

Abstract

There is a major problem that affects patient outcomes in the hospital setting. This problem is ventilator-associated pneumonia. Ventilator-associated pneumonia is the second most nosocomial infection in critical care patients. A new policy is needed to ensure that interventions are being done to decrease the risk of patients getting ventilator-associated pneumonia. Ventilator-associated pneumonia also has a high risk of mortality. If interventions are being done, the risk of ventilator-associated pneumonia and mortality will decrease. Prophylactic oral care with chlorhexidine solution is shown through evidence to decrease the risk of both ventilator-associated pneumonia and mortality rates. The use of ventilator bundles are also beneficial to decrease the risk of mortality and ventilator-associated pneumonia. With a policy that includes both chlorhexidine oral solution and ventilator bundles, there will be a great decrease in the amount of patients with ventilator-associated pneumonia and a decrease in mortality rates.

Problem/Background

According to the Center of Disease Control and prevention CDC website, ventilator-associated pneumonia (VAP) is defined as, "Ventilator-associated pneumonia is a lung infection that develops in a person who is on a ventilator. A ventilator is a machine that is used to help a patient breathe by giving oxygen through a tube placed in a patient's mouth or nose, or through a hole in the front of the neck. An infection may occur if germs enter through the tube and get into the patient's lungs" (Ventilator-associated Pneumonia, 2010). Ventilator-associated pneumonia is very high mortality illness that affects thousands of patients on ventilators every year in the hospital settings. As stated in the research article *Ventilator-associated pneumonia: diagnosis, treatment, and prevention*, "Pneumonia is the second most common nosocomial infection in critically ill patients, affecting 27% of all critically ill patients. Eighty-six percent of nosocomial pneumonias are associated with mechanical ventilation and are termed ventilator-associated pneumonia (VAP)" (Koenig, S. M., & Truett, J. D., 2006). With the information presented, there needs to be a change to decrease the risk of ventilator-associated pneumonia. A way to decrease the risk of ventilator-associated pneumonia is to do oral care with chlorhexidine oral solution.

Recommendations for Practice

1. Oral care should be done with the use of 1% of Chlorhexidine oral solution should be used every 4 hours and as needed.
2. Ventilator bundles should be used. The bundles should include:
 - a. Head of bed every 30 hours
 - b. Subglottic suctioning as needed
 - c. Stresser chlorhexidine prophylaxis
 - d. Sedation management
 - e. Apnea cessation breathing trials
3. Documenting the administration of oral chlorhexidine solution into the patient electronic medical record.
4. Documentation of oral care completed within the patient's chart.
5. Assessing the patient for early signs and symptoms of ventilator-associated pneumonia.

Effects of chlorhexidine gluconate oral care on hospital-acquired pneumonia: a hospital-wide, observational cohort study

This study is a non-interventional study that looked at the hospital-acquired pneumonia (HAP) rates in patients on ventilators who received oral care with chlorhexidine gluconate (CHG) solution. The study was conducted in a large tertiary care hospital. The study included 1,000 patients who were on ventilators for at least 48 hours. The study found that patients who received oral care with CHG solution had a lower risk of HAP compared to patients who did not receive oral care with CHG solution. The study also found that patients who received oral care with CHG solution had a lower risk of mortality compared to patients who did not receive oral care with CHG solution. The study concluded that oral care with CHG solution is an effective intervention to reduce the risk of HAP and mortality in patients on ventilators.

ed Pneumonia

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Evidence-Based Practice

...involving toothbrushing versus the prevention of ventilator-associated pneumonia in a randomized study.

This study was a randomized experimental study of oral solution together help decrease the risk of ventilator-associated pneumonia. The study found that both toothbrushing and oral solution had a decreased risk of ventilator-associated pneumonia. The patients who had oral solution every 12 hours. The benefits of brushing were more significant when the chlorhexidine was used before and after procedures. The patients who used toothbrushing alone had a higher risk of pneumonia. This study shows that the combination of oral solution and toothbrushing leads to the prevention of pneumonia in a better manner than either alone.

...of chlorhexidine oral solution in the prevention of ventilator-associated pneumonia in a randomized study.

This research study is a randomized controlled trial that was conducted in a 6-bed critical care unit. The study included 100 patients who were intubated and on mechanical ventilation. The study was divided into two groups: the intervention group and the control group. The intervention group received chlorhexidine oral solution every 12 hours, and the control group received water. The study found that the intervention group had a significantly lower risk of ventilator-associated pneumonia compared to the control group. The study also found that the intervention group had a higher rate of adherence to oral care procedures. The study concludes that the use of chlorhexidine oral solution in combination with toothbrushing is an effective strategy for the prevention of ventilator-associated pneumonia in critical care units.

Henderson's 14 Components as applied to Maslow's Hierarchy of Needs

Figure 1 is a description of how Henderson's components to Maslow's Hierarchy of needs. (Gonzalez, 2019)

Henderson's Nursing Need Theory

- Henderson's Nursing Needs Theory helped guide research on the topic of chlorhexidine oral solution and how it helps decrease the ventilator-associated pneumonia and mortality. Henderson's model also fits in with Maslow's Hierarchy of Needs. The lowest level needs to be met before the next level is able to be achieved. "Henderson's theory emphasizes on the basic human needs and how nurses can assist in meeting those needs" (Gonzalez, A.). We need to be able to reach all basic human needs to ensure a great patient outcomes for patients. Henderson stated, "I believe that the function the nurse performs is primarily an independent one - that of acting for the patient when he lacks knowledge, physical strength, or the will to act for himself as he would ordinarily act in health, or in carrying out prescribed therapy". (Gonzalez, A.). Nurses provide care to patients till they are strong enough to complete the care on their own. Henderson's Nursing Needs Theory is a great framework to use when researching nursing care topics.

Conclusion

A very important topic in nursing and in health care is ventilator-associated pneumonia. Prevention is key to reduce the number of patients getting ventilator-associated pneumonia and to decrease the mortality rate from ventilator-associated pneumonia. This study shows the use of chlorhexidine oral solution helps decrease ventilator-associated pneumonia. An evidence-based practice with ventilator-associated pneumonia. The use of chlorhexidine oral solution in combination with toothbrushing ensures that patients who are intubated and on mechanical ventilation will have a decreased risk of ventilator-associated pneumonia.

References

Gonzalez, A. (2019). Henderson's 14 Components as applied to Maslow's Hierarchy of Needs. [Unpublished manuscript].

Chlorhexidine: The Fight to End

Ventilator-Associated Pneumonia

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Evidence-Based Practice

Impact of oral hygiene involving toothbrushing versus chlorhexidine in the prevention of ventilator-associated pneumonia: a randomized study

This research study was a randomized experimental study that assessed how toothbrushing with the use of chlorhexidine oral solution together help decrease the risk of patients getting ventilator-associated pneumonia. Patients in the study that had both toothbrushing and chlorhexidine solution had a decreased risk of getting ventilator-associated pneumonia. The patients also had shorter stays in the ICU, shorter ventilator days, and a decreased risk of death. The interventions of both oral care with chlorhexidine oral solution and brushing teeth were completed every 12 hours. The benefits of brushing teeth are removing plaque where the chlorhexidine solution will be able to adhere and fight against bacteria more easily. If the plaque was not prevented, the solution is not as beneficial. Study shows that the combination of oral care and toothbrushing needs to be completed to ensure that patients will not acquire ventilator-associated pneumonia during their time of being on the ventilator. This means a better outcome for the patient.

Impact of chlorhexidine mouthwash prophylaxis on probable ventilator-associated pneumonia in a surgical intensive care unit

This research study is a non-experimental study that was conducted in a 44 bed surgical intensive care unit (ICU) at a university hospital. The data presented in the study showed that the use of chlorhexidine oral solution does decrease the risk of patients getting ventilator-associated pneumonia. The data presented in the study also shows that the use of ventilator bundles help prevent patients from getting ventilator-associated pneumonia. Some interventions that are recommended to be in the ventilator bundles are: oral care every 4 hours and as needed, brushing teeth every 12 hours, subglottic suctioning every 4 hours, DVT prophylaxis, stress ulcer prophylaxis, ventilator management, and breathing trials. Added to the bundle was chlorhexidine solution every 12 hours. The study also showed that chlorhexidine oral solution fights both gram-positive and gram-negative bacteria. Patients who had the interventions in the study did better and acquired ventilator-associated pneumonia less than the ones who did not get the treatment.

Effect of chlorhexidine gluconate oral care on hospital mortality: a hospital-wide, observational cohort study

This study is a non-experimental study that looked at mortality rates of patients that get chlorhexidine gluconate oral care throughout the hospital on both ICU and non-ICU floors. The study showed that patients who had oral care completed with chlorhexidine gluconate had a decreased mortality rate. This is good information to pass on to our respiratory patients. This is good information to pass on to our cardiac surgery patients and at risk from major problems and an infection from ventilators should not be one of these problems. The information is important because in health care, the main goal is to prevent mortality while helping better patients control health. If oral care completed with chlorhexidine oral solution can help prevent the risk of mortality, it needs to be completed as patients have better outcomes. The mortality rate decreased by 1.23% when oral care with chlorhexidine oral solution was completed on patients. The data from the research shows that to decrease mortality rates on patients who are intubated and to decrease ventilator-associated pneumonia, oral care needs to be completed with chlorhexidine oral solution.