

Evaluation Table

Evidence-Based Project, Part 4A: Critical Appraisal of Research

	Article #1	Article #2	Article #3	Article #4
Full APA formatted citation of selected article.	Kaneoka, A., Pisegna, J. M., Miloro, K. V., Lo, M., Saito, H., Riquelme, L. F., ... & Langmore, S. E. (2015). Prevention of healthcare-associated pneumonia with oral care in individuals without mechanical ventilation: a systematic review and meta-analysis of randomized controlled trials. <i>Infection control & hospital epidemiology</i> , 36(8), 899-906.	Kim, S. J., Lee, Y. M., & Cho, J. (2017). The Effects of Implementation of Ventilator-Associated Pneumonia Prevention Bundles. <i>Journal of Korean Critical Care Nursing</i> , 10(2), 14-23.	Xie, X., Lyu, J., & Li, M. (2019). Drug Prevention and Control of Ventilator-Associated Pneumonia. <i>Frontiers in pharmacology</i> , 10, 298.	Zhang, Z., Hou, Y., Zhang, J., Wang, B., Zhang, J., Yang, A., ... & Tian, J. (2017). Comparison of the effect of oral care with four different antiseptics to prevent ventilator-associated pneumonia in adults: protocol for a network meta-analysis. <i>Systematic reviews</i> , 6(1), 103.

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<p>Evidence Level * (I, II, or III)</p>	<p>This study is of Level I because it entails both published and unpublished randomized controlled trials that examined the effect of various methods of oral care.</p>	<p>This is of Level 1 because it includes RTC trials.</p>	<p>This is of Level I because it includes randomized controlled trials (RCTs).</p>	<p>This study is of level V because it includes evidence from meta-analysis to compare the preventive interventions.</p>
<p>Conceptual Framework Describe the theoretical basis for the study (If there is not one mentioned in the article, say that here).**</p>	<p>There is no conceptual framework used in this study.</p>	<p>There is no conceptual framework in this study.</p>	<p>There is no conceptual framework used in this study.</p>	<p>There is no conceptual framework used in this study.</p>
<p>Design/Method Describe the design and how the study was carried out (In detail, including inclusion/exclusion criteria).</p>	<p>The study employed a systematic review and meta-analysis of RCT trials. The studies included for meta-analysis were incorporated published or unpublished RCTs; primary studies; evaluated the incidence of pneumonia or mortality; studied adults (18 years or older) in hospitals or long-term care facilities; assessed chemical oral</p>	<p>The study used a retrospective research design in which 3,224 patients were divided into three groups and the VAP bundle was applied to each of the three groups. Group 1 patients (n=470) included head-of-bed elevation to 30 degrees, cuff pressure monitorization, prophylaxis of peptic ulcer, and prophylaxis of deep vein thrombosis. The VAP bundle for Group 2</p>	<p>This study employed systematic meta-analysis of 20 randomized controlled trials (RCTs). This review included all studies with current therapeutic options for the prevention and treatment of VAP in clinical practice.</p>	<p>This study used Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) for all the review steps. The inclusion criterion is as follows: Hospitalized adult patients (>18 years) who have a device to continuously assist or control respiration through a tracheostomy. The</p>

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	<p>disinfection and/or mechanical oral cleaning; and reported sufficient data to calculate the relative risk (RR) for pneumonia or mortality. The exclusion criteria included studies that were set for research that evaluated patients with mechanical ventilation. Studies that had no language or publication date restrictions imposed.</p>	<p>patients (n=1,914) included all the elements of the VAP bundle for Group 1 patients and one additional element which was oral care with 0.12% chlorhexidine. The VAP bundle for Group 3 patients (n=870) added sedative interruption and assessment of readiness to extubate to the VAP bundle for Group 2.</p>		<p>study excluded studies with patients that did not undergo mechanical ventilation for more than 48 h before enrolment.</p>
<p>Sample/Setting</p> <p>The number and characteristics of patients, attrition rate, etc.</p>	<p>The researchers used a sample of 79 studies (58 of them written in English, 17 in Japanese, 2 in Dutch, 1 in Spanish, and one in German). Finally, 5 studies entailed 1,009 subjects that met all the inclusion criteria and were included in the final systematic review.</p>	<p>The authors used a sample of 3,224 patients divided into three groups.</p>	<p>The researchers used a sample of 41 trials and 7,015 patients</p>	<p>The researchers plan to include all articles that meet the selection criteria.</p>

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<p>Major Variables Studied</p> <p>List and define dependent and independent variables</p>	<p>The independent variables included oral care and controlled oral care conditions while the dependent variable was the risk of pneumonia.</p>	<p>The independent variables included three groups while the dependent variable included the VAP bundle.</p>	<p>Independent variables included strategies for preventing ventilated pneumonia and drug strategies for preventing VAP. The independent variable was risk of VAP.</p>	<p>The independent variables include oral care, Chlorhexidine, Povidone-iodine, Five percent sodium bicarbonate, and Herbal mouthwash of Matrica(R). The independent variable is VAP rate.</p>
<p>Measurement</p> <p>Identify primary statistics used to answer clinical questions (You need to list the actual tests done).</p>	<p>The researchers performed a meta-analysis of 4 RCTs to evaluate the pooled effect of oral care with topical chlorhexidine or mechanical oral cleaning on the occurrence of non-VAP. The Cochran-Mantel Haenszel fixed effect analysis revealed a significant overall effect of oral care in decreasing the risk for developing pneumonia as compared with a control condition (RR, 0.61; 95% CI, 0.40–</p>	<p>The researchers carried out a retrospective research in which VAP bundle was applied in each of the groups of patients. the study included all patients at risk of VAP (ICU stay ≥48hours); patients with ICU stay ≥6 days; and patients with ICU stay ≥14 days.</p>	<p>This study summarized strategies in recent studies for the management of VAP and compares the effectiveness of drug strategies in the management of VAP.</p>	<p>The researchers will utilize the I^2 statistic will to measure heterogeneity among the trials in each analysis, with results in a 0–100% range quantifying the proportion of variation in the effect, which is due to inter-study variation. The authors will also consider an I^2 value of 75 to 90% as substantial heterogeneity.</p>

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	0.91; P= .02), without statistical heterogeneity ($\chi^2= 0.53$; df =3; P= .91; I2= 0%).			
Data Analysis Statistical or Qualitative findings (You need to enter the actual numbers determined by the statistical tests or qualitative data).	The researcher used an intention-to-treat analysis when the data were available 26–28 to minimize bias from treatment-related attrition. Besides, the authors also conducted a meta-analysis of 4 RCT.	The numbers and incidences of VAP were significantly different among the three groups. Besides, there were significant differences among groups in ICU length of stay and mortality.	The researchers conducted a meta-analysis of 41 RCTs to compare the effective strategies for the management of VAP.	The researchers will utilize a network of meta-analysis to assess the relative outcomes of different antiseptics.
Findings and Recommendations General findings and recommendations of the research	The findings showed oral care potentially reduced the risk of pneumonia in non-ventilated patients. Besides, the researchers noted that Mechanical oral cleaning in conjunction with professional care reduced the incidence of nursing home–acquired pneumonia and death from pneumonia. The researchers recommended that future studies need to be conducted to establish	The researcher found that the different VAP prevention bundles had different impacts in patient outcomes.	The authors found that Ventilator-associated pneumonia is a vital cause of morbidity and mortality in mechanically ventilated patients, and many strategies have been proposed for the prevention and treatment of this disease. The researchers recommended future studies to be conducted to evaluate these therapeutic strategies in	The researcher found that oral care to prevent ventilator-associated pneumonia has been extensively utilized. Besides, the authors found that the efficacy of usual oral antiseptics have been examined mainly utilizing traditional meta-analysis.

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	the evidence of the best type of preventive oral care in persons in long-term care facilities and to determine whether similar positive effects can be attained in hospitalized patients.		the management of VAP.	
<p>Appraisal and Study Quality</p> <p>Describe the general worth of this research to practice.</p> <p>What are the strengths and limitations of study?</p> <p>What are the risks associated with implementation of the suggested practices or processes detailed in the research?</p> <p>What is the feasibility of use in your practice?</p>	<p>This study is vital because it provided the guidelines for the use oral care to prevent pneumonia in non-ventilated persons. The strengths of this review include the preregistered protocol, duplicate screening, data extraction, and risk of bias assessment. The limitations included the use of limited number of studies, which decreased the statistical power of the meta-analysis and prevented reliable visual inspection for publication bias using a funnel plot. Besides, the imputed incidence of pneumonia could</p>	<p>This study is important because it showed that the effectiveness of VP bundle depends on different factors that determine the incidence of VAP. The strength of this study lies on the fact that it used established independent surveillance methodology, a long baseline and prolonged post-intervention periods as well as multiple techniques to assessing the effects of VAP. However, this study did not exhaust all VAP bundles elements such as anti-bacterial coated and endo-tracheal tubes. Nevertheless, this study provides health care</p>	<p>This study is important because it provides various strategies for the management of VAP. The strength of this study lies on the fact that many studies were conducted to provide evidence of the effectiveness of various strategies for the management of VAP. However, the implementation of these strategies should be carefully evaluated. This study offers the best options for the management of VAP that healthcare providers could adopt..</p>	<p>The strength of this study lies on the fact that oral care to prevent ventilator-associated pneumonia has been broadly used, thus increasing the validity and reliability of the findings. however, the study is limited by the fact that it is difficult to evaluate more than two interventions by traditional meta-analysis. Lastly, there are not head-to-head comparisons of the efficacy of the four antiseptics. However, it is important to be</p>

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	<p>slightly be altered. Additionally, the limited number of studies decreased the statistical power of the meta-analysis and deterred reliable visual inspection for publication bias using a funnel plot. The imputed incidence of pneumonia may have slightly altered the effect of oral care. The majority of studies included were at high risk of various biases, making the results less conclusive. However, the effect of oral care on pneumonia should be interpreted with caution due to risk of bias in the included trials.</p> <p>This study can offer nurse dealing with non-ventilated patients in long-term acute care the oral guidelines to prevent pneumonia.</p>	<p>providers with robust method of examining the clinical and cost-effectiveness of introducing more expensive interventions in the management of VAP.</p>		<p>careful on the type of oral care solution to use because this study has not made it clear which oral care solution is best used for oral care. This study provides relative estimates of effectiveness of each antiseptic; information which can help health care providers to determine the best method to use to prevent VAP.</p>
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<p>Key findings</p>	<p>The study revealed that the effects of mechanical oral care alone were significant when pooled across studies. Another key finding was that the risk reduction for fatal pneumonia from mechanical oral cleaning was also significant.</p>	<p>The researchers found that systematic implementation of VAP bundle of interventions may decrease the incidence of VAP among the patients at great risk.</p>	<p>the authors found that successful prevention of VAP can save on total costs and is possible using a multidisciplinary clinical and administrative approach. The researchers also found that the early appropriate antimicrobial therapy is critical to improving clinical outcomes for patients with VAP. Most importantly, the researchers found that clinician failure is common, with about 70% of patients receiving inadequate initial empiric therapy for VAP.</p>	<p>This study is still ongoing.</p>
<p>Outcomes</p>	<p>Reduction of pneumonia incidences in non-ventilated persons.</p>	<p>Reduction of VAP using various VAP bundles.</p>	<p>The various strategies reviewed showed potential of reducing VAP.</p>	<p>The primary outcome of is VAP morbidity, while the secondary outcomes incorporate the length of intensive care stay, the length of hospital stay, and the duration</p>

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				of mechanical ventilation.
General Notes/Comments	Overall, this study provides evidence on the preventive effect of oral care on healthcare-associated pneumonia in hospitalized patients and nursing home residents who are not mechanically ventilated.	Overall, this study showed that the three different VAP prevention bundles made different effects in patient outcomes.	Overall, this study contributes to the prevention and control of VAP.	Overall, this proposed network meta-analysis will compare four antiseptics and rank the results using network meta-analysis to decide the best antiseptic for VAP prevention.

[*These levels are from the Johns Hopkins Nursing Evidence-Based Practice: Evidence Level and Quality Guide](#)

- Level I
Experimental, randomized controlled trial (RCT), systematic review RCTs with or without meta-analysis
- Level II
Quasi-experimental studies, systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis
- Level III
Nonexperimental, systematic review of RCTs, quasi-experimental with/without meta-analysis, qualitative, qualitative systematic review with/without meta-synthesis
- Level IV
Respected authorities' opinions, nationally recognized expert committee/consensus panel reports based on scientific evidence
- Level V
Literature reviews, quality improvement, program evaluation, financial evaluation, case reports, nationally recognized expert(s) opinion based on experiential evidence

**Note on Conceptual Framework

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- The following information is from Walden academic guides which helps explain conceptual frameworks and the reasons they are used in research. Here is the link <https://academicguides.waldenu.edu/library/conceptualframework>
- Researchers create theoretical and conceptual frameworks that include a philosophical and methodological model to help design their work. A formal theory provides context for the outcome of the events conducted in the research. The data collection and analysis are also based on the theoretical and conceptual framework.
- As stated by Grant and Osanloo (2014), “Without a theoretical framework, the structure and vision for a study is unclear, much like a house that cannot be constructed without a blueprint. By contrast, a research plan that contains a theoretical framework allows the dissertation study to be strong and structured with an organized flow from one chapter to the next.”
- Theoretical and conceptual frameworks provide evidence of academic standards and procedure. They also offer an explanation of why the study is pertinent and how the researcher expects to fill the gap in the literature.
- Literature does not always clearly delineate between a theoretical or conceptual framework. With that being said, there are slight differences between the two.

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References

- The Johns Hopkins Hospital/Johns Hopkins University (n.d.). Johns Hopkins nursing evidence-based practice: appendix C: evidence level and quality guide. Retrieved October 23, 2019 from https://www.hopkinsmedicine.org/evidence-based-practice/docs/appendix_c_evidence_level_quality_guide.pdf
- Grant, C., & Osanloo, A. (2014). Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your "House". *Administrative Issues Journal: Education, Practice, and Research*, 4(2), 12-26.
- Walden University Academic Guides (n.d.). Conceptual & theoretical frameworks overview. Retrieved October 23, 2019 from <https://academicguides.waldenu.edu/library/conceptualframework>

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