Acacium Group

Assisted Airway Maintenance and Cough (Adult)

Procedure Reference | SOP VENT 14

Version | V4.1

Procedure Name	Assisted Airway Maintenance and Cough (Adult)
Purpose of Document	To ensure that the correct preparation, procedure & outcome are achieved by implementing a consistent and systematic approach to the procedure of assisted cough
Target Audience	All appropriately trained healthcare professionals and carers
Version	V4.1
Author	Karen Matthews-Shard
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Lead Director	Karen Matthews-Shard
Review Frequency	2 yearly or when clinical or operation guidelines change
Last Reviewed	June 2024
Next Review Date	June 2026
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
V1.1	Mar 2020	Updated to new Template	CC
V2	Jun 2020	2 yearly review	Clinical Advisory Group
V2.1	Oct 2020	Updated re rebrand	CC
V3	Jun 2022	Review and update	Clinical Advisory Group
V4	Jan 2024	Rebrand	Clinical Advisory Group
V4.1	Jun 2024	Review and update	Clinical Advisory Group

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1. Introduction

Assisted cough is used to manage airway impairment, which require interventions to assist in the elimination of mucus for the airway to clear or mobilise secretions when spontaneous cough is inadequate due to the client's condition (for example clients with neuromuscular disorders, cystic fibrosis or where there is spinal cord injury causing paralysis). It is the external application of mechanical or manual pressure to the epigastric (upper adnominal) region or thoracic cage (rib) coordinated with forced exhalation.

Assisted cough can be undertaken in any care setting in bed, chair or wheelchair, but a risk assessment should be performed first. Staff must be suitably trained and competent to provide the care and do so while maintaining client dignity within a safe environment. Assisted Cough can be performed by a healthcare worker, relative or carer but the client may also learn to do it for themselves.

Its indications are:

- Maintain the airway/patency
- The need to aid the removal of retained secretions from central airways
- The presence of atelectasis (*a condition in which all or part of a lung becomes airless and collapses)*
- As a routine part of bronchial hygiene (this is a non-invasive technique designed to improve gas exchange) in clients with cystic fibrosis, bronchiectasis, chronic bronchitis, or spinal cord injury
- To obtain sputum specimens for diagnostic analysis.

2. Aim

Assisted cough and airway management aims to mimic the attributes of an effective spontaneous cough (or series of coughs), which loosen, mobilise, cough up and expectorate the secretions to help to provide voluntary control over reflex, and to compensate for physical limitations (e.g. by increasing glottic control, inspiratory and expiratory muscle strength, coordination and airway stability).

3. Who needs to be aware of this procedure

All Acacium Group workers that provide direct care to clients as long as they have been trained in this procedure, assessed as competent and are able to demonstrate understanding of the risks and limitations. All Acacium Group workers must follow Acacium Group policies on all associated policies and SOP's.

4. Contraindications

Assisted cough is rarely contraindicated. The contraindications listed must be weighed against potential benefit in deciding to eliminate assisted cough from the care of the client. Listed contraindications are relative, but may include:

- Inability to control possible transmission of infection from clients suspected or known to have pathogens transmittable by droplet aerosols (e.g. M tuberculosis)
- Presence of known intracranial aneurysm
- Past or current history of Pulmonary embolism, myocardial infarction or unstable angina
- Cardiovascular instability

Assisted cough with pressure to the epigastrium may be contraindicated in the presence of but not limited to:

- Known abdominal/thoracic condition, such as abdominal aortic aneurysm, hiatus hernia, recent abdominal/thoracic surgery or pregnancy
- Pneumothorax

- A bleeding condition.

Manually assisted cough with pressure to the thoracic cage may be contraindicated in the presence of:

- Osteoporosis, flail chest
- Rib fractures

Cough Assist will be prescribed by the Consultant, Physiotherapist or Ventilation Team and should only be carried out on their instruction and as detailed within the clients care plan.

5. Hazards/complications which can be caused by assisting cough

- reduced cerebral perfusion leading to fainting or alterations in consciousness, such as, light-headedness or confusion, vertebral artery dissection
- incontinence
- fatigue
- headache
- paraesthesia or numbness
- bronchospasm
- muscular damage or discomfort
- spontaneous pneumothorax, subcutaneous emphysema
- coughing spasms
- chest pain
- rib or costo-chondral junction fracture
- incisional pain
- anorexia, vomiting, and retching
- visual disturbances including retinal haemorrhage
- central line displacement
- gastro-oesophageal reflux.

All the above-named hazards are found more commonly within a hospital setting and not within the community where the majority of clients have had their conditions for a long time and are stable; however, staff need to be aware of the potential complications.

If any of the following occurs, seek medical attention immediately as detailed within the client's individual care plan or escalation process:

- unexplained increase in pain
- unexplained increase in spasm
- sudden onset of breathlessness.
- Respiratory arrest
- Cyanosis

6. Limitations of method

The following clinical entities may compromise the effectiveness of the assisted cough technique:

- the presence of severe obstructive airways disease
- severe restrictive lung disease
- pain exacerbated by coughing (e.g. incisional pain post operatively)
- fear of pain
- neurologic, muscular, or skeletal abnormalities
- dehydration of the client

In clients with a bypassed upper airway or other condition that precludes the ability to effectively close the glottis, the effectiveness of the cough may be limited.

Thick, tenacious sputum may limit the effectiveness of these techniques and may require other supplemental strategies to optimise clearance of secretions due to the formation of a plug.

7. Assessment of need

- Spontaneous cough that fails to clear secretions from the airway
- Ineffective spontaneous cough as judged by:
- Clinical observation
- Long-term care of clients with tendency to retain airway secretions
- Presence of tracheostomy tube.

8. Consent

Please read Acacium Group Policy on consent thoroughly and ensure valid consent has been gained.

9. Client and relatives/carers involvement

Healthcare professionals who have been trained and are competent to do so and where it has been commissioned, can undertake the procedure.

10. Client information

The procedure should be clearly documented, and form part of the clients plan of care

As part of obtaining valid consent the risks, benefits and alternatives to treatment will have been discussed.

The procedure must be explained fully in order to gain full cooperation with the procedure.

11. Frequency

- Cough procedures should be performed as frequently as needed and as prescribed by a consultant/physiotherapist/Ventilation team and as detailed within the individual care plan. No data exists to support a specific frequency
- Assisted cough procedures should be performed in conjunction with other forms of therapy to mobilise and remove secretions, this would include, nebulisers, suctioning during and at the conclusion of the therapy.

12. Monitoring

Items from the following list should be chosen as appropriate for monitoring a client's response to the assisted cough technique:

- client response: pain, discomfort, dyspnoea, verbal and non-verbal cues
- sputum expectorated following cough to note colour consistency, odour, volume of sputum produced
- breath sounds
- presence of any adverse neurologic signs or symptoms following cough

13. Assessment of outcomes

- the presence of sputum specimen following a cough
- clinical observation of improvement
- client's subjective response to therapy.

14. Infection control

- Cough is a source of aerosols that can remain suspended in the air for hours and are associated with transmission of Tuberculosis and Covid 19 and other airborne pathogens. Care must be taken to minimize exposure of the health care worker and others. Appropriate PPE should be worn as per National and local guidance
- The single most effective step to reduce transmission of the droplet nuclei is to have the client cover his or her mouth when coughing
- Personal protective equipment should be used to minimise exposure to airborne pathogens
- Universal Precautions should be followed.

15. Equipment

- Material (such as tissues or gauze pads to cover mouth or tracheostomy tube during cough to catch any expectorated secretions
- Appropriate PPE as per current guidance
- Access to suction equipment (if available).

16. Procedure

For all techniques used

	Action	Rationale
1.	Ensure room has been prepared to promote privacy and dignity, minimising interruptions.	Client must feel comfortable that his or her privacy and dignity is promoted at all times.
2.	Explain the procedure, advising of risks, benefits and alternatives. Ensure client understands and gives consent	To ensure valid consent has been obtained and client understands in order to comply with procedural needs.
3.	Determine that there are no contraindications to the procedure (see section 4).	Ensure procedure is not carried out if it may harm the client to do so
4.	Assess level of pain and whether the administration of analgesia is required. **Note** You would not do this technique if the presence of pain was noted	To ensure optimum comfort during the procedure
5.	Check whether the client has any bleeding disorders that are being treated with an anticoagulant. **Note** You would not do this procedure if anticoagulants were regularly prescribed.	To ensure a gentler method in order to reduce the risk of bleeding

6.	Cover mouth or tracheostomy, unless this puts the client at risk.	Reduce risk of transmitting infection.
7.	Consider the following: • Spinal stability (does the client require a shoulder hold?) • Size of the client's chest (is a second person required?) • Thickness of the client's secretions (is a second person required?) • Whether the client is in bed or in a wheelchair (will assistance be needed to stabilise the chair) • The experience of the available staff (is a second person required?) The upper body strength of the member of staff (is a second person required?)	To determine the most appropriate method of assisted cough and ensure relevant staff resources are made available.
8.	Ensure that the client's dignity is maintained throughout the procedure	To ensure the client feels respected and part of their care plan

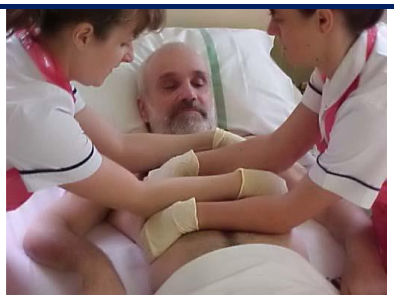
In bed – one-person technique Follow steps 1 to 8 in 16.1

	Action	Rationale
1.	Using appropriate PPE as per Current Guidance Place the heels of your hands underneath the ribs as illustrated. 	To reduce the risk of cross infection To ensure correct positioning to maximise cough.
2.	The client should take a breath in and as the client attempts to cough push inwards and upwards.	To strengthen the cough and help with the management of secretions
3.	Place one forearm across the upper abdomen of the client with your hand curved around the opposite side of the chest. Your other hand is placed on the near side of the chest. As the client attempts to cough, push simultaneously inwards and upwards with your forearm, squeezing and stabilising with the other hand. 	Correct positioning is important to minimise damage to other organs and maximise the outcome of the procedure

4.	Spread your hands anteriorly around the lower rib cage and upper abdomen. With your elbows extended push inwards and upwards with both arms as the client attempts to cough.	As above
5.	Arms must be kept extended for this technique to work effectively – it may therefore not be appropriate to use if the Client's bed does not lower to a suitable height. 	To gain maximum benefit for the client from the procedure

In bed assisted cough technique – two persons as identified within the care plan Follow steps 1 to 8 in 16.1

	Action	Rationale
1.	Stand on either side of the bed. Each person should place one forearm across the upper abdomen of the client with your hand curved around the opposite side of the chest. Your other hand is placed on the near side of the chest. As the client attempts to cough, push simultaneously inwards and upwards with your forearms, squeezing and stabilising with the other hand. 	To provide the correct procedure to optimise client benefit
2.	Stand on either side of the bed. Place your forearms across the client's chest with your hands curved around the opposite side of the chest wall. Your arms should alternate, with the lowest arm positioned over the diaphragm. Squeeze the chest simultaneously as the client attempts to cough.	To gain maximum effect when coughing

		
3.	Stand on either side of the bed. Each person places their hands on the upper and lower ribs of the same side with their fingers spread and pointing upwards and centrally. As the client attempts to cough push upwards and inwards simultaneously.	To add strength to the client's cough and help with the management of secretions
4.	This method may not be suitable for a client who has an unstable spine as it introduces rotation of the thorax. See 5 below. 	Ensure procedure does not add undue health risks to the client
5.	Stand on either side of the bed. Each person places their hands on the upper or lower ribs of both sides of the chest, with their fingers spread and pointing upwards and centrally. As the client attempts to cough push upwards and inwards simultaneously.	To increase the strength of the client's cough and help with secretion management
6.	This two-person method is preferred if spinal stability is a consideration as both people are pushing bilaterally which will minimise rotation. 	Ensure the method is used to promote best health for the client

Assisted cough in wheelchair – techniques 1, 2 & 3

	Action	Rationale
1.	Lock the brakes on the wheelchair. Stand behind the wheelchair and put your arms around the client linking your hands together in front over the lower rib cage and upper abdomen. As the client attempts to cough pull your hands up and inwards to assist them.	Ensure wheelchair does not move during procedure and maximise the benefits of the procedure

	 	
2.	**Technique 2**	
3.	Back the wheelchair up against a wall so that it won't tip backwards and lock the brakes. Position yourself in front of the client and place your hands over the lower ribs/upper abdomen. Push upwards and inwards as the client attempts to cough. 	Ensure wheelchair does not move during procedure and maximise the benefits of the procedure.
4.	This technique can be used when it is not possible to reach around the client from behind.	To use the correct procedure following assessment of need
5.	**Technique 3**	
6.	Back the wheelchair up against a wall so that it won't tip backwards and lock the brakes	Wheelchair does not move during procedure
7.	Stand to one side of the client with a wide stance and straight back	Ensure best position for the carer undertaking the procedure
8.	Place your forearm across the client's lower chest and your hands on their lower ribs. As the client attempts to cough push upwards and inwards with a scooping action with your forearm and hands.	Support and strengthen the client's cough and help manage secretions

After the procedure

	Action	Rationale
1.	Dispose of any waste such as tissues, and PPE correctly as per current guidance	Minimise the risk of cross infection
2.	Monitor the client for the outcome of the procedure (see sections 12 & 13).	To monitor the effectiveness of the procedure and determine what may be needed for the next procedure
3.	Document the procedure and the outcome on the secretion chart and via the daily record chart.	To have an audit trail of care given and outcomes and to inform colleagues of care given to date

17. Associated Policies / SOPs

Policies
CLIN 02 Assisted Ventilation Policy
CLIN 06 Consent Policy
CLIN 07 Infection Prevention and Control Policy
CLIN 19 Resuscitation Policy

SOPs
SOP VENT 01 Tracheostomy Dressing Change (Adult & Child)
SOP VENT 02 Tracheostomy Care General Guidelines
SOP VENT 03 Humidification of a Client's Tracheostomy
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 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

18. References

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- NMC Code of Conduct – Consent
- DoH - Reference guide to consent for examination or treatment 2009
- Effect of manually assisted cough and mechanical insufflation on cough flow of normal subjects, patients with chronic obstructive pulmonary disease (COPD), and patients with respiratory muscle weakness BMJ June 2001
- Respiratory Care and Management at Home Following Spinal Cord Injury – Buckingham Healthcare NHS -Spinal Cord Injury A guide for patients and Carers Assisted Coughing Dec 2018, due for renewal Dec 2020
- **Teaching Manually Assisted Cough to Caregivers of Children with Neuromuscular Disease.** Amelia F Kan, Jane M Butler, Meghan Hutchence, Kristi Jones, John Widger and Michael A Doumit. Respiratory Care December 2018,
- https://www.physio-pedia.com/Assisted_Coughing

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