

Above Cuff Vocalisation (ACV)

ACV can enable tracheostomised patients to speak.

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Tracheotomised, ventilated patients have difficulty communicating, but thanks to a special method it is possible, for patients to speak to relatives and staff, motivating them for rehabilitation.

Abstract

ACV can enable tracheostomised patients to speak

Being able to talk with people is a fundamental need. When someone is tracheotomised and ventilated, he is deprived of this capacity. For many years, the intensive care unit in Silkeborg, Denmark has had ventilated but conscious patients and the problem of achieving dignified communication. Since 2008, this ICU has served as a national care centre for neurointensive patients from all over Denmark. The object of a stay at this ICU centre is, in addition to early highly specialised neurorehabilitation in close collaboration with the Hammel Neurocenter, also weaning from ventilation. In addition, the centre provides swallowing training. One of the methods is ACV — Above Cuff Vocalisation.

The method trains the laryngeal muscles and additionally enables the patient to speak. The method was described as early as in 1975, but it is our impression that it is not widely used in Denmark.

The procedure has been implemented in the unit and is used for many patients. In this article, the focus is on verbal communication as a core aspect of delivering nursing to medical patients and patients with Guillain-Barré syndrome. Communication by means of ACV has made a great difference for many patients and relatives.

Keywords: Guillan-Barré syndrome, GBS Communication, patient involvement, rehabilitation, respirator treatment, tracheostomy

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The ACV method

Since 2011 the intensive care unit in Silkeborg has been using a special tracheostomy tube with an extra tube for suctioning secretions above the cuff. Via the same tube it is possible to introduce air above the cuff, the ACV method. The procedure serves to stimulate the patient's respiratory tract and contributes to a rehabilitation of the throat muscles, but is also having the side effect of enabling the patient to speak; as air crossing the vocal cords allows sounds to be made. A study from 2013 also shows that ACV significantly reduces the incidence of ventilator-associated pneumonia.¹³

While there are several important reasons for being aware of and using ACV, the purpose of this article is to focus on dignified and considerate communication between the intensive care patient, their relatives and the nursing staff, providing the best possible nursing care for seriously ill patients who are temporarily prevented from speaking.

Every year, the intensive care unit at Silkeborg Regional Hospital, Regional Hospital Central Jutland, receives 25–35 intensive care patients with respiratory insufficiency who therefore require a tracheostomy tube and ventilation. The causes are primarily pneumonia and COPD in exacerbation, or may be part of an impairment of their general health. Although patients receive painkillers as needed, they are often awake for extended periods during which the possibility of communication is given.

As a highly specialised neurointensive care unit, we receive patients once the first acute, critical period after their cerebral trauma or haemorrhage has passed.

Patients can start a highly specialised neurorehabilitation with us while they remain dependent on ventilation and other forms of intensive care. This is a service that is not available in the highly specialised intensive care units. We also receive neurological patients on respirators, patients diagnosed with acute autoimmune polyneuropathy, Guillain-Barré. This illness can affect persons of any age, but we currently have several younger individuals at the unit who have been severely affected by the long-term illness pathway. The patients are often tracheotomised as a result of respiratory muscle palsy and are therefore unable to communicate verbally with the outside world.

For the vast majority of patients, respiratory therapy is associated with some degree of discomfort, stress and anxiety.

Suffering from serious illness and being unable to communicate adequately with relatives, nurses and doctors is very stressful and can reduce the motivation to participate in rehabilitation.⁸

Equal communication requires patient influence over their own care pathway

Being able to talk with people is a fundamental need.¹ Virginia Henderson identified 14 basic needs. Number 10 concerns communication and highlights the ability and opportunities to express emotions, needs, fears or opinions and thereby be able to have meaningful contact with others.

A study shows that people typically spend 61 per cent of their waking hours communicating,² an opportunity which critically ill and intubated individuals are often denied. Kari Martinsen writes that patients ought to be treated so that they feel acknowledged and capable of managing their own affairs. Critically ill individuals may feel that they are losing their autonomy and privacy if they do not have a sense of control over their situation.¹ This is why, as far as possible, patients must be involved in, feel in control of and be able to influence their own care pathway. These are indicators that contribute to equality in communication.

With regard to basic nursing, Australian Professor of Nursing Alison Kitson says:

“Nurses must be able to meet basic human needs including communication based on a psychosocial and relational understanding of the patient’s experiences and needs. Care can only be said to be patient-centred if this is the case”.⁵

As nurses, we are very mindful of informing patients about every step we would like to take. But if the patient is unable to ask a question, how can we be sure that the information has been understood or that they do not have other questions that need to be answered?

Moreover, the nurse often only provides information about everyday procedures. The patient might also have important and more complex questions relating to their prognosis, fears about the future and concerns for their family.

Fear of dying

An observational study from 2011 followed a patient who was affected by Guillain-Barré syndrome in 2002. The patient talks about the severity of his illness and inability to communicate:

“I was in bed on a respirator behind a curtain in a two-bed room in the intensive care unit. I couldn’t communicate with anyone but heard everything that was going on as if it were a play on the radio. To the extent that seven of my fellow patients on the other side of the curtain died during that period. I was very, very scared. I was sure, I was going to die too”.³

Another patient, who was severely injured in a traffic accident in 2000, has written about being tracheotomised and incapable of asking and thereby receiving answers to important questions:

“I still don’t understand why the staff never tried to explain to me what had happened, what was wrong with me and why they were treating me the way

they were. I think I could have been spared a lot of subsequent psychological distress”.⁴

Multi-faceted communication

These two patient quotes illustrate that communication with a critically ill person can have many facets, from providing information on everyday procedures and the outside world to answering questions about life and death. When Kitson says that the nurse must communicate according to the patient’s basic needs, the dialogue is important.

Inadequate answers to questions about the nature of the illness and its prognosis, and not being able to express pain and other discomfort, may contribute to the development of intensive care delirium. This is an extremely unpleasant condition for the patient and very costly for society, and can mean prolonging the stay in both the intensive care unit and main hospital ward.⁶

It is therefore important that the nurse helps the patient communicate and thus explain both basic and more complex needs during the illness pathway. As healthcare professionals, we have a duty to ensure the patient’s well-being and to help reduce the risk of complications in the illness pathway and the development of late sequelae. Part of the fundamental nursing process is to make sure that the patient can speak if possible, thereby minimising anxiety and stress.⁷

ACV makes all the difference

Tove’s story

Tove was a 65-year-old patient with severe pulmonary disease who was transferred to us from another hospital. She had been a tracheotomised inpatient there for several weeks. Tove was a very independent and active woman who was very close to her daughter and six year-old grandchild, and to her sister. They came to visit every day and it was clear that their visits had a very positive impact on Tove. We began ACV shortly after her admission to our unit. Tove was able to communicate in writing, but once again being able to communicate verbally made a big difference to her, especially in relation to her grandchild. Their time together became more varied, intense and lively. She was more “her old self” when her grandchild visited, during which time they could talk about small everyday events. Tove was also better able to participate in planning her care and the decisions to be made during the day, which she greatly appreciated. She was also very clear in her decision to refuse resuscitation in event of possible cardiac arrest and respirator therapy. It was important for her sister to be sure that this was Tove’s choice.



Anna's story

Anna, a 20-year-old woman, was transferred to us with the diagnosis of Guillain-Barré. Anna was referred to Hammel Neurocenter, and the purpose of her stay was early highly specialised neurorehabilitation. As Anna was severely affected by the disease, tracheotomised and ventilated, she was admitted to the Intensive care unit at Silkeborg for weaning from ventilation. When Anna arrived at the unit, her tube was switched to a Tracheostomy tube with subglottic line in order to monitor secretions above the cuff and to enable her pharyngeal muscles to rehabilitate. ACV was started, partly for swallowing training and partly to enable Anna to communicate verbally. Up to this point, she had used lip reading and a spelling board. Her mother had acted as an interpreter as she was very good at lip reading her daughter. However, Anna quickly became frustrated when we were unable to understand her. When she arrived at the unit, she was in the midst of a severe crisis. But once she was able to start communicating normally with the outside world, the condition became easier for her to endure. Her care and training became smoother as she felt she was being heard, and she participated in her rehabilitation with more and more enthusiasm. She was now also able to see the funny side of her situation during training. There were jokes, laughs and stories, which had not been possible before, but are normal for 20-year-olds. But what made the biggest difference to her was that she was now able to use FaceTime with family and friends in Zealand when they were not with her. Being able to talk to them every day was a very positive change for her and for the family and staff around her. There was a completely different atmosphere in the room.

Application of the ACV method:

- Inform the patient about what is going to happen. The patient's cooperation is important, and the procedure is orientated towards the individual patient
- Suction secretion above the cuff through the subglottic tube
- A ACV tube with Y-piece/fingertip is attached to the subglottic tube.
- Insufflate air via the subglottic tube. Start the flow with 1 litre (atmospheric air) and then slowly increase. See how the patient responds. Reduce the flow if the patient feels severe discomfort, or feels nauseous. The higher the flow, the drier the mucosa in the throat become. The air is kept on for approximately five minutes. Use the Y-piece/fingertip to give the patient air in small quantities. Monitor the patient's breathing, give air on expiration and pause when the patient swallows. In some cases, the patient and/or relatives can be trained to manage the process themselves.

ACV is not difficult. The method requires very little training, but care must be taken to monitor the patient's reaction. The cooperation between patient and nurse is very important. A high flow of dry air can be uncomfortable for the patient and cause the mucosa to dry. The recommended maximum flow rate is 5 l/min, although the nurse's experience and the cooperation with the patient are crucial for assessing flow and length of treatment.⁹

Development of emphysema as a result of a displaced tracheal tube has been mentioned in the literature, but has not been seen in our unit.

Treatment with ACV is also used in the rehabilitation of neurological patients with dysphagia. The aim is to stimulate the throat muscles, thereby training the patient's ability to swallow.¹⁰

Grateful patients

Based on a number of patient care pathways completed since 2011, our experience is that patients using ACV derive great satisfaction from being able to participate in their own care pathway. Patients express considerable gratitude at being heard and understood when it comes to daily tasks and having the opportunity to discuss crucial decisions about their treatment and future.¹¹

We encounter many different care pathways, and the ACV treatment requires a little getting used to, but the patients express their joy at being able to speak. However, one patient says that the air tastes foul, so perhaps in the future a solution might be found in the form of flavouring. This is an area that is being worked upon. A number of patients are bothered by the dry air, and here too we are working to find a solution whereby the air can be moistened.

Not all patients benefit from ACV, as older and severely impaired patients, in particular, may have difficulty cooperating and summoning up the energy for the procedure. Units that do not use tracheostomy tubes with subglottic tube justify this by citing complaints that the tube is stiff and uncomfortable for the patient. If we asked the patients themselves, they might prefer a slightly stiffer tube requiring some getting used to when the reward is being able to speak.

We encounter very few patients who are so bothered by the stiffness of the tube that they have to switch to a softer tube that does not have the subglottic tube.

Only a few ICUs in Denmark are aware of ACV

ACV is not a new treatment. The method is described in an article from 1975.¹² However, our experience is that very few intensive care units in Denmark, and perhaps also internationally, are aware of and use ACV.

We are very concerned that many seriously ill patients are denied the opportunity for dignified communication during an already very difficult period of their lives. The reason for this is unclear to us. Is it a lack of knowledge, ingrained culture or a lack of focus on communication? We do not know. One research group has observed patient-nurse communication in an intensive care unit and concluded that more than one third of patients did not experience successful pain communication.¹³

We can enable the patient to speak, but very few nurses and doctors do so, thus depriving the patient of their autonomy. This situation is both intolerable and unethical.

Students receive instruction during specialist ICU training

It is important that we investigate causes and relationships to ensure the best care and treatment for the patient. That is why we spend time teaching students undergoing specialist ICU training and training in other units. We have given presentations within our own organization, and in the future we want to teach internationally.

Our expectation is that many intensive care patients around the world will benefit from being able to communicate with relatives

and healthcare professionals. From being able to participate actively in their own care pathway and even being able to say goodbye to their family in a dignified manner if that is what they want.

We have no doubt that ACV makes a huge difference to patients and relatives, although it would be interesting to investigate how important it is to patients and relatives that their communication in connection with critical illness takes place in a dignified manner. It may also be relevant to consider how important it is for staff to be able to communicate reliably with the patient.

Perhaps it would be possible to demonstrate that the incidence of intensive care delirium decreases or that the number of bed days in the intensive care unit is reduced? Perhaps nursing these patients with a focus on communication reduces the number of patients who subsequently suffer PTSD?

The research unit at the Centre for Scheduled Surgery has been involved in communication with ACV and is currently looking into opportunities for research in the area.

From an option to standard practice

We have been using ACV for a number of years, and following a start-up period during which the treatment was an option, ACV is now offered to patients as standard practice. The method requires very little nurse training and takes little getting used to for the patient, but once again being able to speak is clearly of great importance to the patient. Motivation to participate actively in treatment, care and rehabilitation is significantly increased, which is why ACV is a natural part of the treatment we provide.

Debate

- How can you ensure that the tracheostomised patient is involved in their care pathway?
- What challenges do you face in your unit when communicating with the critically ill, tracheostomised patient?
- If you have follow-up conversations with patients, how have they found the communication during the care pathway?

References

1. Gulbrandsen T, Stubberud Dag-Gunnar (red.) Intensivsykepleie. Oslo: Cappelen Damm 2015.
2. Adler RB, Rodman G. Understanding Human Communication. New York: Oxford University Press; 2003.
3. Lumby E. Her får de folk i gang igen. København: Berlingske; 27. april, 2003.
4. Meiniche A. To kaffe og en staveplade. København: People's Press; 2003.
5. Baktoft B, Wolder L. Intensivsygepleje. København: Nyt Nordisk Forlag Arnold Busck 2016.
6. Svenningsen H, Bagger C. Stille intensivdelirium er et overset fænomen i sygeplejen. Sygeplejersken 2009;(8):42-7.
7. Bahnsen IB, Pedersen PU, Sørensen EE, Uhrenfeldt L. Sygeplejen tilbage til det basale. Fag & Forskning 2017;(1):52-7.
8. Magnus VS, Turkington L Communication interaction in ICU-Patient and staff experiences and perceptions, Intensive and critical care nursing (2006);22:67-180.
9. McGrath B, Lynch J, Wilson M, Nicholson L, Wallace S. Above cuff vocalization: A novel technique for communication in the ventilator-dependent tracheostomy patient. Journal of the care society 2016;Vol. 17 (1):19-26.
10. Kothari M, Bjerrum K, Nielsen LH, Jensen J, Nielsen JF.

Influence of External Subglottic Air Flow on Dysphagic Tracheotomized Patients With Severe Brain Injury. Preliminary Findings. Annals of Otology, Rhinology og Laryngology 2017;126:199-204.

11. McGrath B, Lynch J, Wilson M et al. Above cuff vocalization: A novel technique for communication in the ventilator-dependent tracheostomy patient. Journal of the Intensive Care Society October 5, 2015.
12. Safar P, Grenvik A. Speaking cuffed tracheostomy tube. Crit. Care Med.
13. Happ MB, Garrett K, Thomas DD, Tate J et al. Nurse-Patient Communication Interactions in the Intensive Care Unit. Am J. Crit. Care. 2011. DOI 10.4037/ajcc 2011433.
14. Ledgerwood LG, Salgado MD, Black H, Yoneda K et al. Tracheotomy tubes with suction above the cuff reduce the rate of ventilator-associated pneumonia in intensive care unit patients. Ann Otol Rhinol Laryngol. 2013 Jan;122(1):3-8. DOI 10.1177/000348941312200102

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The intensive care unit at Silkeborg Regional Hospital is part of the Central Denmark Region hospital cluster and works closely with the Hammel Neurocenter. The unit has eight beds, one and a half for medical/orthopaedic surgery and six and a half for neurointensive step-down.