AJCMI
Avicenna Journal of Clinical Microbiology and Infection
Avicenna J Clin Microbiol Infect. 2025;12(2):99-101. doi:10.34172/ajcmi.3686
http://ajcmi.umsha.ac.ir

letter to Editor

Challenges of Infection Control in Hospitals: Effective Strategies and Approaches for Prevention

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Please cite this article as follows: Zarezadeh Mehrizi F, Eftekhari A. Challenges of infection control in hospitals: effective strategies and approaches for prevention. Avicenna J Clin Microbiol Infect. 2025;12(2):99-101. doi:10.34172/ajcmi.3686

Received: May 21, 2025, **Revised:** June 16, 2025, **Accepted:** June 18, 2025, **ePublished:** June 30, 2025

Dear Editor,

Healthcare-associated infections are among the most common adverse health outcomes globally, with at least one in ten patients acquiring an infection while receiving care in low- and middle-income countries (1). This infection is significantly influenced by factors such as weakened patient immune systems, invasive treatments, inadequate sanitation, and antibiotic-resistant germs. These infections result in serious outcomes, including higher death rates, longer hospital stays, increased healthcare expenses, and great strains on both patients and healthcare systems. Furthermore, the rising use of antibiotics to manage these infections contributes to the spread of antimicrobial resistance, with nosocomial infections also posing a risk of transmission from patients to healthcare workers (2).

Effective infection prevention and control are critical for eliminating avoidable hospital-acquired infections and are integral to providing safe, effective, and high-quality healthcare services (3). The World Health Organization estimates that effective infection prevention and control programs can reduce hospital-acquired infection rates by up to 30% (4). Healthcare professionals have a crucial role in preventing infections, actively educating patients, and grounding their practices in current scientific research. Nurses, as patient advocates, are uniquely positioned to champion improvements in patient care protocols and standards.

The most important nursing intervention for infection prevention is hand hygiene, and nurses must use personal protective equipment when handling body fluids. However, implementing effective infection control in hospitals faces several challenges that can impact patient care quality and healthcare worker safety. Some of these challenges include:

1. ***Resistance to change:*** Many healthcare staff resist new IPC protocols, favoring familiar routines. Overcoming this requires proper education, training, and ongoing support to encourage adoption of improved practices.
2. ***Lack of resources and structural issues:*** IPC needs adequate supplies, including PPE, disinfectants, and skilled personnel. Deficiencies compromise both patient and staff safety. Structural problems, including insufficient cleaning facilities, inadequate bed capacity, and overcrowded wards, facilitate disease transmission when patients' beds are positioned too closely.
3. ***Mobility and interaction in healthcare settings:*** Hospitals continuously move patients, staff, and visitors. This dynamic environment increases the risk of contamination, emphasizing strict adherence to cleaning, isolation, and hygiene protocols to limit the spread of infection.
4. ***Develop specific strategies to optimize performance:*** Patients' varying conditions require customized IPC strategies. Designing flexible area-specific protocols can improve care quality, reduce costs, and satisfy stakeholders while responding effectively to diverse patient profiles.
5. ***Ineffective communication and collaboration:*** Successful IPC demands strong cooperation among physicians, nurses, other staff, patients, and families. Communication breakdowns can lead to inconsistent protocol implementation, raising the risk of infection and adverse outcomes.
6. ***Inadequate training:*** Lack of continual education on IPC methods undermines effective practice. Regular up-to-date training empowers staff and enhances their infection control competency.
7. ***Increasing microbial resistance to antibiotics:***

Growing antibiotic resistance stems from inappropriate use, poor compliance with protocols, and spread of resistant strains in hospitals. This complicates treatment, increases side effects, lengthens hospitalization, and drives up costs.

8. ***Emergence of new and resistant pathogens:*** Emerging pathogens challenge IPC efforts. Factors such as environmental shifts and medication misuse contribute to resistant strains, complicating patient management and necessitating research into new prevention and treatment options.

Recommended Strategies for Effective Infection Control

To address these challenges, hospitals should adopt the following comprehensive measures:

Hand Hygiene

Frequent handwashing by healthcare workers is a simple yet powerful preventive measure. Promoting hand hygiene through reminders and compliance with the World Health Organization's "Five Moments for Hand Hygiene" framework significantly reduces hospital-acquired infections (5).

Personal Protective Equipment (PPE)

Consistent and correct use of gloves, gowns, masks, and eyewear protects staff and patients. Comprehensive training on their proper use and disposal is vital (6).

Environmental Cleanliness

Routine cleaning and disinfecting of patient rooms, medical instruments, and high-traffic areas create a safer environment and minimize the spread of microorganisms. Regular monitoring of cleaning activities ensures thoroughness (7).

Identification and Isolation of Patients

Early screening for multi-drug resistant organism carriers allows timely isolation, mitigating transmission risk. Strict adherence to isolation protocols protects other patients and staff (8).

Updating Staff Knowledge

Keeping healthcare personnel informed of current scientific evidence and emerging threats enhances adherence to IPC protocols. Education should emphasize disease transmission routes and standard precautions universally (9).

Surveillance and Reporting

Proper cleaning and sterilization of medical devices, especially those posing high infection risks, is critical. Disinfection of surfaces and instruments further reduces infection sources. Early outbreak detection and timely reporting allow prompt interventions. An effective surveillance system should predict trends, identify vulnerable groups, and measure the impact of infection control actions (10).

Vaccination

Immunization reduces the likelihood of acquiring and spreading infectious diseases. Ensuring that healthcare staff are vaccinated according to established guidelines is essential for occupational and patient safety (11).

Utilization of New Technologies

By utilizing new technologies and artificial intelligence, hospitals can improve the level of infection control and protect the health of patients and staff. These tools are capable of identifying and preventing the spread of infections, detecting patterns and predicting potential outbreaks, monitoring adherence to hand hygiene protocols, and alerting staff for timely interventions. Telemedicine, by facilitating online consultations and training, equips healthcare workers with essential knowledge about infection prevention techniques, thereby reducing the risk of transmission in healthcare settings (7). Furthermore, hospitals are exploring advanced cleaning methods such as the use of UV light and electrostatic sprays, which improve cleaning efficiency and reduce the need for a large workforce, thereby optimizing costs (12). Environmental monitoring systems provide real-time data on factors such as temperature, humidity, and air quality that affect infection control. Hospitals use this information to identify potential sources of infection and implement preventive measures (13). Moreover, hospitals have strengthened inter-organizational collaborations to share best practices and resources, recognizing the importance of patient participation in infection control.

Conclusion

In conclusion, effective infection control in hospitals requires a comprehensive approach and collaboration among all stakeholders. By implementing these strategies and adhering to health protocols, we can reduce hospital infections and enhance the quality of healthcare services. We hope that the recommendations presented will be considered by health managers and policymakers to develop effective programs for hospital infection control, taking significant steps toward improving infection control strategies.

Authors' Contribution

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Competing Interests
None to declare.

Ethical Approval
Not applicable.

Funding
None.

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