Journal of Public Health in the Deep South

Volume 1 | Number 1 Article 12

2019

Speech-Language Pathologists and Respiratory Therapists: Team Approach to Caring for Patients with Long-Term Tracheotomy

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SLPs and RTs: Team Approach to Caring for Patients

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Background: Recent technological advances, together with growing social acceptance of patients with disabilities, has led to a realization of the importance of long-term management of technologically dependent and chronically ill patients with tracheostomies. This includes tracheostomy patients who are ventilator dependent, neurological patients, patients with severe illness such as stroke, and so forth. These patients are able to have a higher quality of life and communicate verbally due to advances in health care. One of the major advancements is communicating via a tracheostomy. Hence, this study will provide ways in which respiratory therapists (RTs) and speech-language pathologists (SLPs) can work together to make the process more efficient. *Aim*: The aim of this research article is to focus on a team approach utilizing the skills of speech-language pathologists and respiratory therapists to address communication issues for tracheostomy patients. *Method*: The authors reviewed historical and contemporary literature and computerized databases, and they also applied their collective 25-plus years of clinical and educational experience in the field. *Results*: The findings suggest that respiratory therapists and speech-language pathologists can work together to coordinate the most effective approach to helping patients with permanent tracheas regain full speech functionality and social adaptation. *Conclusions*: Rehabilitation of tracheostomy patients remains an important issue in modern medicine. There are a number of approaches to enhancing vocal speech in tracheostomy patients and ensuring full speech functionality and social adaptation. Successful speech therapies are based on coordinated interaction of respiratory and speech-language pathologists, nurses, caregivers, and patients. Findings regarding speech therapy for tracheostomy patients are based on a limited number of effective and controlled studies (Hess & Altobelli, 2014).

Introduction

Recent technological advances, together with growing social acceptance of patients with disabilities, has led to a realization of the importance of long-term management of technologically dependent and chronically ill patients with tracheostomies. Infant, adolescent, and adult tracheostomy patients suffer from a number of risks associated with a complex invasive procedure (Hess & Altobelli, 2014; Lewarski, 2005). Communication difficulties associated with speech impairment are among those risks and can pose a threat to successful long-term management of tracheostomy patients and their social adaptation.

A speech-language pathologist (SLP) is a health-care practitioner who specializes in the evaluation and treatment of communication and swallowing disorders. The components of speech production include phonation (producing sound); resonance; fluency; intonation (variance of pitch); and voice, including aeromechanical components of respiration. The components of language include phonology (manipulating sound according to the rules of a language); morphology (understanding and using minimal units of meaning); syntax (constructing sentences by using languages' grammar rules); semantics (interpreting signs or symbols of communication to construct meaning); and pragmatics (social aspects of communication). Swallowing disorders include oropharyngeal and functional dysphagia in adults and children and feeding disorders in children and infants. SLPs are particularly crucial for pediatric patients because tracheostomy can lead to significant speech-development problems. Communication issues associated with tracheostomy can have a number of negative effects on a patient's social life and well-being.

Respiratory therapists (RT) are specialized health-care practitioners who have earned a university degree and passed a national board-certifying examination. Respiratory therapists work most often in intensive-care and operating rooms, but they also are commonly found in outpatient clinics and home-health environments. Respiratory therapists are specialists and educators in cardiology and pulmonology. Respiratory therapists are also advanced-practice clinicians in airway management, establishing and maintaining the airway during trauma and intensive-care situations, and administering anesthesia for surgery or conscious sedation.

In order to achieve the goals for evaluation and intervention for a tracheostomy patient, it is essential that speech-language pathologists, respiratory therapists, and other professionals work together as a team (Kobak, 2016; Hess & Altobelli, 2014; Hess, 2005). Therefore, it is crucial that the speech-language pathologist develops a strategic plan to address the communication issues and the respiratory therapist develops a plan to manage the tracheostomy.

Etiology and Concerns

Tracheostomy is a surgical operation that involves making an incision on the anterior side of the patient's neck to directly open an airway. The created opening, tracheostomy, can be used as an

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airway or a site to place a tracheostomy tube. This allows the patient to breath without using his or her mouth or nose. Tracheostomy patients form an etiologically diverse group that includes individuals with upper-airway deformities, individuals in need of lasting invasive ventilation, and individuals with a number of diseases that compromise the integral structure of the upper airway. Despite fundamental differences in the underlying conditions, long-term tracheostomy patients face similar challenges during their treatment and rehabilitation. The most common concerns can be grouped into the following categories (Hess & Altobelli, 2014; Siebens & Tippett, 1995):

- patient and caregiver education and training;
- airway ventilation;
- tracheostomy equipment management (installation, change, maintenance, check-ups);
- humidification and suctioning needs; and
- effective swallowing and vocal speech issues.

The latter is an important concern for respiratory therapists and speech-language pathologists to consider while providing a long-term care plan for tracheostomy patients.

Speech Enhancement and Rehabilitation

The practical and technological advances in handling respiratory failure has resulted in an increased number of tracheostomy patients. Most tracheostomy patients do not need speech therapy because they will have tracheostomies only for a limited time. The patients with long-standing tracheotomies can usually vocalize; however, a significant portion of them, particularly pediatric patients, need speech therapy (Kobak, 2016; Hess & Altobelli, 2014). Respiratory therapists, speech-language pathologists, and a surgical doctor should work together to determine if a patient is ready to use a speaking valve. Clinicians usually consider patients' level of consciousness, ability to tolerate tracheostomy tube capping, cough effectiveness, and secretions as the most important factors in the decision to use a speaking valve (Hess & Altobelli, 2014).

We will describe and analyze speech-enhancement practices for both ventilator-dependent patients and patients without mechanical ventilation. We will also discuss general therapeutic guidelines to prepare patients to successfully use their vocal cords.

Ventilator-Dependent Patients

There are a number of practices to assist vocal communication among tracheostomy patients dependent on ventilation; we will discuss talking tracheostomy tube, cuff down with a speaking valve, and cuff down without a speaking valve.

Talking tracheostomy tube. The tube allows the patient to talk in a whispered voice. An important feature of the device is that it decouples breathing and talking functions because gas supplied by the ventilator passes through the larynx, enabling the patient to speak. Despite the

fact that this method allows the patient to vocally communicate, it is associated with a number of negative side effects. One of them is poor sound quality. The patient's voice is very quiet, and volume can only be improved with higher air flows, which, in turn, can lead to damaged airways. Another pitfall is that an assistant is required to control the air flow pressure. The patient needs a period of training (by respiratory therapists and speech-language pathologists working together) in order to master vocal communication using a voice tube.

Cuff down with a speaking valve. Using the speaking valve is based on the following principle: gas flows into the tube during inhalation and exits through the upper airways during exhalation. The method has been reported to improve various aspects of vocal communication in tracheostomy patients: speech flow and time, speech hesitancy, and so forth. Some patients might have difficulties adjusting to the use of a speaking valve. In that case, the assistance of a speech-language pathologist is needed (Hess, 2005; Kobak, 2016).

Cuff down without a speaking valve. This technique is based on manipulations of the ventilator by a respiratory therapist to allow gas to escape through the upper airway during inspiration. This allows the patient to be able to speak during the inspiratory phase (Hess & Altobelli, 2014; Siebens & Tippett, 1995). In this phase, the speech-language pathologists teach/coach the patient on how to communicate while on the ventilator. It is important that the team monitors the patient for signs of distress at this time.

Patients Without Mechanical Ventilation

A tracheostomy tube can also be used in patients who are not mechanically ventilated. The following techniques can be used to address vocal communication issues in tracheostomy patients: cuff down finger occlusion and cuff down with speaking valve.

Cuff down finger occlusion. The method is based on the following manipulation performed by the patient (or caregiver) when the cuff is down: the finger is placed on the proximal opening of the talking tracheostomy tube. This way, air is directed through the upper airways, which produce speech. The pitfall of this method is that many patients cannot coordinate their movements to master vocal speech with finger occlusion (Hess, 2005; Hess & Altobelli, 2014).

Cuff down with a speaking valve. Air is directed through the upper airways by a speaking valve, which allows the patient to speak. This technique is most commonly used among patients and is relatively simple for them to master. Improvement of swallowing and olfaction has been reported among patients using the cuff down with a speaking valve method. This method, however, has a number of serious limitations, one of them being a high risk of aspiration. Therefore, the medical team should perform a thorough medical examination of the patient before prescribing this treatment (Hess, 2005; Hess & Altobelli, 2014).

SLP and RT Team Approaches to Training Patients/Caregivers

The initial step of every successful speech-rehabilitation practice includes appropriate patient and caregiver training. Training should deal with the following important information blocks: basic airway anatomy, description of the tracheostomy invasion operation and its justification in the patient's particular case, symptoms of respiratory and upper-airway distress, equipment installation and maintenance, and physician follow-up schedule. The training should be conducted for both adult and pediatric patients; ideally, this training should take place prior to the invasive procedure to prepare the patient and caregiver psychologically for possible outcomes (Lewarski, 2005; Hess & Altobelli, 2014).

The long-term goal of speech therapy includes improved swallowing and vocal communication. There are a number of physiotherapeutic methods and device adjuncts to promote vocal communication in tracheostomy patients (Kobak, 2016; Lewarski, 2005). A crucial component of the speech-restoration process among long-term tracheostomy patients is teamwork between the patient and the care team (respiratory therapist, speech-language pathologist, and nurses) (Hess, 2005). Speech therapy for tracheostomy patients should focus on the following areas:

- educating the patient regarding the procedure and its effects on speech;
- developing a strategy to address conditions of each specific patient (respiratory and speech-pathology therapists, nurses, patient, caregivers);
- choosing a correct communication-enhancement method and providing the patient with appropriate training;
- conducting speech development exercises (e.g., reading and talking to pediatric patients); and
- looking for an alternative communication technique if necessary (sign language, electronic device, and so forth).

Conclusions

Rehabilitation of tracheostomy patients remains an important issue in modern medicine. There are a number of approaches to enhancing vocal speech in tracheostomy patients and ensuring full speech functionality and social adaptation. Successful speech therapies are based on coordinated interaction of respiratory therapists and speech-language pathologists, nurses, caregivers, and patients. The ability to speak is an important quality-of-life issue for tracheostomy patients.

Definitions

Tracheostomy is a surgical operation that involves making an incision on the anterior side of a patient's neck to directly open an airway.

Tracheostomy tube is a tube that is placed through the tracheostomy opening to provide an airway and to remove secretions from the lungs.
Speaking valve is a one-way valve that is attached to the end of the tracheostomy tube. It opens to allow air in through the tracheostomy during a breath in and then closes on the breath out, directing the air up through the larynx and out of the mouth in order to produce voice.
Mechanical ventilator or respirator is a machine that improves the exchange of air between the lungs and the atmosphere.
Aspiration is when food, stomach acid, or saliva is inhaled into the lungs.

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