

Patient with a new tracheostomy nursing essay



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The trachea divides the bronchi in two; left and right. The bronchi branch out into small and smaller branches including primary, secondary, and tertiary bronchi. The tertiary bronchi branch into even smaller tubules called bronchioles. Bronchioles have air-filled sacs at the terminals. These air-filled sacs are called alveoli. Impaired gas exchange is the state in which an individual experiences an actual or potential decreased passage of gases (oxygen and/or carbon dioxide) between the alveoli (small hollow air sacs that connect to the bronchioles) of the lungs and the vascular system. (Carpenitor-Moyet, 2006). Impaired gas exchange can be related to a number of different medical conditions including but not limited to: hypoxia, hypercapnia, bronchitis, bronchiolitis, pneumonia, pneumo-thorax, COPD/emphysema, hypoventilation, and asthma. Anytime that are cannot pass freely through the trachea, bronchi, bronchioles or alveoli risk for impaired gas exchange increases. (LeMone & Burke, 2008) There are many reasons for inadequate gas exchange

Patient B. R. is a 14-month old male who came in to the emergency room at Providence Memorial Hospital with the main complaint of severe stridor (high pitched, continuous sound auscultated over the upper airway), acute respiratory failure, and possible tracheotomy placement. Acute respiratory failure may occur when a patient has chronic respiratory problems and suddenly develops a respiratory infection or is exposed to other types of stressors. (Sole, Klein, & Mosely, 2009) In this case acute respiratory failure was a complication of his other medical issues. His medical history consists of CP and seizures since birth due to being born with an absent corpus callosum; he spent two weeks in NICU. He has a GERD and has G-tube for

bolus feeds. Upon admission on October 24, 2012 an X-ray was taken and he was diagnosed with pneumonia and a pneumo-thorax, for which thoracentesis (a chest tube) was placed. After further assessment he was a candidate for a tracheotomy.

Patient B. R. weighs 6. 85 kilograms. Upon assessment of B. R. on 10/31/2012 vital signs were as follows: temperature 98. 7, pulse 181, respiratory rate 31, blood pressure 111/54, and pulse oximeter 92 percent. Using the FLACC (Face, Legs, Activity, Cry, and Consolability) scale for pain he had a zero which correlates to no pain. His skin was pink and warm with normal skin turgor. He had mild breakdown around the fresh tracheotomy site, sutures were intact with significant pulling. He receives enteral feeding through a gastrostomy tube that was surgically placed in July 2012, which he gets fed 90 cc of Neosure formula, every three hours. Abdomen was soft and non-tender with active bowel sounds. B. R. has mild bruising on his right hand due to previous IV sticks. His IV line was located at the left antecubital vein with no swelling or pain noted. Range of motion was passive with minimal spontaneous active movements, no apparent sensation deficits. Brisk capillary refill less than 3 seconds, apical pulse and peripheral pulses were 145, +3/+3. S1 and S2 heart sounds were present with no adventitious sounds heard. Respiratory rate was 31, unlabored breathing with rhonchi (coarse, continuous low-pitched rattling sound) heard in all four lobes of the lungs and mild wheezing to the lower left lobe. (Sole et al., 2009)

Due to B. R. having a pneumo-thorax, pneumonia and a new tracheostomy placement he was having difficulties with gas exchange. The pneumonia was preventing air from going into the alveoli due to the alveoli being filled with

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fluids and secretions. The pneumo-thorax, collapsed lung was preventing air from entering the left lung due to the lack of negative pressure. There was no oxygen that was able to pass through alveolar sacs. Thoracentesis procedure was performed and a chest tube was surgically placed to reopen the alveoli and allow oxygenated air to circulate and oxygenate the patient's tissues once again. The new tracheostomy allowed the airway to remain patent and permits access to remove secretions from the lungs.

The top three nursing diagnoses were ineffective airway clearance, risk for aspiration, and risk for impaired gas exchange. Priority number one for B. R. was ineffective airway clearance related to artificial airway, excessive or thick secretions and the inability to cough effectively as evidence by ineffective cough and inability to remove airway secretions as well as abnormal breath sounds. Goals and outcomes were that B. R. will maintain patent airway with evidence by respirations will be easy and unlabored and at a normal rate of 30-50 breaths per minute. Interventions: assess respiratory rate, depth, effort, breath sounds and rhythm every 2 hours, keep the head of bed elevated above 30 degrees, turn patient every two hours minimum, tracheal suction as needed, teach mother and other family members to suction and obtain an apnea monitor for home use. Evaluation: Patient's airway was maintained as evidence by respiratory rate maximum was 48 and minimum was 31, breathing was unlabored. Continue with care plan, follow up on obtaining an apnea monitor for home use and reinforce suctioning techniques with mother.

Priority number two impaired gas exchange related to decreased lung compliance, excessive or thick secretions, loss of lung elasticity,

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neuromuscular impairment, surgery, history of pneumothorax, left sided chest tube, pneumonia and paralyzed diaphragm as evidenced by dyspnea on exertion, lethargy and fatigue, decreased oxygen content, decreased oxygen saturation and increased PCO₂. Outcomes and Goals: Arterial blood gases are within acceptable limits. Interventions: Assess color, breath sounds, respiratory rate, depth, effort and rhythm every two hours, report arterial blood gases that deviate from patient's baseline, position to facilitate optimum breathing patterns; head of bed elevated to at least 30 degrees, turn every two hours facilitate cough and deep breathing exercises, tracheal suction as needed, increase activity to facilitate diaphragm excursion. Evaluation: Patient's arterial blood gases were still slightly out of range PCO₂ 19. It is necessary to continue with nursing interventions. Investigate possible exercises for improving diaphragm strength. Ask Respiratory Therapy to get involved with vest compressions.

Priority number three risk for aspiration related to recent tracheostomy, enteral feedings and impaired swallowing as evidenced by abnormal breath sounds and impaired swallowing. Outcomes and goals: Patient will experience no aspirations as evidenced by a decrease in rhonchi and decreased production of secretions. Interventions: head of bed elevated to at least 30 degrees, assess for presence of neuromuscular impairment, assess amount and consistency of secretions and gag cough reflex and strength, verify feeding tube placement, monitor use of oxygen masks, maintain suction at bedside, instruct on safety when feeding, provide rest periods between meals at or above 30 degrees. Evaluation: Patient remained free

from aspirations as evidenced by no new adventitious breath sounds.

Continue nursing interventions especially suctioning as needed.

While it was impossible to give instruction to the patient because of age (Erikson's stage of autonomy verses shame and doubt) and mental deficits the mother and grandmother were eager and willing to learn how to better care for B. R. B. R's mother (Erikson's stage of intimacy verses Isolation) (Taylor, Lillis, LeMone, & Lynn, 2008) had been doing all the home healthcare all by herself. She stated, " I realize I need some help right now. I am still unsure of how to suction. I think I am going to need some nursing help when I go home. Well at least until I feel comfortable doing it all on my own again." It was apparent that she would be able to learn sterile suctioning and tracheostomy care. The grandmother (Erikson's stage of generativity verses stagnation) (Taylor et al., 2008) was a little more timid and hesitant about suctioning but she was also aware of her need for teaching. She stated, " I have to learn how to care for my grandson. I help my daughter when she is at work so I need to know what to do when I am taking care of the kids without her."

Some of the teaching that was given to the mother included guided instruction on how to perform sterile suctioning of the tracheostomy, cleaning and changing the dressing around the tracheostomy, as well as changing out the cannula. She was unfamiliar to tracheostomies but after the teaching she was able to demonstrate sterile suctioning and explain why suctioning was important. She also verbally communicated reasons to suction and what precautions to take before, during and after suctioning. The teaching also included information about basic anatomy such as, the left
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bronchi normally is longer and narrower than the right bronchi, for that reason it is more likely for aspirations to flow into the right side. Due to the copious sensory neurons in the area of the trachea that separates into the bronchi, it is important to keep that in mind when suctioning a patient with a tracheostomy as stimulation of those nerves may cause coughing and bronchospasms. The mother voiced understanding of teaching. (LeMone & Burke, 2008) Before discharge an apnea monitor must be delivered in order to monitor patient for episodes of apnea. The social workers have been consulted in order to get home health incorporated into the patient's continuation of care after discharge.

According to the American Thoracic Society's guideline Care of the Child with a Chronic Tracheostomy, three main aspects of tracheostomy care are; choosing the proper tracheostomy tube, suctioning, and teaching/education for caregiver.

Choosing the proper tube: Depending on the size and age of the patient the size of the tube will be different. The tube should extend at least 2 cm beyond the stoma and should not be closer than 1 cm to the carina. Patient will often breathe through and around the tracheostomy tube but sometimes they need a more snug fit. It is important to take into account the anatomy of the patient when choosing a tracheostomy tube. If a patient is fit with a rigid tube (Metal) but needs one that is more flexible (poly vinyl or silicone), airway resistance can occur and cause damage to the patient. There are cuffed and un-cuffed cannulas; according to the guideline indications for cuffed tubes are limited in pediatric patients. Most patients have un-cuffed tubes. The cuff allows the tube to stay in place and it also facilitates

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ventilation. At night the cuff needs to be inflated more to assist in ventilation and often is deflated during the day make speech possible. B. R. was fit with a 4 Pedi Shiley un-cuffed tracheostomy cannula. In the room there were three extra cannulas for emergencies 3. 5, 4, and 4. 5. It is important to have various sizes at the bedside incase the size the patient does not fit properly after removal. It is also important to take into account what kind of secretions the patient is producing. A patient with excessive thicker secretions may benefit from a trachostomy with an inner cannula. That will allow the cannula to be taken out and cleaned without as many risks as a tube without the inner cannula. B. R. had a tube with an inner cannula. His tube was chosen according to the guideline. (American Thoracic Society, 1999)

Suctioning: the guideline states that while in hospital sterile technique should be used when suctioning a patient with a tracheostomy. This is defined as using a sterile set of gloves and a sterile catheter when performing suctioning. There is debate as to what methods should be used outside of the hospital setting. If nothing else clean technique, non-sterile gloves and non-sterile catheter, should be practiced if possible modified clean technique, non sterile gloves and a sterile catheter, is recommended for an at home setting. When non-sterile catheters are used it is essential that they have been cleaned properly. Cleaning includes: washing and flushing used catheters with hot soapy water, disinfecting used catheters by soaking them in a vinegar and water solution or disinfectant, rinsing the used catheters inside and out with clean water, and air drying the used catheters. After performing suction on a patient it is necessary to rinse the inside of the

catheter with sterile water in order to loosen thick secretions. Alcohol or hydrogen peroxide may also be used to release particularly adherent secretions. While B. R. was being cared for at the hospital only sterile technique was used. This was in compliance with the stated guideline. His mother was instructed on sterile technique and stated that if possible she would like to continue sterile technique at home.

While suctioning it is also important to consider how deep is deep enough, and how deep is too deep. There are three main styles of suctioning, shallow, premeasured and deep. Shallow suctioning is considered to be suctioning where only the tip of the catheter goes into the hub of the tracheostomy tube. This removes only the secretions that the patient has coughed up. Premeasured suctioning is where there is a predetermined depth in which the catheter will go into the tracheostomy tube. Deep suctioning is where the catheter is inserted until resistance is met. Then the catheter is pulled back slightly right before suction is applied. Premeasured is the preferred method for routine suctioning as it is safer and it is less likely to cause epithelial damage. Pre-marked catheters are recommended for convenience and prevention of measuring errors in emergencies. Twirling or rotating the catheter between fingers is recommended over stirring while suctioning. Suctioning is ordered by the physician most often it is ordered as an as needed procedure. With patients that are not producing obvious secretions a minimum of suctioning before bedtime and in the morning is recommended. For B. R. Pre-marked catheters were used and the premeasured technique was implemented. It was hospital procedure for the nurse to take a measurement and mark a ruler for bedside reference. B. R. was to be

suctioned at the 6 cm mark as needed. He was producing thick secretions so sterile water was also available at the bedside to help clear the catheter during suction interventions. (American Thoracic Society, 1999)

Caregiver education: Caregiver education is essential to ensure the patient is properly cared for prior to discharge from the hospital. All children should receive some form of skilled nursing care at the home following discharge at least during the transitional period while primary caregiver becomes more comfortable and knowledgeable. Tracheostomy care is tedious and potentially life-threatening if performed wrong. It is extremely important that caregivers receive thorough and comprehensive education on caring for the tracheostomy. Education should be given to the caregiver before the procedure is performed. This education should be individualized and provided in writing as well as verbally. If possible a tracheal tube should be available for a visual aid. It should include decision making tests as well as technical skills. Siblings, friends, and other family members should be encouraged to participate in the education classes. Caregivers should have all home supplies available to them in the hospital prior to discharge in order to decrease confusion upon discharge. Decision trees should be provided to the family to assist in caring for the patient and build up confidence. Each caregiver needs to demonstrate home care skills prior to discharge. Hospital procedure is very similar to the guideline. The staff at the hospital made sure that education was given to all family and caregivers that requested it. The hospital also made sure that skilled nursing would be able to follow up at home with patient and family. B. R.'s mother and grandmother were given tracheostomy education and were both able to demonstrate proper care.

Home health was set up to go to the patient's house to help care for the patient. This is temporary as mother stated, I just want to have them there for reference right now until I feel more confident and comfortable. I will eventually be able to care for him by myself."