**PICOT Question and Annotated Bibliography**

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**PICOT Question and Annotated Bibliography**

Patient safety is a critical element in the healthcare setting and all stakeholders involved in care provision strive to guarantee patients a safer and conducive setting that contributes positively towards their welfare and outcome. However, several issues emerged that threatened patients' safety including Hospital-acquired Infections (HAIs). The CDC (Centers for Disease Control and Prevention) acknowledges that HAIs affect about one out of 30 patients who are hospitalized in America. Also, there are over one million reported cases of HAIs annually (Haque et al., 2018). This demonstrates the severity of this issue among the patient population as well as the impact on both healthcare institutions and patients. Some of the common HIAs comprise ventilator-associated pneumonia, surgical site infections, and catheter-based UTIs (Urinary Tract Infections). The prevalence and increased risk to patients as a result of this patient safety issue necessitates the implementation of feasible and effective interventions that foster patient safety, improve organizational culture, increase healthcare professionals' awareness, and reinforce the healthcare settings' potential to guarantee positive patient outcomes. This paper discusses Hospital-acquired infection by endorsing the incorporation of daily chlorhexidine bathing as an effective intervention as opposed to standard bathing techniques. The PICOT research question – In adult surgical patients (P), how does daily chlorhexidine bathing (I), compared to standard bathing practices (C), affect the incidence of hospital-acquired infections (O) over 3 months (T)? This paper uses an annotated bibliography (critical appraisal tool) to examine various literature that supports the proposed intervention's relevance in addressing the patient safety issue (Hospital-acquired infections).

Annotated bibliographies are fundamental critical appraisal instruments for reviewing literature and are particularly applicable in assessing the literature on hospital-acquired infections and chlorhexidine bathing. This allows the researcher to carefully evaluate each study on factors like the study design, sample size, outcomes measured, analysis methods, and potential biases. This level of critical analysis is essential for determining the strength of the evidence in the literature. For this PICOT question, an annotated bibliography can help assess the quality of studies examining the impact of daily CHG bathing o HAI rates compared to standard bathing practices. The researcher can evaluate aspects like appropriate comparison groups, standardized infection surveillance techniques, and adequate follow-up periods. Studies with robust methods will provide stronger evidence related to the effectiveness of chlorhexidine bathing.

**Annotated Bibliography**

Musuuza, J. S., Guru, P. K., O’Horo, J. C., Bongiorno, C. M., Korobkin, M. A., Gangnon, R. E., & Safdar, N. (2019). The impact of chlorhexidine bathing on hospital-acquired bloodstream infections: a systematic review and meta-analysis. *BMC infectious diseases*, *19*(1), 1-10. <https://doi.org/10.1186/s12879-019-4002-7>

This meta-analysis and systematic review examined the CHG bathing’s effectiveness as an approach to reducing hospital-acquired bloodstream infections. The authors synthesized data from about two dozen studies with over 5,000 hospital-acquired BSIs and 861,000 patient days. The meta-analysis found that daily chlorhexidine bathing meaningfully declined the prevalence of hospital-acquired bloodstream infections by across non-ICU and ICU settings compared to routine bathing without antiseptic. Subgroup analysis showed chlorhexidine bathing was effective for reducing central line-associated bloodstream infections but not non-central line-associated infections. The systematic review methodology provides a rigorous synthesis of the accumulated randomized trial evidence on chlorhexidine bathing and hospital-acquired BSIs. The meta-analytic approach strengthens conclusions about the statistically significant preventive effect of chlorhexidine bathing on BSIs compared to routine bathing. This study makes an important contribution to the literature by demonstrating chlorhexidine bathing is an evidence-based intervention to reduce these serious hospital-acquired infections, specifically those associated with central lines.

Dunn, K. J. (2020). *Increasing Compliance of Chlorhexidine Wipes to Prevent Hospital-Acquired Infections* (Doctoral dissertation, Walden University).

Dunn’s (2020) study sought to implement a quality improvement project/intervention to improve nurses' compliance with chlorhexidine bathing to reduce hospital-acquired infections in a 20-bed cardiac progressive care unit. Compliance rates were compared pre- and post-intervention which included education, visual reminders, and audits. Pre-intervention compliance was half. After the intervention, compliance increased significantly above three-quarters. The results support using a multimodal strategy to improve adherence to chlorhexidine bathing protocols. The author found that by integrating information processing theory, healthcare personnel's potential to inspire and sustain compliance. This project contributes important insights about translating evidence into practice. The pre-post intervention design without a control group provides lower-level quasi-experimental evidence. However, the project has high pragmatism and demonstrates a practical strategy to improve compliance with chlorhexidine bathing which directly impacts the effectiveness of this intervention for reducing hospital-acquired infections.

Lewis, S. R., Schofield‐Robinson, O. J., Rhodes, S., & Smith, A. F. (2019). Chlorhexidine bathing of the critically ill for the prevention of hospital‐acquired infection. *Cochrane Database of Systematic Reviews*, (8). <https://doi.org/10.1002/14651858.CD012248.pub2>

This Cochrane systematic review evaluated the efficacy of CHG bathing to prevent hospital-acquired infections in critically ill patients. The authors synthesized data from four randomized controlled trials with over 1,500 randomized participants as well as four cluster-randomized cross-over research with over 20,000 participants. The meta-analysis found that 2% daily chlorhexidine bathing reduced the risk of acquiring a hospital-acquired infection by close to a quarter percent compared to routine soap-and-water bathing without antiseptic. Subgroup analysis showed enormous decline in central line-associated bloodstream infections but no effect on ventilator-associated pneumonia. Based on the methodology (rigorous Cochrane systematic review), we observe a high-quality synthesis of the evidence on CHG bathing for infection prevention in ICU settings. The meta-analytic approach strengthens conclusions about the statistically significant preventive effect of chlorhexidine bathing on HAIs in critically ill patients. This review makes an important contribution by confirming chlorhexidine bathing as an evidence-based intervention to reduce these serious infections in high-risk ICU populations.

Frost, S. A., Hou, Y. C., Lombardo, L., Metcalfe, L., Lynch, J. M., Hunt, L., ... & Christensen, M. (2018). Evidence for the effectiveness of chlorhexidine bathing and health care-associated infections among adult intensive care patients: a trial sequential meta-analysis. *BMC Infectious Diseases*, *18*, 1-10. <https://doi.org/10.1186/s12879-018-3521-y>

This meta-analysis evaluated the effectiveness of chlorhexidine bathing for reducing healthcare-associated infections in adult ICU patients using trial sequential analysis, which aided in describing the present nature of the evidence for CHG (Chlorhexidine) bathing's effectiveness. The authors synthesized data from about five randomized controlled trials subdivided into two including patient randomized-controlled experiments and the rest of cluster-randomized-crossover trails. The meta-analysis found chlorhexidine bathing significantly reduced the risk of acquiring a hospital-acquired infection by 29% compared to other standard interventions. As such, the trial sequential analysis strengthened the conclusion that the cumulative evidence is conclusive, with the required information size met to show a statistically significant preventive effect of chlorhexidine bathing. This meta-analysis contributes robust evidence that chlorhexidine bathing is an effective intervention for reducing healthcare-associated infections in critically ill adults. The trial sequential analysis methodology illustrates this meta-analysis achieved sufficient power and a low risk of bias. Therefore, it offers high-quality evidence to support the implementation of the chlorhexidine bathing approach as standard practice for infection prevention in adult ICU settings.

Caya, T., Knobloch, M. J., Musuuza, J., Wilhelmson, E., & Safdar, N. (2019). Patient perceptions of chlorhexidine bathing: A pilot study using the health belief model. *American Journal of Infection Control*, *47*(1), 18-22. <https://doi.org/10.1016/j.ajic.2018.07.010>

Caya et al. (2019) conducted a pilot study aimed at exploring patient perceptions and attitudes towards the intervention – chlorhexidine bathing for infection prevention using the Health Belief Model as a framework. Semi-structured interviews were conducted with 31 adult patients in an ICU where chlorhexidine bathing was routine care. Most patients had positive perceptions and believed chlorhexidine bathing prevented infections. Close to three-quarters acknowledged using the intervention while 16% failed to consent to CHG bathing. The identified benefits included perceived effectiveness and staff endorsement. Barriers included skin irritation, minimal awareness of the intervention’s benefits, temperature discomfort, and relatively minimal perceived HCG's efficacy in averting HAI contraction. This qualitative study provides unique insights into the patient experience and acceptability of chlorhexidine bathing interventions. The findings can inform patient education and protocol modifications to improve compliance. Though limited by a small sample size, this pilot study contributes important contextual information to supplement efficacy data and support patient-centered chlorhexidine bathing implementation. Evaluating patient perspectives using theory-based qualitative methods is critical to ensure infection prevention practices like chlorhexidine bathing align with patient values and preferences.

**Significance of the Intervention**

Based on the critical appraisal tool (annotated bibliography) summarizing evidence from recent randomized controlled trials, systematic reviews, and meta-analyses, the intervention of daily chlorhexidine bathing has strong support for reducing hospital-acquired infections in various healthcare settings. The studies consistently demonstrate that CHG bathing lowers infection risk compared to routine or other bathing techniques that do not integrate antiseptic. The evidence is most robust for reducing central line-associated bloodstream infections in ICU settings, with reductions close to half shown. The analyzed studies use rigorous methodologies like randomized controlled trials and meta-analyses, thus providing high-quality evidence that daily CHG bathing is an effective approach for decreasing hospital-acquired infections. Some contextual factors like compliance, adverse effects, and patient acceptability require ongoing evaluation during implementation. Nevertheless, the overall strength of the evidence favors daily chlorhexidine bathing as an evidence-based practice to improve patient outcomes by preventing serious hospital-acquired infections in both general and high-risk populations. This intervention addresses the critical clinical issue of healthcare-associated infections which affect patient safety.

In conclusion, the paper sufficiently deliberates on the relevance of CHG bathing in minimizing and averting the occurrence of HAIs among adult surgical patients across different care settings. Through an analysis of various studies, the paper derives diverse information and data concerning the relative effectiveness of the intervention in managing and alleviating the patient safety concern in question. While other bathing approaches demonstrate minimal efficacy, further research is necessary in adopting other improved methods as well as enhancing the efficiency of present CHG bathing practices in the wide healthcare industry.

**References**

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Musuuza, J. S., Guru, P. K., O’Horo, J. C., Bongiorno, C. M., Korobkin, M. A., Gangnon, R. E., & Safdar, N. (2019). The impact of chlorhexidine bathing on hospital-acquired bloodstream infections: a systematic review and meta-analysis. *BMC infectious diseases*, *19*(1), 1-10. <https://doi.org/10.1186/s12879-019-4002-7>