

## Above Cuff Vocalisation

### Key Points

- Above Cuff Vocalisation (ACV) is a technique that uses the subglottic suction port of specific tracheostomy tubes to deliver a low flow of gas (air or oxygen) back up through the subglottic port which exits above the cuff. This flow is then directed up through the larynx, passing through the vocal cords.
- This can result in audible vocalisation in patients who otherwise would not be able to speak.
- Guideline includes the theory behind ACV, initiation & documentation

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### Abbreviations

|      |                                                 |
|------|-------------------------------------------------|
| ACV  | Above Cuff Vocalisation                         |
| FEES | Fibreoptic Endoscopic Examination of Swallowing |
| FNE  | Flexible Nasoendoscopy                          |
| MDT  | Multidisciplinary team                          |
| RASS | Richmond Agitation-Sedation Scale               |
| SLT  | Speech and Language Therapist                   |

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## Introduction

Tracheostomies are commonly used in Intensive Care Units. They are most commonly required to facilitate prolonged artificial ventilation and to expedite weaning off sedation and early waking of patients to enable close neurological monitoring.

Cuffed tubes are necessary when positive pressure ventilation is required or in situations where airway protection is essential to minimise aspiration of secretions. When a tracheostomy is cuffed, it prevents air flow to the nose and mouth, bypassing the larynx, which means patients cannot vocalise and the ability to communicate is impacted. This can negatively affect psychological well-being, delirium and mood leading to anger, frustration and withdrawal and can prevent the patient from being able to communicate decisions or questions about their care. This in turn can lead to suboptimal pain relief and increased likelihood of a significant medical event (Wallis 2024).

## What is Above Cuff Vocalisation?

Above cuff vocalisation may be beneficial for such patients. This technique uses the subglottic suction port of specific tracheostomy tubes to deliver a low flow of gas (air or oxygen) back up through the subglottic port which exits above the cuff. This flow is then directed up through the larynx, passing through the vocal cords. This can result in audible vocalisation in patients who otherwise would not be able to speak. This is particularly useful for patients who require prolonged cuff inflation due to ventilator dependence or because of the risk of aspiration.

## Why Use Above Cuff Vocalisation?

Research demonstrates the effectiveness of this technique, and it has been reported that effective vocalisation can be achieved in three quarters of ventilator-dependent, cuff-inflated patients who meet the inclusion criteria (McGrath et al, 2019). It has also been reported to have a significant positive effect on secretion management and aspiration scores by increasing both the unstimulated cough and swallow frequency (Kothari et al, 2017; McGrath et al, 2019). Enabling speech may also reduce distress, frustration and anxiety in addition to facilitating the patient being able to contribute to treatment decisions, weaning and assessment. Mechanical ventilation can continue uninterrupted.

## Who Can Perform Above Cuff Vocalisation?

All qualified nurses, medical staff, physiotherapists and speech & language therapists (SLT) if they are trained in the use of subglottic suction tubes, ACV technique and follow correct procedure/precautions.

## Tube Selection

Tracoe-Twist subglottic tracheostomies are the tube of choice in Frimley Health for ACV. The team selected this tube because the internal diameter is bigger whilst the outer diameter is smaller in comparison to other available subglottic tracheostomy tubes, as well as a preference for the design of this tube and percutaneous kit over others on the market. Tracoe have confirmed that they have started the regulatory process to include the therapy of ACV into their instructions for use. They also state that they are aware of the tube being used for this therapy and have “never received any negative feedback or complains regarding the use of our tubes for this therapy”.

## Patient Selection Criteria

ACV may be suitable for any patient with a tracheostomy with a subglottic port who is unable to tolerate cuff deflation whether or not they require ventilator support. However, they must be alert and able to participate in trials and should show communicative intent. Appropriate candidates can be highlighted by any multidisciplinary team (MDT) member in critical care or tracheostomy board rounds. Prior to ACV trials the patient must be assessed by speech & language therapy (SLT) and physiotherapy to ensure they are an appropriate candidate. If appropriate, SLT will liaise with the MDT to provide specific advice on protocol, timing and frequency of trials.

## References

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National Tracheostomy Safety Project. ACV - Above Cuff Vocalisation [Internet]. 2024. Available from: <https://tracheostomy.org.uk/healthcare-staff/vocalisation/acv-above-cuff-vocalisation>

Wallis S. *Above Cuff Vocalisation (ACV): An exploration of clinical practice* Atos Medical Education (2024) <https://www.atosmedical.co.uk/events/above-cuff-vocalisation-acv-an-exploration-of-clinical-practice>

## Above Cuff Vocalisation (ACV) Procedure

### Aims

1. To restore laryngeal airflow despite tracheostomy cuff inflation
2. To stimulate laryngeal sensation, swallowing, vocal cord movement
3. To improve saliva secretion clearance, reduce aspiration risk
4. To facilitate vocalisation, communication and participation in treatment

### A. Checks required

- SLT/MDT in agreement for ACV trials – check frequency as specified by SLT/MDT
- Subglottic suction tracheostomy tube in situ
- Patient is alert & able to participate – RASS  $\geq$  -2
- Cuff inflated

### B. Equipment

- 10 or 20ml syringes
- Oxygen tubing attached to wall oxygen
- Tracheal and yankeuer suction

### DO NOT USE IF

- x Not assessed by Speech & Language Therapy and Physiotherapy
- x Upper airway obstruction, recent head & neck surgery, laryngectomy
- x New tracheostomy <72hrs
- x Stoma issues, e.g., infection, bleeding or tissue breakdown
- x Requiring continuous subglottic drainage
- x Tracheostomy tube displaced or not in optimal position

### C. Procedure

*Explain to patient; reassure them about the change in sensation/taste and secretions blown into mouth.*

- 1) Perform subglottic suction using 10/20ml syringe, document volume
- 2) Connect ends of tubing to oxygen and subglottic port
- 3) Slowly turn on airflow to 2L flow
- 4) Ask patient to blow and vocalise, if required gradually increase to max 5L, stop at the point of optimum voice (tracheal auscultation can be used to assess for airflow/stoma leak, etc. if required)
- 5) Use Yankauer suction to clear any secretions blown to mouth
- 6) Document trial and outcome. Carry out for a maximum of 15 mins at a time, can be trialed every hour or between cuff deflations or with visitors.

***Monitor closely and do not leave patient unattended.***

### STOP if:

- x Air leak from stoma. Try gently adjusting tracheostomy tube angle to reduce leak. If remains present, stop & liaise with Speech & Language Therapist (FEES may be required)
- x No airflow through upper airway - risk of subglottic pressure build-up. FEES (Fibreoptic Endoscopic Examination of Swallowing) by SLT or FNE by ENT may be required
- x Neck or facial swelling (subcutaneous emphysema)

- x Patient can tolerate cuff deflation +/- use of speaking valves
- x Patient complains of pain or discomfort
- x Patient becomes fatigued

## Trouble Shooting

### Variable voice quality

- Possible vocal fold injury i.e. intubation trauma – *FEES indicated*
- Hyperadduction – *practice, seek SLT advice*
- Port abutting tracheal wall - *adjust head /tube position slightly*
- Insufficient airflow – *optimise, max 5l/min*
- Laryngeal drying, non-humidified air - *avoid high flow, prolonged use*

### Patient discomfort

- Provide *reassurance* in initial stages but, if persistent discomfort, stop and seek advice from physio/SLT/medical team

### Unable to suction subglottic secretions

- May indicate blockage. *Try to push in air bolus via syringe*

### Copious secretions

- ACV trials may aid secretion clearance
- Consider medications (atropine drops sublingually, hyoscine etc) to reduce saliva

## Full version control record

|                                                                          |                                                                                  |
|--------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Version:</b>                                                          | 1.0                                                                              |
| <b>Guidelines Lead(s):</b>                                               | Charlotte Quilliam (ICU SLT)<br>Georgina Linstead (ICU Advanced Physiotherapist) |
| <b>Contributor(s):</b>                                                   | Rachel Darcy (SLT)<br>Suman Shrestha (ICU Consultant Nurse)                      |
| <b>Lead Director / Chief of Service:</b>                                 | Dr Subodh Tote, CoS for Anaesthetics, Theatres and Critical Care                 |
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This guideline is for use in Frimley Health NHS Foundation Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

## Version History

| Version  | Date        | Guideline Lead(s)                       | Status | Comment             |
|----------|-------------|-----------------------------------------|--------|---------------------|
| 1 (FPH)  | Feb 2019    | Karen Waardenburg<br>Georgina Linstead  | Final  |                     |
| 2 (FPH)  | May 2024    | Charlotte Quilliam<br>Georgina Linstead | Final  |                     |
| 1.0 (FH) | August 2024 | Charlotte Quilliam<br>Georgina Linstead | Final  | For trust-wide use. |

## Related Documents

None