

**The Impactful Role of Nurses in Prevention and Control of the Spread of Infections
in Hospitals**

By:

Sarah Falih Al-Dosari
Nursing technician
Zahra Mahmoud Ali, Somali
Nursing technician
Sarah Saad Ghazi Al-Otaibi
Specialist Nursing
Nawal Nasser Al-Shishi
Technical laboratories
Saleh Muhammad Youssef Hassan
Technical laboratories
Abdulaziz Al-Sumait explained
lab technician

Introduction

Healthcare-associated infections, often known as patient infections, are a global issue. Preventing healthcare-associated illnesses is straightforward and necessitates multiple resources. The World Health Organisation embraced the overarching principle of "Clean care is safer care" in its First Global Patient Safety Challenge (Gurol, 2013).

Healthcare-associated infections (HAIs) pose a significant threat to patient safety and public health, placing a considerable strain on healthcare systems globally. HAIs, or healthcare-associated infections, refer to diseases that occur while receiving medical care in a healthcare institution. These infections can be caused by various bacteria and can appear in different ways, such as surgical site infections, bloodstream infections, and pneumonia (Aljamali et al., 2021).

Hospital-acquired infections can result in functional impairments, emotional strain, a decline in quality of life, and even mortality. Furthermore, factors such as extended hospital stays, job loss, escalating medicine costs, the necessity for isolation, and additional laboratory and diagnostic procedures contribute to the growing economic burden.

Hospital-acquired infections are the second most avoidable infections, and nurses play a crucial role in implementing preventive measures. Nurses who are recognized as advocates for patients enhance the quality of patient care and have the potential to instigate change (Maki & Zervos, 2021). Nurses should possess an understanding that nosocomial infections can be avoided. They should be knowledgeable about international strategies for avoiding and managing infections and should deliver the best suitable treatment based on this understanding.

In the intricate healthcare delivery system, nurses play a crucial role as the primary defenders against Healthcare-Associated Infections (HAIs). Nurses, being the most numerous healthcare professionals, play a crucial role in patient care by offering direct and uninterrupted assistance to patients in diverse healthcare environments such as hospitals, clinics, and long-term care facilities (Mahmoud Elboraey Elsayed et al., 2022). Nurses play a crucial role in preventing the spread of diseases within healthcare institutions due to their distinct position at the intersection of clinical treatment, patient advocacy, and

infection prevention. Nurses, due to their close proximity to patients and extensive knowledge of infection control methods, have a crucial role in implementing evidence-based policies to decrease the likelihood of healthcare-associated infections (HAIs) and improve patient safety.

Although nurses play a crucial role in preventing and controlling infections, there are still several obstacles and difficulties that prohibit them from fully maximizing patient safety outcomes. Challenges such as insufficient staffing, limited time, resource limits, and gaps in knowledge and training provide substantial obstacles to the implementation of thorough infection control procedures. Moreover, the constant emergence of infectious threats, the growing problem of antibiotic resistance, and the ongoing reforms in healthcare delivery require nurses to continuously adapt and innovate in their profession in order to successfully meet the changing requirements of patients and solve the issues posed by public health.

1. Overview of Healthcare-Associated Infections

Healthcare-associated infections (HAIs) are a major global public health issue. They refer to illnesses that patients get while receiving medical care in healthcare facilities. These infections can arise in many healthcare environments, such as hospitals, long-term care institutions, ambulatory surgery centers, and clinics.

The epidemiology of healthcare-associated infections (HAIs) is diverse and influenced by factors such as patient demographics, healthcare facility characteristics, and the local presence of disease-causing microorganisms. Prevalent forms of healthcare-associated infections (HAIs) encompass surgical site infections (SSIs), central line-associated bloodstream infections (CLABSIs), catheter-associated urinary tract infections (CAUTIs), ventilator-associated pneumonia (VAP), *Clostridioides difficile* infections (CDI), and infections caused by multidrug-resistant organisms (MDROs) (Meddings et al., 2021).

Multiple variables contribute to the susceptibility to Healthcare-Associated Infections (HAIs), such as invasive medical procedures, extended hospital stays, pre-existing medical disorders, weakened immune systems, the use of antimicrobial drugs, and environmental factors (Jackson, 2018). The rise of

antibiotic resistance adds complexity to the management of healthcare-associated infections (HAIs), creating difficulties in treating and controlling infections.

Although infection control measures have improved, healthcare-associated infections (HAIs) still present a substantial risk to patient safety and the quality of healthcare. To tackle the problem of HAIs, it is necessary to maintain constant watchfulness, foster cooperation among healthcare professionals, follow established guidelines, and strive for continued enhancement in infection prevention and control measures. Healthcare facilities can improve patient outcomes, save healthcare expenses, and provide a safer healthcare environment for everyone by implementing thorough measures to prevent and control healthcare-associated infections (HAIs).

2. The Impact of Healthcare-Associated Infections (HAIs) on Patient Outcomes

Healthcare-associated infections (HAIs) have a substantial impact on patient outcomes in healthcare settings. Patients who contract infections while hospitalized are more likely to suffer from negative health outcomes, such as extended sickness, complications, and the need for further medical treatments. For instance, surgical site infections (SSIs) can result in delayed wound healing, the formation of abscesses, and the requirement for more surgeries or extended antibiotic treatment (Copanitsanou, 2020). HAIs frequently complicate the treatment of preexisting medical problems or surgical procedures, resulting in increased illness severity and longer recovery times for affected patients. According to (Barrasa-Villar et al., 2017), higher death rates are among the consequences of healthcare-associated infections (HAIs), which worsen morbidity. Complications from infections such as bloodstream infections, pneumonia, and sepsis can be fatal, especially for susceptible patient groups like the elderly, those with impaired immune systems, and those with long-term health issues. Patients who have healthcare-associated infections (HAIs) while in the hospital are more likely to die than those who do not. The severe significance of efficient infection control and prevention methods is highlighted by the fact that HAIs can make patient care more difficult and raise the probability of negative outcomes, including mortality.

In addition to affecting individual patients, healthcare-associated infections (HAIs) have systemic consequences for the healthcare system as a whole, such as longer hospital stays and higher healthcare expenditures. There is an increase in the demand on healthcare facilities and the use of healthcare resources due to the length of time that patients with HAIs must remain in the hospital for treatment and management of their illnesses (Stewart et al., 2021). Increased healthcare expenditures, including those for supplementary medical procedures, laboratory tests, pharmaceuticals, and healthcare personnel resources, are a direct result of longer hospital stays, which also increase the risk of exposure to healthcare-associated infections. The significance of preventative measures is further highlighted by the fact that healthcare institutions and systems can be severely hit financially by the cost of treating HAIs.

3. The Role of Nurses to Control and Prevent Infection

Nurses have a varied and crucial role in controlling and preventing infections in healthcare settings, which is essential for maintaining patient safety and the quality of care. Nurses fulfill the crucial roles of being primary caretakers, champions, educators, and leaders in the field of infection prevention. Nurses have a significant role in the prevention of hospital-acquired infections.

- **Implementing Infection Control Protocols**

Nurses have the duty to carry out and comply with infection control policies and rules set by regulatory agencies and healthcare organizations. This encompasses measures such as meticulous hand hygiene, adherence to isolation procedures, and utilization of personal protective equipment (PPE) to effectively hinder the spread of diseases (Cook, 2020).

- **Patient Education**

Nurses have a vital responsibility in providing education to patients, their families, and caregivers regarding strategies to prevent infections. They offer instructions on proper hand cleanliness, respiratory manners, wound treatment, and other preventive steps to minimize the likelihood of infections, both while in the healthcare institution and after being discharged.

- Surveillance and Monitoring

Nurses are diligent in observing patients for indications and manifestations of infections. They perform routine evaluations, closely monitor physiological indicators, and carefully observe for any signs of illness. Nurses have a crucial role in rapidly recognizing and reporting suspected illnesses, which helps in the early detection and intervention, hence preventing the transmission of pathogens to other patients and healthcare staff (Leary et al., 2019).

- Environmental Cleaning and Sterilization

Nurses supervise the cleanliness and sterility of patient care locations, equipment, and supplies. They diligently enforce environmental cleaning and disinfection measures to decrease the risk of healthcare-associated illnesses. Nurses also cooperate with environmental services professionals to keep a secure and sanitary healthcare environment.

4. The Challenges Nurses Face in Infection Prevention and Control

Although there have been notable improvements in healthcare practices, the prevention and control of healthcare-associated infections (HAIs) continue to be a persistent concern in healthcare settings globally. Despite the development of efficient infection control methods, the proper implementation of these measures is hindered by several challenges and hurdles, which in turn contribute to the continued risk of healthcare-associated infections (HAIs). It is crucial to tackle these difficulties in order to enhance patient safety outcomes and alleviate the impact of healthcare-associated infections (HAIs) on healthcare systems.

- Staffing Shortages and Workload Issues

Healthcare institutions frequently encounter personnel deficiencies and excessive workloads, which can undermine the execution of infection control policies. Healthcare professionals, including nurses, may experience excessive workload, resulting in exhaustion, burnout, and decreased adherence to infection prevention measures. Insufficient staffing can also restrict the presence of professionals to carry out surveillance, execute environmental cleaning, and deliver patient education on infection prevention

measures (Manomenidis et al., 2019).

- Compliance with Infection Control Protocols

Although evidence-based recommendations and processes for infection prevention exist, achieving consistent compliance among healthcare workers remains a challenge. Adherence to infection control methods can be hindered by factors such as competing priorities, time constraints, and personnel turnover. Furthermore, the presence of resistance to change or a perceived lack of relevance can contribute to differences in compliance levels among various healthcare settings.

- Education and Training Gaps

Comprehensive education and training in infection prevention and control are crucial for healthcare professionals to grasp the significance of these measures and to proficiently apply them. Nevertheless, there can exist deficiencies in education and training initiatives, especially among newly recruited individuals or personnel with low expertise in infection control. Additionally, continuous education and reinforcement of infection prevention principles are essential to stay updated with new best practices and emerging infectious hazards.

- Resource Constraints

Limited resources, such as financial, human, and material resources, present substantial obstacles to the implementation of comprehensive infection control strategies. Healthcare facilities may have financial limitations that restrict their ability to invest in personnel, education, equipment, and infrastructure necessary to effectively support infection prevention initiatives (Schultz et al., 2019). Limited availability of personal protective equipment (PPE), disinfectants, and other supplies can exacerbate the challenges in implementing infection control measures and heighten the likelihood of healthcare-associated infections (HAIs).

5. Strategies to Overcome the Challenges in Infection Prevention and Control

In order to address the difficulties caused by insufficient staff and excessive workloads, healthcare institutions might adopt various techniques. It is essential to assign sufficient staffing resources to

infection prevention and control (IPC) teams as a top priority. Healthcare institutions can effectively manage the workload of adopting infection prevention and control measures by providing adequate coverage and support for IPC activities (Lowe et al., 2021). In addition, the implementation of workload management measures, such as workload balancing and task delegation, can assist in reducing the impact of workforce shortages on infection prevention and control activities. Utilizing technology and automation can optimize procedures and decrease administrative responsibilities, enabling healthcare professionals to allocate more time to infection prevention efforts.

When it comes to ensuring compliance with infection control protocols, it is crucial to have strong monitoring and enforcement mechanisms in place. Healthcare organizations have the ability to establish surveillance systems in order to monitor adherence to infection prevention and control (IPC) protocols and pinpoint areas that require enhancement. It is essential to regularly provide feedback and reinforcement to healthcare professionals regarding their adherence to infection prevention and control (IPC) measures. Providing recognition and rewards for following established and effective methods might serve as a motivation for others to comply. Implementing measures to ensure accountability for non-compliance, such as taking disciplinary actions when appropriate, strengthens the significance of infection prevention and control (IPC) and cultivates a safety-oriented environment in healthcare organizations.

Education and training are essential for enhancing infection prevention and control strategies among healthcare personnel. It is crucial to create extensive education and training programs about infection prevention and control for healthcare personnel at all levels. These programs ought to be integrated into the orientation process for newly hired employees and offer continuous chances for learning and enhancing their skills (Storr et al., 2017). By employing a range of educational methods, including in-person seminars, online courses, simulations, and competency evaluations, healthcare staff may cater to the different learning requirements and preferences of individuals.

Efficiently allocating resources and optimizing their use are crucial for improving interprofessional collaboration (IPC) in healthcare organizations. It is essential to allocate resources to prioritize programs

related to Infection Prevention and Control (IPC), such as funding for personnel, equipment, supplies, and infrastructure enhancements. To optimize the effectiveness of available resources, it is important to explore potential for resource optimization and efficiency. This can be achieved by utilizing technology to enhance surveillance capabilities and implementing cost-effective infection control strategies. It is crucial to advocate for greater financing and support for infection prevention and control (IPC) at the organizational, regional, and federal levels in order to guarantee long-term investment in IPC.

Conclusion

Ensuring the prevention and control of infections is a duty that falls upon every healthcare worker.

Nurses have a vital role in interrupting the transmission of infections as they are consistently in contact with individuals, providing them with the opportunity to prevent infections throughout each interaction and intervention. Nurses constitute about 50% of the health and social care workforce, thereby exerting a substantial influence on infection prevention. Nurses possess a distinctive ability to impact the interruption of the chain of infection by comprehending the sequence of infection and the methods of transmission.

Implementing efficient infection prevention and control (IPC) measures is crucial for protecting patient well-being, improving healthcare standards, and minimizing the prevalence of healthcare-associated infections (HAIs) in healthcare facilities. Healthcare companies can enhance their infection prevention and control (IPC) activities by implementing improvement techniques, despite hurdles such as staffing shortages, compliance issues, education gaps, and resource limits.

Healthcare institutions can effectively manage the burden associated with infection prevention and control (IPC) operations by appropriately assigning people, using workload management strategies, and utilizing technology. Implementing rigorous surveillance, effective enforcement mechanisms, and continuous education and training initiatives can enhance healthcare workers' adherence to infection prevention and control (IPC) protocols. This approach promotes the adoption of best practices and cultivates a safety-oriented culture.

References

- Aljamali, N. M., Al-zubaidy, Z. H., & Enad, A. H. (2021). Bacterial infection and common bacterial diseases: A Review. *Pharm. Nanotechnol*, 3, 13-23.
- Barrasa-Villar, J. I., Aibar-Remón, C., Prieto-Andrés, P., Mareca-Doñate, R., & Moliner-Lahoz, J. (2017). Impact on morbidity, mortality, and length of stay of hospital-acquired infections by resistant microorganisms. *Clinical Infectious Diseases*, 65(4), 644-652.
- Cook, T. M. (2020). Personal protective equipment during the coronavirus disease (COVID) 2019 pandemic—a narrative review. *Anaesthesia*, 75(7), 920-927.
- Copanitsanou, P. (2020). Recognising and preventing surgical site infection after orthopaedic surgery. *International Journal of Orthopaedic and Trauma Nursing*, 37, 100751.
- Guroi, A. G. (2013). Hand Hygiene. *Nursing with Health Journal*, 3, 23-26.
- Jackson, S. S. (2018). Risk Factors for Transmission of Multidrug-Resistant Organisms and Acquisition of Healthcare-Associated Infections (Doctoral dissertation, University of Maryland, Baltimore).
- Leary, B., Cuccovia, B., & Nixon, C. (2019). Nursing Considerations. *Critical Care of the Pediatric Immunocompromised Hematology/Oncology Patient: An Evidence-Based Guide*, 337-407.
- Lowe, H., Woodd, S., Lange, I. L., Janjanin, S., Barnett, J., & Graham, W. (2021). Challenges and opportunities for infection prevention and control in hospitals in conflict-affected settings: a qualitative study. *Conflict and health*, 15, 1-10.
- Mahmoud Elboraey Elsayed, W., Mohamed Shebl, A., Abd El Kader Ali, H., & Sobhy Omran, E. (2022). Effectiveness of Educational Program regarding MRSA Prevention and Control on Nurses' Knowledge and Practice. *Journal of Nursing Science Benha University*, 3(2), 523-537.
- Maki, G., & Zervos, M. (2021). Health care-acquired infections in low-and middle-income countries and the role of infection prevention and control. *Infectious Disease Clinics*, 35(3), 827-839.
- Manomenidis, G., Panagopoulou, E., & Montgomery, A. (2019). Job burnout reduces hand hygiene compliance among nursing staff. *Journal of patient safety*, 15(4), e70-e73.

- Meddings, J., Saint, S., & Chopra, V. (2021). Preventing hospital infections: real-world problems, realistic solutions. Oxford University Press.
- Schultz, M. J., Dünser, M. W., Dondorp, A. M., Adhikari, N. K., Iyer, S., Kwizera, A., ... & Thwaites, C. L. (2019). Current challenges in the management of sepsis in ICUs in resource-poor settings and suggestions for the future. *Sepsis management in resource-limited settings*, 1-24.
- Stewart, S., Robertson, C., Pan, J., Kennedy, S., Haahr, L., Manoukian, S., ... & Reilly, J. (2021). Impact of healthcare-associated infection on length of stay. *Journal of Hospital Infection*, 114, 23-31.
- Storr, J., Twyman, A., Zingg, W., Damani, N., Kilpatrick, C., Reilly, J., ... & Allegranzi, B. (2017). Core components for effective infection prevention and control programmes: new WHO evidence-based recommendations. *Antimicrobial Resistance & Infection Control*, 6, 1-18.