Changing the incidence rate of Ventilator-Associated Pneumonia

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Literature Review

Clients who are intubated and placed on a ventilator are at high risk for ventilator-associated pneumonia, a condition in which the lungs become infected due to bacteria entering the ventilator tubing (Center for Disease Control and Prevention, 2010). Indications for mechanical ventilation are based on the client's ability to breathe on their own. Common signs include life-threatening emergencies or surgical interventions. Ventilator-Associated Pneumonia is known for its high morbidity and mortality rate; therefore, the need for a change in procedure and policy is critical (Anderson et al., 2003). Examples of potential changes to these policies consist of minimizing mechanical ventilation occurrences unless necessary, maintaining optimal positioning, and providing regular and thorough oral care. This paper will further analyze the stated changes and what impact they have on Ventilator-Associated Pneumonia infection rates.

There are several methods of prevention regarding Ventilator-Associated pneumonia. One crucial intervention is using mechanical ventilation as a last resort. Unless it is an emergent situation or a surgical procedure, physicians should wait until it is imperative to a client's care. Sedation is a risk factor for developing Ventilator-Associated Pneumonia, as it depresses the central nervous system. When a client is placed on a ventilator, they run the risk of developing hospital-associated infections, respiratory damage or requiring the need for a tracheostomy (Cleveland Clinic, 2019). Keeping the patient's best interest in mind, the health care team should exhaust all other measures before deciding to place the client on a ventilator.

Another prevention strategy is maintaining an optimal position of the head of the bed. It is essential to keep the head and neck upright and to support the head of the bed for patients with mechanical ventilation (Boltey et al., 2017). Keeping the head of the bed at a 30-45 degree angle

can help prevent gastric reflux and aspiration, leading to Ventilator-Associated Pneumonia (Boltey et al., 2017). Implementing the semirecumbent position can give patients a chance at a quick recovery with fewer complications. Hospitals should work to change their policies to benefit most patients. This specific policy would play a key role in minimizing the rates of Ventilator-Associated Pneumonia.

The last prevention strategy often implemented is providing oral care more frequently throughout the day to clear out bacteria and secretions. One of the biggest contributing causes of Ventilator-Associated Pneumonia is the colonization of bacteria (Gupta et al., 2016). Studies suggest that brushing the client's teeth, gums, and tongue twice or more per day can reduce Ventilator-Associated Pneumonia rates by 60% (Gupta et al., 2016). Interventions such as routine assessment of the client's oral cavity, maintaining saliva in the oral cavity, elevating the bed's head, and suctioning (Gupta et al., 2016). If all of these preventions in conjunction with a multitude of others are implemented in a facility, they will likely have a lower Ventilator-Associated Pneumonia rate and a decreased mortality rate.

Selection and Application of Change Theory

After extensive research on Ventilator-Associated Pneumonia and the prevention strategies associated with the condition, the change topic was chosen. When applying these changes to clinical practice, evidence-based research needs to be incorporated. Each preventative measure needs to be well monitored and applied to a controlled number of patients. If the outcome is positive, these changes should be implemented into hospital policy. Each health care professional should be aware of these changes and ensure they are being carried out to promote a decrease in Ventilator-Associated Pneumonia rates. It would also be beneficial to the facility to

have continuing education programs available on specific topics like prevention of Ventilator-Associated Pneumonia.

Planning the Change Strategy

After collecting data for the change, the information will be assessed and analyzed then the planning process will begin. The planning process involves setting goals and outcomes that directly impact patient care. This article reviews three evidence-based nursing practices that can reduce the risk of ventilator-associated pneumonia. Those three practices include minimizing patient exposure to ventilators, providing excellent oral hygiene, and using proper position techniques.

Implementation

Implementing involves taking the plan and putting it into practice. Reducing ventilator-associated pneumonia can begin with minimizing patient exposure to ventilators. As nurses, our plan of action works from least invasive to most invasive. Nurses can use this concept to prevent VAP by advocating for the use of noninvasive ventilation approaches. A nurse can begin with the least invasive method by using continuous positive airway pressure (CPAP). A CPAP machine increases air pressure so that the airway does not collapse during inhalation (Boltey et al., 2017). If CPAP does not correct the issue, and mechanical ventilation cannot be avoided, nurses should minimize ventilation duration. Using the weaning technique may help shorten the amount of time patients are spending on a ventilator. Weaning involves daily interruption in sedation to allow for spontaneous breathing (Boltey et al., 2017)

Next, providing excellent oral hygiene is used to prevent VAP. Oral health is quickly compromised when ventilation occurs. Some patients sustain injuries during the intubation phase and are susceptible to dry mouth afterward. Poor oral hygiene can lead to a buildup of bacteria in

the oral mucosa and spread directly to the lungs via the endotracheal tube (Boltey et al., 2017). Adequate oral hygiene can reduce the multiplication of bacteria and decrease the risk of infection. Oral care needs to complete every two hours or as required according to facilities protocol. Making oral hygiene a routine part of intubated patients' care should decrease infection risk, hence preventing ventilator-associated pneumonia.

Proper positioning aids in the prevention of ventilator-associated pneumonia. Keeping the head of the bed elevated between 30 and 45 degrees (semirecumbent position) will reduce gastric reflux and aspiration (Boltey et al., 2017). Aspiration of gastric contents not only sends bacteria to the airway but causes significant inflammation to the airways. Aspiration can result in patients having ventilator-associated pneumonia and extending their time on the ventilator.

Stabilize the Change

To stabilize change, the nurses need to follow the changes implemented to reduce the risk of ventilator-associated pneumonia. By using mechanical ventilation as a last resort, patients do not have a chance at getting VAP. Nurses must also ensure that proper oral hygiene is in the plan of care for ventilated patients. Nurses can perform oral maintenance at the correct time and use an aseptic technique. Lastly, using proper positioning techniques will reduce the risk of ventilator-associated pneumonia.

The goal of patient care is to keep all patients safe and free of infection. The last thing a healthcare professional wants is to give a patient another condition while patients do everything they can to better. Times are very uncertain right now, especially with COVID-19. More and more people are admitted to the Critical Care Unit with the virus and, as a result, are being mechanically ventilated. We can do our part by performing proper hand hygiene, wearing a mask whenever in public or around others, and social distancing when applicable. As fourth-semester

nursing students, we are preparing to enter the field in a few months and make a difference in others' lives. We dedicate ourselves to decreasing the spread of infection. If we are assigned a mechanically ventilated patient, we will reflect on this change paper and work towards a better outcome.

Evaluation of Change Experience

Ventilator-Associated Pneumonia is a severe and life-threatening complication for clients who require mechanical ventilation in the hospital. Research shows that when prevention strategies are implemented, rates of Ventilator-Associated Pneumonia decrease. This group worked well together, navigating the best preventions that should be implemented. Key prevention strategies include avoiding intubation until necessary, elevating the head of the bed to 30-45 degrees, and providing routine oral care. When these protocols are put in place, the patient is more likely to be extubated without further complications. Preventing Ventilator-Associated Pneumonia is simple when changes are made. Health care workers strive to give their patients the best possible outcome during and after their time in the hospital. Working to achieve these goals will help hospitals improve their rating and maximize patient satisfaction.

Appendices

DATA:

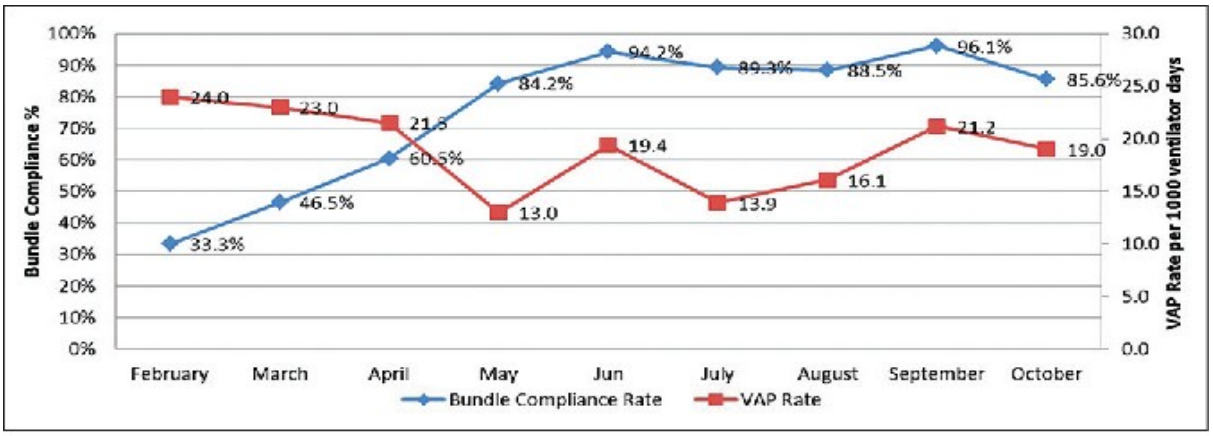

Figure 2: VAP bundle compliance rates and VAP rates in hospital (2) over the

- Bundle compliance refers to a few changes to the protocol for managing ventilator patients. This graph depicts Ventilator-Associated Pneumonia rates while implementing the new changes.

DATE GROUP MET:

- 10/30/2020 & 11/1/2020

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