days post operatively.

(The Royal Free Hampstead NHS Trust, 2002; JBI 2000)

Establish presence or absence of breathing will determine the subsequent management of patient.

(The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)

Absence of spontaneous breathing indicates the need to proceed with emergency airway management.

(Oxford Radcliffe NHS Hospital Trust, 2005)

Provide oxygen via displaced tube may result in ineffective oxygenation and ventilation of oxygen into the surrounding tissue around the trachea.

(Oxford Radcliffe NHS Hospital Trust, 2005)

Deflating cuff is necessary to allow airflow surrounding the displaced tube to the lower airway to provide adequate oxygenation to patient.

(The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)

If reinsertion of a new tracheostomy tube fails, securing airway via oral intubation is essential to prevent complication like hypoxia.

(The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)

13.2 Tube Obstruction

- Acute dyspnoea is commonly caused by partial blockage or complete blockage of the tracheostomy tube by a mucous plug.
(D/4 - The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)
- Ask the patient to cough.
(D/4)
- Remove inner cannula.
(D/4 - The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)
- Apply suctioning to remove the secretions.
(D/4 - The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)

- Ventilate the patient (and secure airway patency)
 - Deflate the cuff tube (if this is in-situ), bag and mask patient.
 - Call for medical help.
 - Prepare for change of tracheostomy tube or oral intubation.

(D/4 - The Royal Free Hampstead NHS Trust, 2002;
Oxford Radcliffe NHS Hospital Trust, 2005)

Rationale:

The crust of mucus plug is usually attached to the end of the inner or outer tube.

(Serra, 2000)

A strong, vigorous cough may be all that is needed to expel the secretions.

(Serra, 2000;
St James's Hospital/Royal Victoria Eye & Ear Hospital, 2000)

Secretions that are stuck in the inner tube will be automatically removed when the inner tube is taken out.

(St James's Hospital/Royal Victoria Eye & Ear Hospital, 2000)

If coughing and removing the inner tube fails to remove the blockage, suctioning is indicated to remove secretions that are present at patient's lower airway.

(St James's Hospital/Royal Victoria Eye & Ear Hospital, 2000)

Timely and optimal airway management is critical to improve functional and survival outcome of patient.

(Serra, 2000;
St James's Hospital/Royal Victoria Eye & Ear Hospital, 2000)

14 QUALITY ASSURANCE

Healthcare administrators should consider these guidelines in their in-house quality assurance programmes. Nurses should critically review the implications of these guidelines for their routine care delivery, trainee teaching and patient education needs.

14.1 Parameters for Evaluation

In the nursing management of patients with tracheostomy, the quality of care may be evaluated using indicators such as:

- Prevalence rate of tracheostomy-related infections
- Number of tracheostomy-related adverse events
- Percentage of tracheostomised patients successfully weaned

Closer monitoring can be conducted for further evaluation of the quality in the nursing management of tracheostomised patients.

14.2 Management Role

Healthcare administrators, together with quality assurance teams, should ensure that the targets for the outcome indicators are met. They may benchmark against hospitals or institutions that perform well.

15 IMPLEMENTATION OF GUIDELINES

It is expected that these guidelines will be adopted after discussion with healthcare administrators and clinical staff. They may review how these guidelines may complement or be incorporated into their existing institution protocols.

Feedback may be directed to the Ministry of Health for consideration for future review.

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17 GLOSSARY

Type and Characteristics of Tracheostomy Tubes:

1. Single lumen tube - Tracheostomy tube with one outer tube. This tube is meant for short term use.



Figure 1. Cuffless Single Lumen Tube

2. Double lumen tube - Tracheostomy tube which consists of an inner and an outer tube fitted snugly together. The outer lumen is secured to the skin while the inner tube can be removed for cleaning.



Figure 2. Double Lumen Tube

3. Long, adjustable flange tracheostomy tube - Single lumen (without an inner lumen) tube with an adjustable flange and a non-detachable locking device / knob. The tube is designed for patients with abnormal or increased distance from skin to trachea (deep set tracheas), patients with difficult anatomy e.g. short neck. The tube can be adjusted to the desired length.

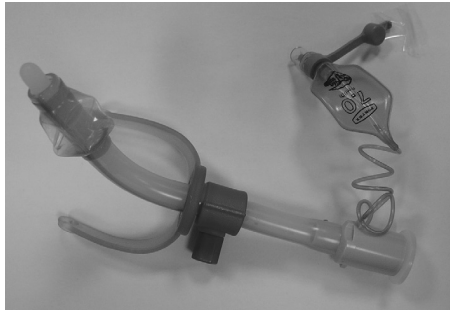


Figure 3. Long flange adjustable single lumen tracheostomy tube

4. Cuffed tube - Tube with a cuff / balloon at the distal end. It provides a seal between the tube and the trachea which reduces the risk of gross aspiration and permits positive pressure ventilation.

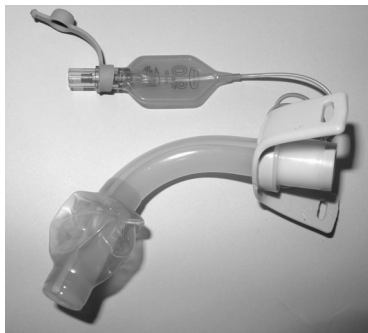


Figure 4. Cuffed Tube

5. Uncuffed (cuffless) tube - Tube with no cuff / balloon. It protects airway but requires clearance of secretions and airway maintenance.



Figure 5. Uncuffed Single Lumen Tube

6. Fenestrated tube - Tube with an opening in the arch of the cannula. It (the opening) permits airflow over (through) vocal cord for speech and allows patients to verbalise.



Figure 6. Fenestrated Tube

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APPENDIX 1 SELF ASSESSMENT

1. Patients with tracheostomy should be assessed for airway patency to prevent complications.
True/False
2. When nursing a patient with tracheostomy, the routine is to perform suctioning procedure on a regular basis.
True/False
3. Suction pressure of 200 mm Hg is regulated to remove mucus effectively from the tracheostomy tube.
True/False
4. The duration for per suctioning should be less than 15 seconds so as to reduce the risk of hypoxia and trauma.
True/False
5. Heat Moisture Exchanger Filters is harmful for patients with thick, copious and bloody secretions.
True/False
6. When a patient has a cuffed-tracheostomy tube in-situ, it is important to check cuff pressure regularly.
True/False
7. The presence of a tracheostomy might have effect on the swallowing function in patients.
True/False
8. The health care provider must observe the patient closely for any sign of respiratory distress when the tracheostomy tube is capped.
True/False
9. Tracheostomy suctioning is an aseptic procedure.
True/False
10. The immediate step to a suspected tube obstruction of a dual lumen tracheostomy tube is to change a new tube.
True/False

Answers

<u>Questions</u>	<u>Answer</u>	<u>Reference</u>
1	True	Refer to guideline 6.1
2	False	Refer to guideline 7.1
3	False	Refer to guideline 7.4
4	True	Refer to guideline 7.5
5	True	Refer to guideline 8.1.1
6	True	Refer to guideline 9.1.1
7	True	Refer to guideline 12.1
8	True	Refer to guideline 11.3
9	True	Refer to guideline 7.2
10	False	Refer to guideline 13.2

