

**Literature Review: Infection Prevention in the Operating Room**

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The ethics of their profession binds nurses to protect and strengthen their clients' health at all costs, and nothing poses more of a threat to that obligation than nosocomial infections. A nosocomial infection occurs when a patient acquires an infection within a facility that was not present at the time of their admission into the said facility, and are most likely to transpire when poor infection control is utilized during invasive procedures. The operating room is the main arena for performing invasive procedures. This paper will review three articles that are looking into how the operating room can be improved to protect patients at their most vulnerable.

### **Effect of Operating Room Nursing Management on Nosocomial Infection in Orthopedic Surgery: A Meta-Analysis**

An analysis of 20 randomized controlled trials encircling 2,962 orthopedic surgery patients published between 2013 and 2020 found that applying structured operating room nursing management significantly reduced hospital-acquired (nosocomial) infection rates and improved patient satisfaction (He et al., 2022). Compared to routine nursing, enhanced nursing interventions were associated with roughly an 80% reduction in infection risk and improved nursing satisfaction (He et al., 2022). These findings strongly support implementing organized nursing protocols in orthopedic operating rooms to reduce infections and enhance the quality of care.

#### **Key Points**

This study evaluated the impact of structured operating nurse management on the rate of nosocomial infections acquired during orthopedic surgery and the satisfaction rate reported by the nurses working within these units (He et al., 2022). Key tasks observed under the

implementation of structured nursing management were the implementation of sterile techniques during invasive procedures, the infection prevention training received by the operating room staff, and how sternly foot traffic was restricted from entering the operating room suite during invasive procedures (He et al., 2022). Observing these tasks being performed under structured nursing management provided insight into where and how microbes were being introduced to patients during invasive procedures, when the same tasks were also observed under less structured nursing management (He et al., 2022)

### **Assumptions**

This article assumed that the studies included in the analysis are appropriately similar enough regarding patient populations, surgical procedures, and infection definitions to allow meaningful comparison (He et al., 2022). This article also relies on the accuracy and reliability of data reported in these studies and assumes that the nursing interventions categorized as "operating room nursing management" were consistently applied (He et al., 2022). The authors go on to assume a causal link between these nursing practices and the observed reduction in infection rates and increased patient satisfaction, with minimal influence from external factors (He et al., 2022) Additionally, it is presumed that outcome measures were comparable across studies, and that the interventions analyzed are reproducible in other clinical settings (He et al., 2022)

### **Deficit/Conclusion**

This article concluded that structured operating room nursing management substantially reduces the risk of nosocomial infections in patients undergoing orthopedic surgery and significantly improves patient satisfaction with care they receive (He et al., 2022). The analysis of 20 randomized controlled trials leads the authors to conclude that applying structured and

standardized nursing management practices in surgical settings is the best way to enhance patient safety and care quality (He et al., 2022). Moving forward, I hope to see more structured operating room nursing management being implemented in the operating room, and I am excited to see the positive results this implementation will bring.

### **The clinical effect of nursing intervention in the operating room on the prevention of orthopedic wound infections**

This quantitative study explored how operating room nursing interventions affect the percentage of surgical wound infections acquired in elderly orthopedic patients. 128 patients were randomly divided into two groups, where one received standard nursing care, while the other received improved nursing measures, including firmer aseptic procedures, environmental management, and the cautious handling of surgical tools (Bai et al., 2021). The group that received the enhanced interventions showed significant improvement, including a 100% rate of optimal wound healing, no infections (compared to a 21.88% infection rate in the control group), faster recovery times, improved quality of life after surgery, and higher satisfaction levels (Bai et al., 2021). The study emphasized the importance of thorough nursing care in the operating room to reduce infections and improve patient outcomes (Bai et al., 2021).

#### **Key Points**

This study demonstrated that using strict sterile techniques, maintaining a clean and controlled surgical environment, properly disinfecting surgical tools and implants, and limiting staff movement in and out of the operating room led to significantly better outcomes in orthopedic patients (Bai et al., 2021). Patients who received an enhanced level of care reported shorter hospital stays, quicker recovery times, an improvement in wound healing, and no post-

surgical infections were reported, unlike those who received standard care (Bai et al., 2021). The patients who received enhanced care also reported a higher quality of life and greater satisfaction with their healing process in general (Bai et al., 2021).

### **Assumptions**

This article was based on several underlying assumptions. It assumed that the level and consistency of nursing care in the operating room directly impacts the likelihood of developing postoperative wound infections (Bai et al., 2021). It also assumed that the two patient groups, those receiving routine care and those receiving enhanced nursing interventions, are similar in terms of health status, surgical procedures, and risk factors, allowing for a fair comparison (Bai et al., 2021). Also, the study assumed that the nursing interventions used, such as maintaining a sterile environment and properly disinfecting equipment, can be consistently applied in other hospital settings (Bai et al., 2021). Finally, it relied on the belief that measures like patient satisfaction and quality of life accurately reflect the effectiveness of the nursing care provided (Bai et al., 2021).

### **Deficit/Conclusion**

This article offered helpful insights into the impact of nursing care on postoperative wound infections, but it also had some limits. One primary deficit was the lack of detail regarding the sample size and diversity of patients, which left the reader with questions regarding these matters (Bai et al., 2021). Additionally, the study did not thoroughly address potential inconsistent factors, such as variations in surgical techniques or patient comorbidities, which could influence infection rates independently of nursing care (Bai et al., 2021). The conclusions, while promising, would be stronger with longer-term follow-up data to assess continued effects on

wound healing and patient outcomes (Bai et al., 2021). Overall, the article highlighted the important correlations but would benefit from more thorough controls and broader data to fully validate its claims (Bai et al., 2021).

### **Risk assessment of infection control in operating room based on hazard vulnerability and refined process management**

This study evaluated the impact of combining Hazard Vulnerability Analysis (HVA) with innovative process management to improve infection control in operating rooms (Wang et al., 2021). A total of 84 surgical patients were randomly divided into two groups where one received conventional care. At the same time, the other was managed using targeted strategies based on HVA and detailed procedural improvements (Wang et al., 2021). The group receiving the enhanced intervention showed significantly lower risk scores for common infection hazards (such as inadequate hand hygiene and delayed lab reporting), experienced fewer infections, and reported higher satisfaction with their care (Wang et al., 2021). The findings showed that this shared approach can effectively reduce infection risks and enhance patient outcomes (Wang et al., 2021).

#### **Key Points**

This article highlighted how combining Hazard Vulnerability Analysis (HVA) with innovative process management can improve infection control in operating rooms (Wang et al., 2021). The researchers identified fundamental contributors to infection, such as inadequate hand hygiene, inconsistent shift handovers, delayed reporting of lab results, and improper waste disposal (Wang et al., 2021). By educating staff on HVA and implementing targeted strategies to address these risks, the intervention group saw a significant drop in infection rates and greater patient

satisfaction compared to those receiving standard care (Wang et al., 2021). This study demonstrated that a structured, practical approach to identifying and managing risks can enhance patient safety and overall surgical care quality (Wang et al., 2021).

### **Assumptions**

This article relied on several assumptions. It assumed that combining Hazard Vulnerability Analysis (HVA) with innovative process management offers a more effective approach to identifying and reducing infection risks in operating rooms than traditional methods (Wang et al., 2021). It also assumed that medical staff can effectively be trained to apply HVA techniques, and that these skills will lead to noticeable improvements in their clinical practices (Wang et al., 2021). The study also assumed that the chosen focus areas, such as hand hygiene, shift transitions, timely lab result handling, and waste management, are the primary contributors to infection rates (Wang et al., 2021). Additionally, the study assumed that addressing these specific issues will directly result in fewer infections and increased patient satisfaction (Wang et al., 2021). Lastly, despite its limited sample size and single-site design, the study assumed its findings were suggestive of larger trends that could be applied in other clinical settings, while recognizing the need for further research to confirm this (Wang et al., 2021).

### **Deficit/Conclusion**

This article determined that the combined use of Hazard Vulnerability Analysis (HVA) and innovative process management efficiently reduced infection risks in operating rooms while improving patient satisfaction (Wang et al., 2021). The results showed that focusing on critical areas such as hand hygiene, shift changes, the timely reporting of lab results, and how waste is disposed of can substantially improve patient outcomes and overall safety (Wang et al., 2021).

However, the study also noted several limitations, including a relatively small sample size, a short study duration, and the fact that it was conducted at a single site (Wang et al., 2021). These factors may limit how broadly the findings can be applied, and the authors recommended conducting larger, multi-center studies over more extended periods to confirm the efficiency of this approach (Wang et al., 2021).

## **Conclusion**

In conclusion, infection prevention in the operating room is a fundamental aspect of nursing care, wholly tied to patient safety and the moral duty to do no harm. These three studies demonstrate that structured and intentional nursing interventions can substantially reduce the risk of nosocomial infections acquired in the operating room and improve overall patient satisfaction. Whether it be through standardized nursing protocols, enhanced surgical care practices, or the integration of Hazard Vulnerability Analysis with innovative process management, the approaches examined in these studies show the importance of utilizing practical and evidence-based strategies in the operating room and how they will ultimately improve patient health and satisfaction in the future.

## References

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