Acacium Group

Humidification of a Client's Tracheostomy

Procedure Reference | SOP VENT 03

Version | V4.1

Procedure Name	Humidification of a Client's Tracheostomy
Purpose of Document	To ensure that the correct preparation, procedure & outcome are achieved by implementation of a consistent and systematic approach to humidification
Target Audience	All Nurses & appropriately trained carers
Version	V4.1
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Equality Impact Assessment (EIA) Form	Acacium Group is committed to Equality, Diversity and Inclusion and in line with our values, we strive to ensure that everyone that is part of the Acacium community is not disadvantaged or discriminated against given their individual need or characteristics. To support this, an Equality Impact Assessment has been undertaken on this policy/procedure. This information is held centrally and can be requested from the Clinical Governance Team.
About Acacium Group	Details of all Acacium Group trading companies that this policy applies to are detailed within Appendix A

Document History			
Version	**Date**	**Changes made/comments**	**By whom**
V1	Dec 2016	Implementation of document history page	KNF/VM
V1	Jul 2018	Review	KMS/VM
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1. Introduction

Humidification may be defined as increasing the moisture content of air. During normal breathing, inspired air is warmed, filtered and moistened by ciliated epithelial cells in the nose and upper airways. However, these humidifying functions are bypassed by a tracheostomy tube or laryngectomy and air inspired will be cold and dry.

2. Aim

To provide artificial humidification to ensure that the upper respiratory pathways remain moist in clients with a tracheostomy.

3. General

The hospital/specified consultant or respiratory team in charge of the clients care should advise on what they consider to be appropriate humidification methods for the client. Details of this may be included within the clients discharge letter or ventilation prescription. All details should be accurately documented within the clients care plan.

Humidification will help

- Provide adequate humidification of chest secretions
- Moisten airway and prevent dry airway
- Help maintain body temperature

Inadequate humidification can result in a number of physiological changes which can be serious to the client, be irreversible and potentially fatal:

- Retention of viscous, tenacious secretions
- Impaired mucociliary transport
- Airway obstruction and occlusion due to thick secretions
- Inflammatory changes and necrosis of epithelium
- Impaired cilia activity
- Destruction of cellular surface of airway causing inflammation, ulceration and bleeding
- Reduction in lung function (e.g. atelectasis/pneumonia)
- Increased risk of bacterial infiltration. (tracheostomy.org.uk)

Methods of Artificial Humidification

Heated Humidification

Heated Humidification operates actively by increasing the heat and water vapour content of inspired gas. Gas can be delivered fully saturated at core temperature, depending on the system used and the prescribed setting. It is indicated for tracheostomy clients requiring mechanical ventilation or oxygen therapy for prolonged length of time

Cold Humidification

Cold humidification bubbles gas through cold water, but only delivers a relative humidity of around 50% at ambient temperatures.

For tracheostomy clients on high inspiratory flow rates of oxygen with tenacious secretions or clients complaining of subjective dryness a heated device is indicated and can be incorporated into the circuit.

Condensation: This should never be drained back into the humidifier reservoir, as this could be an infection control risk. Make sure that the tubing is in a downward position to reduce the risk of aspiration.

4. Saline Nebulisation

The nebuliser unit converts saline into a supersaturated aerosol of liquid droplets which penetrates the lung moistening the airways. It may be indicated in tracheostomy patients who are mechanically ventilated, receiving oxygen therapy or self-ventilating on air. Saline nebulisers help to reduce the viscosity of secretions which makes them easier to remove by suction or cough. This must be prescribed for administration.

5. Heat Moist Exchanger (HMEs)

HMEs consists of rolls of metal gauze or a condenser element like propylene sponge/fibre sheet/corrugated paper. These products are placed either directly onto the end of the tracheostomy tube or can be placed into a breathing circuit. They conserve heat and moisture on expiration via tube. They need to be checked regularly to ensure they are not wet, damaged or occluded by secretions which may obstruct the airway. They must be changed at least every 24 hours or as per care plan

Heat and moisture exchangers (HME's) come in different forms. Swedish nose or tracheostomy bibs for tracheostomy clients who are not ventilated. (They can come with or without oxygen ports and suction ports) thermo-vents for clients that use ventilator dry circuits.

6. Stoma Filters or Bibs

This group of humidification devices contains a foam layer which absorbs moisture from the patient's expired gases. They are predominantly used for established tracheostomy patients and are often favoured by patients as they are less bulky and conspicuous and are able to completely obscure the tube from sight.

7. Equipment

Ensure you familiarise yourself with the equipment and have undertaken the clinical conversation as per the clinical process and CLIN 12 Safe use of medical devices Policy:

- Oxygen outlet
- Tracheostomy mask/catheter mount
- Appropriate reservoir for sterile water, normal saline
- Humidifier
- Ventilator Wet Circuit
- Ventilator Dry Circuit
- Suitable nebuliser as prescribed
- Sterile water or Sterile Sodium Chloride as prescribed
- Oxygen supply
- MAR sheet
- Appropriate PPE in line with current guidelines
- Waste receptacle

8. Procedure

If the client requires oxygen

	Action	Rationale
1.	Explain the procedure to the client.	To obtain consent and cooperation.

2.	prepare nebuliser as prescribed and attach it to the oxygen supply, then set the gas rate for liquid to form into humidification droplets (the flow rate will be documented in the client's care plan. As per VENT 08	Humidification prevents the formation of crusts, which are liable to obstruct the airway.

If the client does not require oxygen

	Action	Rationale
1.	Explain the procedure to the client.	To obtain consent and cooperation.
2.	For a client no longer requiring continuous oxygen therapy give humidification as prescribed. Usually, a client needs about 10—15 minutes of humidification every 4 hours. This may be adapted according to the client's needs, e.g. throughout the night, according to time. This will be agreed with the clients specialist and documented in the client's care plan.	Some humidification is always required according to individual needs to prevent crust of thick secretions forming in the client's tracheostomy.
3.	Promote humidification process and the need to keep the air being breathed through their tracheostomy moist by the use of room humidification or other methods as per the clients care plan.	To loosen secretions and to prevent crust formation.
4.	Ensure laryngeal stoma protectors, e.g. Laryngofoam, Buchanan bib, Romet or heat and moisture exchangers are applied if detailed in the client's care plan.	To protect and humidify the airway.
5.	Dispose of waste according to waste management policy.	Safe and effective disposal of waste.
6.	Record the procedure in Daily Records or MAR Chart if required	To maintain accurate records and provide a point of reference.

Humidification of a ventilated Client using a dry circuit

	Action	Rationale
1.	Complete safety checks at the beginning of each shift and document on the checklist provided.	To ensure the clients safety.
2.	Check all the connections on the client's ventilator.	To ensure that the client's equipment is not malfunctioning.
3.	Check in the clients care plan to ascertain how frequently the HME is changed.	For infection control purposes.

4.	Always change the HME when you change the ventilator dry circuit.	For infection control purposes.
5.	Please note if you administer the client a nebuliser in the ventilator circuit, remove the HME.	The HME will become saturated with moisture and will cause respiratory compromise in the client.
6.	Please note if the client is having problems breathing, consider changing the HME. If the client continues to have difficulties in breathing, follow clients individual escalation plan /seek medical advice.	The client having problems breathing could be a sign that the HME is saturated with moisture.

Humidification of a ventilated client using a wet circuit

	Action	Rationale
1.	Complete safety checks at the beginning of each shift and document in the checklist provided.	To ensure the clients safety.
2.	Check all the connections on the client's ventilator and humidifier.	To ensure that the client's equipment is not malfunctioning.
3.	Check the temperature on the humidifier unit. The temperature range will be documented in the client's care plan N.B. Some ventilators have set humidifier temperatures. Most humidifiers both heat and cool the water in the chamber to keep the temperature within a specific range. Trouble shooting: If the temperature range is fluctuating check the following: • The water level in the chamber is at an acceptable level. • Remove the heater wire in the ventilator circuit near the client's tracheostomy and wipe dry and replace • Check for rain out in the ventilator tubing and remove. Rain out is a build-up of water/condensation in the ventilator tubing. It is caused by the temperature in the tubing being warmer than the ambient temperature. • Ensure the rain out water goes back into the humidifier and not back up the tracheostomy tube	To ensure that the client tracheostomy is being humidified within safe temperature ranges.
4.	Check the level of the water for inhalation for a **self-filling chamber**: The self-filling chamber will draw water for irrigation out of the bag to ensure	To ensure that there is an adequate amount of water and that the humidifier chamber does not

	a constant level of water is in the chamber at all times. Check there is enough water in the fluid bag. This water should be changed a minimum of every 72hrs in line with manufacturers guidelines– ensure that you label the bag with the date that it was put up. Please note: always change the water for irrigation bag when the ventilator wet circuit is changed.	run dry. This would mean the client was not receiving humidification
5.	Check the level of the water for inhalation for a **non-self-filling chamber** (these are predominantly used in the acute sector). The non-self-filling chamber requires you to manually fill the chamber to the level shown. Check the chamber for water every 2 hours and fill as appropriate. This water should be changed a minimum of every 72hrs in line with the manufacturer's guidelines – ensure that you label the bag with the date that it was put up. Please note: always change the water for irrigation bag when the ventilator wet circuit is changed.	To ensure that there is adequate water in the chamber and that the humidifier chamber does not run dry. This would mean the Client was not receiving humidification.
6.	Rain out: It is normal for the client to have water in the ventilator tubing when using humidification. Please ensure that you empty the ventilator circuit of water regularly. It will be stated in the client's care plan how often this is required. Please note that the rain out will be increased over the winter months when central heating is used.	To prevent the client from becoming respiratory compromised

9. Trouble Shooting

For any issues refer to the manufacturers guide and to the office

10. Associated Policies / SOPs

Policies
CLIN 02 Assisted Ventilation Policy

CLIN 06 Consent Policy

SOPs
SOP VENT 01 Tracheostomy Dressing Change (Adult & Child)
SOP VENT 02 Tracheostomy Care General Guidelines
SOP VENT 04 Tracheal Suctioning (Adult & Child)
SOP VENT 05 Tracheostomy Tube Care (Adult)
SOP VENT 06 Tracheostomy Tube Change (Adult)
SOP VENT 07 Tracheostomy Tube Change (Child)
SOP VENT 08 Administration of a Nebuliser through a Ventilator Circuit
SOP VENT 09 Assembling a Ventilator Circuit
SOP VENT 10 Cleaning the Ventilator Equipment
SOP VENT 11 Safe Management of a Ventilated Service User During Outings
SOP VENT 12 Safe Management of a Ventilated Service User During Power Cuts
SOP VENT 13 Safe use of Battery Packs
SOP VENT 14 Assisted Airway Maintenance and Cough (Adult)
SOP VENT 15 BiPAP
SOP VENT 16 Oral and Nasal Suctioning
SOP VENT 18 CPAP
SOP VENT 19 Mechanical Cough Assist
SOP VENT 20 Changing Tracheostomy Cotton Ties (Child)
SOP VENT 21 Changing Tracheostomy Velcro Tapes (Child)
SOP VENT 22 Phrenic Nerve Pacing
SOP VENT 23 Laryngectomy Care General Guidelines
SOP VENT 24 Emergency Tracheostomy Tube Change (Adult)
SOP VENT 25 Emergency Tracheostomy Tube Change (Child)
SOP VENT 26 Nasopharyngeal Airway Management (Adult & Child)
SOP VENT 27 Nebuliser Therapy

11. References

- The Royal Marsden Hospital Manual of Clinical Nursing Procedures, Tenth edition, Dougherty L & Lister S, 2009, Wiley-Blackwell
- tracheostomy.org.uk

Appendix A: About Acacium Group

Acacium Group consists of a number of trading companies, each providing services within core niche areas of the health and social care industries. Therefore, as this document is a Group Policy, the Policy herein applies to all trading companies detailed below:

pulse Part of Acacium Group	Thornbury Nursing Services Part of Acacium Group
Thornbury Community Services Part of Acacium Group	Scottish Nursing Guild Part of Acacium Group