Journal of Advances and Scholarly Researches in Allied Education
Vol. 22, Issue No. 3, April-2025, ISSN 2230-7540

DOI: https://doi.org/10.29070/pmvveh21

The Role of the Nurse in Preventing Infection: Practices and Strategies for Effective Infection Control

Ahlam Sulaiman Al-Faifi [1] * , **Khulud Suliman Hadi** [2] , **Ashwaq Saeed Alahmari** [3]

1. Nurse, Armed Forces Hospital Southern Region, Khamis Mushait, SA
a.s.h.2003@outlook.sa ,
2. Nurse, Armed Forces Hospital Southern Region, Khamis Mushait, SA ,
3. RGN, Armed Forces Hospital Southern Region, Khamis Mushait, SA

Abstract: Infection prevention and control (IPC) are fundamental pillars of patient safety and healthcare quality. Nurses, who are present at the bedside 24/7, are in a unique position to implement and sustain IPC practices. This study aims to explore the critical responsibilities of nurses in infection control, analyze the impact of nurse-led interventions on reducing healthcare-associated infections (HAIs), and evaluate challenges and enablers to effective IPC practices. The study synthesizes data from international guidelines, peer-reviewed literature, and hospital case studies. The findings highlight the need for comprehensive education, institutional support, and systemic accountability to empower nurses in their infection control role.

Keywords: Nurse-led infection control, healthcare-associated infections, hand hygiene, PPE compliance, patient education, IPC strategies

X

INTRODUCTION

Healthcare-associated infections (HAIs) are a significant public health burden. The World Health Organization (WHO) reports that up to 15% of hospitalized patients in low- and middle-income countries (LMICs) develop at least one HAI, with surgical site infections and bloodstream infections being the most common. Nurses interact with patients more frequently than any other healthcare provider, making them key agents in the prevention of infection.

Nurses' responsibilities include direct care practices (hand hygiene, environmental disinfection), patient and family education, surveillance and reporting, and participation in policy development. Despite this central role, gaps remain in compliance, training, and organizational support.

This paper expands on the nurse's role in infection prevention, analyzing recent research, reviewing global IPC standards, and offering solutions to improve outcomes.

LITERATURE REVIEW

Global Infection Control Guidelines

The WHO (2022) and CDC (2020) emphasize standard precautions, including:

- Hand hygiene

- Use of PPE
- Safe injection practices
- Environmental cleaning
- Waste management

These standards are echoed by accreditation bodies like Joint Commission International (JCI) and Centers for Medicare and Medicaid Services (CMS), which also stress the importance of staff training, leadership engagement, and audit systems.

Nurse-Led Interventions

Studies demonstrate the effectiveness of nurse-driven initiatives:

- Hand hygiene training reduced HAIs by up to 40% (Liu et al., 2021)
- Central line bundle compliance led by nurses decreased CLABSI rates by 55% (Morgan et al., 2019)
- Antimicrobial stewardship education improved antibiotic usage (Perry et al., 2022)

However, compliance varies depending on staff workload, leadership culture, and resource availability.

METHODS

This study used a systematic review methodology:

- **Databases Searched:** PubMed, CINAHL, Scopus, Google Scholar
- **Inclusion Criteria:** Published between 2015–2024; English language; focused on nurses and IPC
- **Search Terms:** "nurse infection prevention," "HAI nurse intervention," "hand hygiene compliance," "PPE nursing hospital," "infection control policy nursing"
- **Number of Articles Reviewed:** 65 articles; 42 included for data synthesis

Qualitative findings were analyzed thematically, while quantitative results were tabulated and compared.

RESULTS

Thematic Analysis

Five major themes emerged:

- **Education & Training:** Mandatory and ongoing IPC education significantly improves nurse performance.
- **Compliance Monitoring:** Hospitals with real-time feedback showed higher hand hygiene rates.
- **Interdisciplinary Collaboration:** IPC improves when nurses collaborate with physicians and infection control teams.
- **Patient Engagement:** Education provided by nurses leads to fewer post-discharge infections.

- **Organizational Support:** Leadership involvement, adequate PPE supply, and safe nurse-patient ratios are essential.

Table 1. Core Nursing Roles in Infection Control

Area	Description	Key Outcomes
Hand hygiene	Routine handwashing with soap/alcohol-based rubs	↓ Cross-contamination and HAIs
PPE usage	Gloves, gowns, masks, face shields for isolation/standard precautions	↓ Transmission of droplet/contact pathogens
Sterile technique	Wound dressing, catheter insertion, IV line care	↓ CLABSI, CAUTI, SSI
Environmental hygiene	Cleaning equipment, patient rooms, high-touch surfaces	↓ Surface and fomite transmission
Surveillance and reporting	Early detection and escalation of infections	Rapid isolation and treatment of infection
Health education	Educating patients and caregivers on hygiene, symptoms, and treatment plans	↓ Post-discharge infections

Table 2. Impact of Nurse-Led Programs on Infection Rates

Author (Year)	Intervention	Setting	Infection Reduced	Reduction %
Liu et al. (2021)	Hand hygiene education	ICU	MRSA	40%
Morgan et al. (2019)	CLABSI bundle by nurses	Oncology Unit	CLABSI	55%
Perry et al. (2022)	Antimicrobial stewardship	Medical Wards	Antibiotic resistance	32%
Alotaibi et al. (2020)	PPE compliance enforcement	Emergency Department	COVID-19 transmission	47%

Zhang et al. (2023)	Patient hygiene education	Surgical Ward	Surgical site infections	38%

DISCUSSION

Nurses are essential drivers of infection prevention. Consistent execution of core responsibilities yields measurable results in reducing infection rates and improving patient safety.

Challenges

- **Staffing Shortages:** High patient loads reduce time for IPC practices.
- **Training Gaps:** Infrequent IPC training leads to outdated practices.
- **Resistance to Change:** Cultural resistance to protocols, especially in long-established routines.
- **Resource Constraints:** In LMICs, lack of PPE and hygiene materials undermines IPC.

Facilitators

- **Leadership Engagement:** Nurse managers who model IPC improve compliance.
- **Digital Monitoring Tools:** Apps and wearable sensors improve hand hygiene audits.
- **Peer Education Models:** Senior nurses mentoring juniors increases adherence.

POLICY AND PRACTICE IMPLICATIONS

- Integrate IPC performance into nursing evaluations.
- Establish nurse-led infection control teams in each ward.
- Encourage interprofessional IPC rounds involving nursing leadership.
- Allocate budgets for annual IPC training.
- Promote transparency through infection rate dashboards shared with staff.

CONCLUSION

Nurses play a central role in infection prevention through daily clinical practices, patient education, and early identification of risks. Strengthening their capacity through training, tools, and leadership support is key to reducing HAIs and improving healthcare outcomes. Investment in nurse-led infection control is not only clinically beneficial but also cost-effective for healthcare systems.

RECOMMENDATIONS

1. Mandatory IPC certification for all nurses annually.
2. Use of electronic tracking systems for hand hygiene compliance.

3. Patient education materials standardized and nurse-delivered at discharge.
4. IPC inclusion in nursing school curricula and clinical rotations.
5. Dedicated time in shifts for IPC tasks (e.g., 30 minutes protected).

References

1. Liu, Y. et al. (2021). Hand hygiene compliance in ICU: A nurse-driven approach. J Hosp Infect, 110, 45–52.
2. Morgan, P. et al. (2019). Nurse-led central line care bundles reduce infection risk. Am J Nurs, 119(3), 22–30.
3. Perry, H. et al. (2022). Antimicrobial stewardship led by nurses. Clin Infect Dis, 75(6), 1112–1119.
4. Alotaibi, A. et al. (2020). PPE compliance during pandemic response. Int J Nurs Pract, 26(4), e12857.
5. World Health Organization. (2022). Core components of infection prevention and control. WHO Guidelines.
6. CDC. (2020). Guidelines for Infection Control in Healthcare Settings.