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Document Title: Policy and Procedure of Inflation and Deflation of Cuffed Tracheostomy Tube

Approval Process

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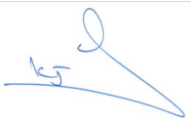
Approved by	Dr. Kadhim Sulaiman	DG of DGSMC	Ministry of Health	Dec 2021	

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Acknowledgement

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Acronyms:

ICU	Intensive Care Unit
MLT	Minimal Leak Technique
MOV	Minimal Occlusive Volume
RCS	Respiratory Care Services
TT	Tracheostomy Tube

Policy and Procedure of Inflation and Deflation of Cuffed Tracheostomy Tube

1. Introduction

The delivery of mechanical ventilation support to a patient with a tracheostomy requires the use of a cuffed tracheostomy tube. Patients with cuffed tracheostomy tubes will have their cuff pressures monitored in order to main between 20 and 30cmH2O. Appropriate management of a cuffed tube can prevent damage to the tracheal mucosa, which at a later date may result in tracheal stenosis. The inflated cuff, an internal balloon that surrounds the outer cannula or body of the tracheotomy tube, fills the tracheal space around the tube and prevents breath from escaping through the upper airway tracheostomy tubes to optimize ventilation, airway protection and tracheal wall perfusion. Appropriate cuff inflation and deflation regimes will be in place for all patients with cuffed tracheostomy tube. Too little pressure may mean that the cuff fails to achieve an adequate seal against the tracheal mucosa and the patient is at risk of a severe air leak developing causing hypoventilation. Although the cuff does not prevent aspiration occurring, an adequate seal may minimize the associated risks.

2. Scope

This policy is applicable for respiratory therapist and other health care professionals working with patients who have a cuffed tracheostomy tube in all healthcare institutions at the Ministry of Health.

3. Purpose

The purpose of this policy is:

3.1. To be a reference for Respiratory therapist, Nurses and doctors, Medical Staff, Speech Pathologists, Physiotherapists to follow with patient who has cuffed tracheostomy tube and require cuff inflation and deflation

3.2. To standardize measurement of pressure being exerted upon the tracheal wall by the endotracheal or tracheostomy tube cuff.

3.3. To guide staff in the procedures that they should undertake when caring for a person with a tracheostomy in order to ensure the patient's safety and minimize the occurrence of associated risks and assist in their recovery.

4. Definitions

4.1 Cuff deflation: The withdrawal of air from the tracheostomy tube cuff, or withdrawal of water from a Bivona Tight-To-Shaft (TTS) tracheostomy tube cuff. Bivona Fome-cuff tracheostomy tubes are only used in the Intensive Care Unit (ICU), not in ward based patients. This tube cuff can self-inflate and is unsafe for ward use. Deflating the cuff restores airflow through the upper airway and provides the opportunity to assess the patient's voice, cough and swallow

4.2 Cuff re-inflation: The replacement of the correct amount of air or water (Bivona TTS only) into the cuff.

4.3 Minimal Occlusive Volume (MOV) Technique Ventilated patient: inflate the cuff until there is no leak audible in the upper airway (listen on the side of the thyroid cartilage with a stethoscope) Non-ventilated patient who can phonate well: inflate the cuff until no voice sounds are audible

5. Policy

5.1. The cuff shall be kept inflated when using a ventilator or keep deflated at all times unless a written order is obtained stating otherwise.

5.2. Patients with cuffed tracheostomy tubes shall have their cuff pressures monitored in order for it to remain between 20 and 30cmH2O.

5.3. Patients with a water filled cuff shall have the minimum amount of water in their cuff to achieve a seal. This will be calculated using minimal occlusive volume MOV technique

5.4. Appropriate cuff inflation and deflation regimes shall be in place for all patients with cuffed tracheostomy tubes to optimize ventilation, airway protection and tracheal wall perfusion.

5.5. Further information or advice relating to general tracheostomy care or the care of a specific person with a tracheostomy shall always be sought from a suitably qualified professional.

6. Procedure

6.1 Review the patient's order sheet for the doctor's specific instructions.

6.2 Obtain the necessary equipment and assemble equipment at patient's bedside.

Equipment includes:

6.2.1 10mL syringe

6.2.2 Suction catheters, standard size 12Fs (size 14F may be requested at the discretion of the Physiotherapist)

6.2.3 Functioning suction unit with vacuum source and connecting tube

6.2.4 Clean disposable gloves

6.2.5 Cuff manometer

6.2.6 Stethoscope

6.3 Explain to patient what you are about to do and be reassuring

6.4 Ensure the patient is comfortable and observations are stable

6.5 Wash your hands and observe universal precautions

6.6 Inflate the cuff : Cuff Inflation

6.6.1 Initially pull back the syringe plunger to reflect the number of cc's of air originally removed from the cuff during deflation and record on the ventilator flow-sheet.

6.6.2 Insert the tip of the syringe in the balloon port. Re-inflate the cuff using a 10ml syringe introducing air slowly so as not to cause discomfort.

6.6.3 Push the plunger inward until the plunger is set at "0". You will see the balloon inflate (bulge)

6.6.4 Check by touch to see if the balloon is inflated. Verify by monitoring cuff pressure with cuff manometer, minimal leak technique (MLT), or minimal occlusion technique (MOT) that cuff is sufficiently inflated.

6.6.5 Check that the cuff pressure is set at the correct level, which is 20-30 cmH2O using a manometer. Correct cuff inflation pressure is 20-30cmH2O (15-22mmHg). Over inflation can cause damage to the tracheal mucosa.

6.6.6 Assess the need for re-inflation and re-inflate if required by introducing any additional cc's of air required for cuff.

6.6.7 Document procedure as well as verification process on ventilator flow-sheet.

6.6.8 Store syringe at patient's designated bedside area.

6.7 Cuff Inflation Considerations

6.7.1 This is ideally a two-person procedure. Senior physiotherapists or Respiratory therapist and senior nursing staff may choose to perform this as a one person procedure.

6.7.2 An inflated cuff prevents air leaks in the ventilated patient.

6.7.3 An inflated cuff provides some airway protection against the aspiration of oral secretions.

6.7.4 An overinflated cuff can result in damage to the tracheal wall.

6.7.5 Thoroughly suction to remove any stagnant secretions which may have collected in the patient's throat and tracheotomy tube.

6.8 Deflate the cuff : Cuff Deflation

6.8.1 Explain the procedure to the patient and note that it may cause them to cough.

6.8.2 Prepare a suction catheter for use.

6.8.3 Remove all the air from the cuff by attaching a 10ml syringe to the valve of the pilot cuff and slowly withdraw the plunger to deflate the cuff.

6.8.4 Insert the tip of the syringe with the plunger set at "0" into the balloon port.

6.8.5 Pull back on the plunger until the balloon is flat (Note the number of cc's from the cuff during deflation and record appropriately on the ventilator flow-sheet).

6.8.6 Remove the syringe from the balloon port. Return the syringe to proper location area at patient's bedside.

6.8.7 Instructed the patient to attempt to swallow as the cuff is deflated. The staff member inserts the suction catheter into the tracheostomy tube and suctions any secretions which may have been released into the trachea by the cuff deflation.

6.8.8 For a water filled cuff (Bivona), establish the amount of water required to achieve a cuff seal using MOV technique, If this is not possible, briefly inflate the cuff with air until a pressure of 20-30cmH2O is achieved.

6.8.9 Remove air from the cuff and introduce an equal number of mls of sterile water.

6.8.10 Do not attach a manometer to a water filled cuff this will damage the manometer.

6.8.11 Record in the patient's history that the cuff deflation was performed.

6.8.12 Document the volume and nature of any above cuff secretions and the duration of cuff deflation.

6.8.13 Assess patient comfort, respiratory rate and oxygen saturation throughout the procedure.

6.9 Cuff Deflation Considerations:

6.9.1 Inappropriate cuff deflation can lead to aspiration of oral secretions, respiratory distress and aspiration pneumonia.

6.9.2 A deflated cuff on a ventilated patient can lead to under ventilation due to air leak. Ventilated patients who have their cuffs deflated must have their ventilation parameters changed by staff trained in this practice.

6.9.3 1-2 qualified staff members are required to carry out the cuff deflation procedure. Thoroughly suction the nasopharynx, oropharynx and above the cuff to prevent aspirations of secretions which may collect around the cuff while it is inflated.

7. Responsibilities

7.1. Respiratory Therapists are responsible for:

7.1.1. Monitoring intra-cuff pressures of patients with endotracheal and tracheostomy tubes during ventilation to minimize the possibility of tracheal wall damage.

7.1.2. Ordering the volume of air to inflate and measure with a pressure gauge.

7.1.3. Documenting the volume of air in the patient care plan and nursing record.

7.2. Nursing Staff is responsible for:

7.2.1. Inflating the cuff to the prescribed volume of air with a syringe if cuff is deflated.

8. Document History and Version Control

Document History and Version Control			
Version	**Description of Amendment**	**Author**	**Review Date**
01	Initial Release	Respiratory Care Services Team	May/ 2024
02			
03			

Written by	Reviewed by	Approved by
Respiratory Care Services Team	Khalsa Al Siyabi; Dr. Ramla Al Qasab	Dr. Kadhim Sulaiman

9. Related Documents:

There are no related documents for this policy

10. References:

Title of book/ journal/ articles/ Website	Author	Year of publication	Page
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AARC Clinical Practice Guidelines		May 2012	
Tracheostomy Tubes. Respiratory Care.	Hess, D and Altobelli, N.,	2014	59(6): 956-974.
Evaluation of an Intervention to Maintain Endotracheal Tube Cuff Pressure Within Therapeutic Range, Am J Crit Care	Mary Lou Sole, RN, PhD, CCNS,	2011 Mar	20(2): 109–118.