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## RESEARCH ARTICLE

## NURSING CARE: BASIC PRINCIPLES OF TRACHEOSTOMY CARE AT HOME.

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**Abstract**

In recent years, the number of patients with tracheostomy is increasing internationally. Tracheotomy is defined as a surgical operation that allows airway patency by creating an opening in alignment of the front wall of trachea on the 3<sup>rd</sup> or 4<sup>th</sup> cartilaginous ring; and it is known to be one of the earliest lifesaving methods. Changes in health care and economic pressures have led to shorter stays in acute care facilities, and as the number of tracheostomies being performed in ENT and ICU are increasing, more tracheostomized patients are being discharged home. For a patient to be discharged home with tracheostomy patients should be independent with their care needs. It is essential for the nurses to consider the individual's ability in light of this and prevent complications on long-term tracheostomy. The process of patient home care after discharge hospital includes preventing infection, suctioning, humidification, nutrition, tube cleaning, tube changing, stoma care and tracheostomy ties changing.

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**Introduction:-**

In recent years, the number of patients with tracheostomy is increasing internationally (Docherty 2001, Baskin et al. 2004; Lewis & Oliver 2005; Parker et al. 2007). The concept of tracheotomy is originated from Greek, and it means "cutting the trachea". Tracheotomy is defined as a surgical operation that allows airway patency by creating an opening in alignment of the front wall of trachea on the 3<sup>rd</sup> or 4<sup>th</sup> cartilaginous ring; and it is known to be one of the earliest lifesaving methods (Hickey, 2002). Tracheotomy is usually temporary, and this opening can be closed when the patient is capable of functioning normal respiration. As for tracheostomy the patient usually meets the air need from this opening and lives with tracheostomy in the rest of his/her life after discharge hospital (Hickey, 2002; Russel and Matta, 2004).

Changes in health care and economic pressures have led to shorter stays in acute care facilities (Lewarski, 2005; National Institute for Health Research, 2009) and as the number of tracheostomies being performed in ENT and ICU are increasing, more tracheostomized patients are being discharged home (Garner et al., 2007). For a patient to be discharged home with tracheostomy patients should be independent with their care needs (Bowers and Scase, 2007). It is essential for the nurses to consider the individual's ability in light of this and prevent complications on long-term tracheostomy.

The process of patient home care after discharge hospital includes preventing infection, suctioning, humidification, nutrition, tube cleaning, tube changing, stoma care and tracheostomy ties changing (Tamburri 2000; Serra 2000; Norwood et al. 2004; Lewis & Oliver 2005; Freeman 2011).

## Tracheostomy Care at Home:

### *Preventing infection:*

The mouth and nose act as natural barriers against bacteria and infection. The person with a tracheostomy does not have the same protection from infection as those who breathe through their mouth and nose. Because it is a more direct pathway, the stoma makes it easier for bacteria to get into the trachea ([www.nmh.org](http://www.nmh.org)). The patient with a tracheostomy is at risk for infection of the pulmonary tree. Bronchopulmonary infections occur, because the tracheostomy bypasses the protective upper airway mechanisms, e.g., filtering, warming, and humidifying the inhaled air. Retained secretions due to decreased mucociliary action and an ineffective or absent cough reflex provide an excellent medium for bacterial growth. Careful suctioning reduces mucosal trauma, which may lead to tracheal infection, and prevents the introduction of bacteria into the trachea ([www.smiths-medical.com](http://www.smiths-medical.com)).

The most important thing to prevent infection is cleaning hands before and after doing anything to the tracheostomy area or tube. The other tips for prevention infection are (TracheostomyGoingHome.doc):

- ❖ Never reuse clear plastic catheters.
- ❖ Always perform routine tracheostomy care.
- ❖ Keep the tracheostomy area clean and dry.
- ❖ Keep tracheostomy tubes and suction equipment clean and dry.
- ❖ No smoking in the house.
- ❖ Clean equipment regularly.
- ❖ Replace disposable equipment on a regular schedule.
- ❖ Avoid people, including friends and family that have colds or the flu. If they must be near you they should wear a mask.

### *Suctioning:*

The body's natural defence mechanism in the respiratory tract is the mucociliary escalator: inhaled foreign matter, bacteria and debris are transported in the mucus by cilia upwards to throat. Suctioning the airway using sterile technique is essential to remove secretions and maintain a clear airway (Tamburri, 2000; Feber 2006). It is imperative that both patient and family recognize the indications for suctioning (Serra, 2000; Dixon, 2003; Karuga and ark, 2012; Dawson, 2014):

- ❖ Noisy or moist-sounding respirations
- ❖ Increased pulse rate
- ❖ Increased or labored respirations
- ❖ Nonproductive coughing
- ❖ Crackles or wheezes
- ❖ Patient requests suctioning
- ❖ Tube changes

The tips suctioning are (TracheostomyGoingHome.doc):

- ❖ The catheters should not be in the airway for more than 10 to 15 seconds.
- ❖ Do not apply suction when inserting the catheter. Only apply suction when withdrawing the catheter.
- ❖ The same catheter may be used during each suction attempt during the same suction session as long as it has not touched anything, other than the tracheostomy tube.
- ❖ If the inside of the catheter becomes plugged, throw it out. Replace with another sterile catheter.
- ❖ Do not dip the catheter into any type of water to test the suction or to clear the catheter between suction attempts.
- ❖ When suctioning is complete throw out the catheter.
- ❖ Some individuals may have to be manually ventilated (bagged) before and after suctioning. This may help move secretions higher in the airway. This may also help with breathing.
- ❖ Reconnect trach mask, trach swivel, cork/speaking valve, ventilator and/or the heat and moisture exchanger when needed.
- ❖ May use alcohol based hand rub for cleaning hands before and after suctioning if soap and water not available.

### *Humidification:*

The breathing air goes through the nose and mouth, where it is warmed and humidified. A tracheostomy tube bypasses the nose and mouth. This can result in thick, dried secretions and a blocked tube ([www.nmh.org](http://www.nmh.org)). Due to this reason, adequate humidification of the trachea is very important. The importance of humidification in reducing

the thickness of secretions and build-up of crusty formations is discussed with the patient (Minsley and Wrenn, 1996). Symptoms of insufficient humidity include (Roberts, 1995; Karuga and ark, 2012; Dawson, 2014):

- ❖ increased, unproductive coughing
- ❖ a change of mucus from thin to a thick, sticky consistency and from clear to pale yellow
- ❖ shortness of breath from a mucous-plug obstruction
- ❖ blood-streaked mucous
- ❖ noisy, labored respirations

For patients who are very young or bedridden, a tracheostomy collar with a warm humidification system is effective (Fitton, 1994). In other situations, the use of a room humidifier or vaporizer may be useful (Craven and Hirnle, 1996). Adequate fluid intake (2000- 2500 ml/day) will help moisten the tracheal tissues and thin secretions (www.nmh.org).

#### ***Nutrition:***

The patient should be evaluated for nutritional well-being and wound healing. The nurse stresses the relationship between good nutrition, meticulous skin care, and the prevention of wound infection (Minsley and Wrenn, 1996). The patient with a tracheostomy is at risk of nutritional deficiency, because of altered anatomy and less taste and smell sensations (Dixon, 2003). Maintenance of weight is one objective measure of nutritional adequacy.

#### ***Tube Cleaning:***

It is very important to keep the inner cannula of the tracheostomy tube clean and free from dried secretions. Dried secretions can occlude the trach tube and make it difficult for the patient to breathe (Breath of Life, 2009). The inner cannula should be cleaned 2 or 3 times a day. It is best to clean it when doing the dressing change. (www.nmh.org).

#### ***Tube Changing:***

The entire tracheostomy tube should be routinely changed every 6 to 8 weeks (Minsley and Wrenn, 1996). It also will need to be changed if the cuff is torn, the pilot balloon cut, or there is difficulty in passing a suction catheter. The purpose of changing the tracheostomy tube is to minimize infection and granulation tissue formation (Minsley and Wrenn, 1996). In most cases, patients can change the tracheostomy tube at home, once they are proficient and confident in their ability (Dixon, 2003). It is very important to use sterile technique during the tracheostomy change procedure.

#### ***Stoma Care:***

The stoma is the opening through the skin. Taking care of the skin around the tracheostomy is one of the most important parts of the care you will have to provide at home. It is important to keep the stoma as clean and dry as possible. Clean the stoma area and apply a new dressing 2 to 3 times a day or more often if needed. (www.nmh.org). It is important to clean stoma preventing infection. It is best to do the stoma care in the morning and before going to bed.

The patient and family are instructed to change tracheostomy dressings that are soiled or moist. These dressings can harbor bacteria, which contribute to skin breakdown and infection at the tracheal stoma. Careful daily assessment of the stoma for the cardinal signs of infection, such as redness, drainage, swelling, and pain, will alert the patient to early signs of infection and prompt treatment. (www.smiths-medical.com)

#### ***Tracheostomy Ties Changing:***

The patient's neck is another common site of skin breakdown and potential infection, as related to the tracheostomy-securing device most often, twill ties. Tissue damage occurs under the ties, which act as a constricting band that puts greater pressure on neck tissues (Craven and Hirnle, 1996). An alternative to traditional twill ties is the Velcro type holder, which secures the tracheostomy tube. Because of its design, wide neck band and elastic portion to allow for movement or cough, this device helps to prevent skin breakdown by reducing the amount of pressure on neck tissues (Breath of Life, 2009; www.nmh.org). When retying the ties, do not pull them too tight, as you may decrease the blood flow to the patient's head and cause too much pressure to the skin of the neck.

## Conclusion:

Caring for a patient with a tracheostomy in the home setting requires both patient and family to acquire many new skills. The nurse helps them integrate these new skills into their daily lives. In this way, the patient and family learn the necessary skills and achieve a level of confidence that eases the transition to home care.

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