

# Infection Prevention and Control

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### November 2025

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### 1. Two-dimensional nanomaterials for infection control: A comprehensive review.

**Authors:** Younes S.;Younes N.;AlDewik N.;AbuRaddad L.J. and Nasrallah, G.

**Publication Date:** 2026

**Journal:** Journal of Infection and Public Health 19(1) (pagination), pp. Article Number: 103027. Date of Publication: 01 Jan 2026

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### 2. Gender dynamics in hand hygiene practices: A survey in a specialized dermatological Scientific Institute for Research, Hospitalization and Health Care

**Authors:** Altamura, Gerardo;Laurenti, Patrizia;Heidar Alizadeh, Aurora;Raspolini, Gian Marco;Facchiano, Antonio;Virgili, Rosamaria;Nurchis, Mario Cesare;Raponi, Matteo;Cavarra, Marco;Panebianco, Annarita and Damiani, Gianfranco

**Publication Date:** 2025

**Journal:** Annali Di Igiene : Medicina Preventiva E Di Comunita 37(6), pp. 691–704

**Abstract:** Background: A high adherence to hand hygiene procedures is regarded as cost-effective for preventing healthcare-associated infections. How important it is perceived by healthcare workers may determine the level of adherence to recommendations. This survey aimed at investigating perceptions, practices, and gender dynamics surrounding hand hygiene

among healthcare professionals.; Study Design: This study followed a cross-sectional design, involving a questionnaire administered only once to each participant.; Methods: The study was set in a dermatological Scientific Institute for Research, Hospitalization and Healthcare (SIRHHC) in Italy. An internet-based survey was made available to every SIRHHC's healthcare worker for two months of 2024. Surveyed population consisted of healthcare professionals involved in patient care within the SIRHHC, including physicians, nurses, and other healthcare staff. The questionnaire was based on the World Health Organization Hand Hygiene Self-Assessment Framework 2010 and involved both open-ended questions and Likert-scale items. Descriptive statistics and qualitative analyses were used to identify themes and quotes related to hand hygiene. To examine the relationship between the percentage of inpatients who will suffer from a healthcare-associated infection and predictor variables, a generalized linear model was fit. Tests were conducted to assess the robustness of results.; Results: Answers from 172 respondents, predominantly nurses (66.86%) and female workers (69.6%), were analyzed. Training emerged as a critical determinant of awareness, with participants reporting higher perceived compliance (86.98%) than general compliance rates (77.52%). However, workload pressures and perceived effort required for adherence (rated 5.70/7) were identified as barriers to consistent practice. Institutional support for hand hygiene, reflected in training initiatives and leadership prioritization (rated 3.87/4), was strong, yet patient involvement remained underutilized (rated 4.55/7). While gender differences in beliefs about healthcare-associated infections (HCAIs) were not statistically significant, the high representation of women highlighted their pivotal role in infection prevention and the potential for leadership in hygiene promotion.; Conclusions: This study provides actionable insights into improving hand hygiene practices and fostering a culture of safety within healthcare settings.

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### **3. Association between infection prevention and control safety culture and healthcare workers' compliance with infection control measures: a cross-sectional study.**

**Authors:** Cen, Yisui;Lao, Chuyu;Li, Zihuan;Zhao, Huiwen;Wang, Tian;Fan, Cuiqiong;Liu, Baohong;Zhao, Zhenyao;Zou, Ya and Lin, Guanwen

**Publication Date:** 2025

**Journal:** Frontiers in Public Health 13, pp. 1668493

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### **4. Relationships among Clinical Competence, Self-Efficacy, Organizational Culture for Infection Control, and Compliance with Standard Precautions in Early Career Nurses**

**Authors:** Cho, Jae Yoon and Kim, Namhee

**Publication Date:** 2025

**Journal:** American Journal of Infection Control

**Abstract:** Background: This study examined the impact of clinical competence, self-efficacy, and organizational culture for infection control on early career nurses' compliance with Standard Precautions.; Methods: Participants were 154 clinical nurses with 6-35 months of experience working at a tertiary and secondary hospital in South Korea. Data were collected using a structured online questionnaire in April 2024, and analyzed using SPSS 29.0.; Results:

The mean and standard deviation for clinical competence was  $3.42 \pm 0.52$  out of 5, self-efficacy was  $2.72 \pm 0.37$  out of 4, organizational culture for infection control was  $5.53 \pm 0.76$  out of 7, and compliance with Standard Precautions was  $12.70 \pm 4.00$  out of 20. Compliance with Standard Precautions exhibited a significant positive correlation with clinical competence, self-efficacy, and organizational culture for infection control. The factors influencing compliance with Standard Precautions were clinical competence ( $\beta=0.21$ ,  $p=.017$ ) and organizational culture for infection control ( $\beta=0.37$ ,  $p<.001$ ). The regression model explained 21.3% of the variance.; Conclusions: Improving clinical competence and fostering positive organizational culture for infection control are imperative to enhancing compliance with Standard Precautions among early career nurses. These findings should be used as foundational data to develop strategies to enhance compliance with Standard Precautions and address individual and organizational factors among early career nurses. (Copyright © 2025. Published by Elsevier Inc.)

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#### **5. Augmenting approaches to AMR prevention: a case for environmental sustainability within the WHO core components for infection prevention and control**

**Authors:** Collins, J. and Krause, A.

**Publication Date:** Nov ,2025

**Journal:** Journal of Hospital Infection 165, pp. 118–127

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#### **6. Implementation of a pilot program of interprofessional education in infection prevention.**

**Authors:** Custer S.;Lim J.;AlHasan M.;Derrick C.;Dash S.;Williams S. and Bailey, P.

**Publication Date:** 2025

**Journal:** Infection Control and Hospital Epidemiology (pagination), pp. Date of Publication: 2025

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#### **7. Trends of economic evidence in infection prevention and control practices for hospital-acquired infections**

**Authors:** Elangovan, Shalini and Graves, Prof Nicholas

**Publication Date:** 2025

**Journal:** American Journal of Infection Control

**Abstract:** Background: Hospital-acquired infections impose substantial clinical and economic burdens but are preventable. Although economic evaluations can show decision-makers which programmes will generate the most health benefits per dollar invested, their representation amongst published evidence is unclear. This study identified infection prevention practices implemented in Singapore and assessed the availability of supporting economic evidence.; Methods: Five infection prevention nurses identified implemented practices. Three were

selected: automated surveillance, portable HEPA filters, and UV-C disinfection machines. PubMed records from 2015 to 2025 were analysed using bibliometric software to map keyword frequencies across five themes: cost-effectiveness, clinical, science and technology, environmental health, and the COVID-19 pandemic.; Results: Cost-effectiveness-related keywords averaged fewer than 6 per year, compared with over 100 to 400 per year for clinical, science and technology, and environmental themes. Pandemic-related keywords increased from 2020 and still exceeded cost-effectiveness terms, with 12 to 18 per year.; Discussion: Cost-effectiveness-related keywords were rare compared with other themes across all three IPC practices. This suggests that published economic evaluations remain scarce even when interest in IPC interventions is heightened.; Conclusion: The lack of cost-effectiveness evidence indicates that IPC adoption might be informed by clinical and technical considerations rather than published economic appraisals. Broadening the use of economic evaluation might be warranted. (Copyright © 2025. Published by Elsevier Inc.)

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## 8. Rapid diagnosis of viral infections and application to infection control

**Authors:** Endo, Miki;Tokuyama-Toda, Reiko;Shirota, Tatsuo and Satomura, Kazuhito

**Publication Date:** 2025

**Journal:** BMC Infectious Diseases 25(1), pp. 1474

**Abstract:** Competing Interests: Declarations. Ethics approval and consent to participate: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the Faculty of Dentistry, Tsurumi University, Japan (No. 124001, approval date is June 12, 2024). The participants provided informed consent. Consent for publication: The patient provided informed consent for the study. Competing interests: The authors declare no competing interests.; Background: Rapid and accurate detection of viral infections is crucial in clinical settings, yet traditional quantitative polymerase chain reaction (qPCR) methods, though highly accurate, are typically laboratory-based and require significant time and resources, limiting their effectiveness in point-of-care environments. In this study, we applied a rapid qPCR method, originally developed for severe acute respiratory syndrome coronavirus 2, to a range of viral infections. The primary aim was to establish a novel diagnostic platform that combines mobile qPCR with multiplex detection for rapid, chairside application in clinical settings, and to explore its potential for detecting environmental contamination.; Methods: The viral infections targeted for rapid diagnosis included herpes simplex, herpes zoster, herpesviruses 4 or 5 -related diseases, hand-foot-and-mouth disease, herpangina, and respiratory syncytial virus infections. Specific primers and probes were designed to enable multiplex detection. The detection of viral nucleic acids using both benchtop and mobile qPCR devices was evaluated. Furthermore, viral synthetic nucleic acids were spread into the clinical environment, and swabs of the environmental surfaces were used as samples to examine whether this rapid method could be employed to detect contamination of environmental surfaces. Clinical samples from patients suspected of having labial herpes were also tested to examine whether viral detection is possible using this method.; Results: Viral synthetic nucleic acids could be detected on both benchtop and mobile qPCR devices. This method can also detect environmental contamination, and differences in the detection of viral synthetic nucleic acids were observed before and after cleaning the clinical environment.; Conclusion: This study introduces a novel approach combining mobile qPCR with multiplex

detection for the rapid, chairside diagnosis of multiple viral infections. Furthermore, it demonstrates potential use in detecting environmental contamination in the clinical environment. (© 2025. The Author(s).)

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#### **9. Educational Escape Room Reinforcement of Infection Prevention in Third-Year Student Pharmacists.**

**Authors:** Gal B.;Le T.;Thomas J. and Hodge, C. K.

**Publication Date:** 2025

**Journal:** Pharmacy 13(5) (pagination), pp. Article Number: 114. Date of Publication: 01 Oct 2025

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#### **10. Escape the Infection: An Interactive Game to Engage Staff in Infection Prevention and Control in Post-Acute and Long-Term Care**

**Authors:** Jump, Robin L. P.;Katz, Morgan J.;Stoltzfus, Heather;Speck, Kathleen;Andrews, Caylin;Walrath, Meghan M.;Kim, Samuel W.;Swoboda, Sandra M.;Barendt, David R. G.;Lin, Leyi;Miller, Melissa A. and Maragakis, Lisa L.

**Publication Date:** Nov ,2025

**Journal:** Caring for the Ages 26(7), pp. 21–22

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#### **11. Enhancing infection prevention and control practices among nurses: The mediating role of resilience and the moderating effect of training participation**

**Authors:** Kim, Yeongmi and Choi, Jihea

**Publication Date:** 2025

**Journal:** American Journal of Infection Control 53(11), pp. 1165–1171

**Abstract:** Background: Infection prevention and control (IPC) practices are essential for pandemic preparedness. This study examined the individual-level cognitive and psychological factors influencing IPC practices among nurses during the coronavirus disease 2019 pandemic.; Methods: A cross-sectional survey was conducted with 120 nurses in Korea from July 7 to August 31, 2022. Partial least squares-based path analysis was performed to assess the relationships among knowledge, nursing attitude, resilience, IPC practices, and training participation, as well as the mediation and moderation effects.; Results: Knowledge ( $\beta = 0.216$ ,  $P = .007$ ) and resilience ( $\beta = 0.211$ ,  $P = .014$ ) significantly influenced IPC practices. Resilience significantly mediated the relationship between nursing attitude and IPC practices. Training participation significantly moderated the effects of knowledge on resilience ( $\beta = 0.184$ ,  $P = .004$ ) and nursing attitude on IPC practices ( $\beta = 0.158$ ,  $P = .025$ ). The adjusted  $R^2$  value of resilience was 13.3%, whereas that of IPC practice was 18.6%.; Conclusions: Nurses' knowledge and attitude enhance IPC practices through the mediating effect of resilience and

the moderating role of training participation. Prioritizing practical reinforcement training and resilience-building programs can strengthen IPC compliance and improve infection prevention in future outbreaks. (Copyright © 2025 Association for Professionals in Infection Control and Epidemiology, Inc. Published by Elsevier Inc. All rights reserved.)

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## **12. Effectiveness of a multimodal information technology-based hand hygiene strategies on reducing healthcare-associated infections in nursing homes: A cluster-randomized controlled trial.**

**Authors:** Lin, Tang-Yu;Chen, Kuei-Min;Belcastro, Frank and Chen, Yao-Mei

**Publication Date:** Oct ,2025

**Journal:** Nurse Education in Practice 88, pp. 104534

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## **13. Enhancing hand hygiene compliance in healthcare environmental services staff: a systematic approach to indicator development**

**Authors:** Liu, Yaqing;Jiang, Feng;Yang, Li;Niu, Haoran;Wang, Hui;Rao, Feifei and Zheng, Yuchen

**Publication Date:** 2025

**Journal:** Antimicrobial Resistance and Infection Control 14(1), pp. 131

**Abstract:** Competing Interests: Declarations. Competing interests: The authors declare no competing interests. Informed consent: Informed consent for the data collection and the use of the data was obtained from all subjects.. Ethical approval: Methods in this study were reviewed and approved by the Institutional Review Board (IRB) of Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology (No. 20220134) and were in accordance with the 1964 Helsinki declaration and its later amendments, or comparable ethical standards.; Objective: The aim was to develop a comprehensive system of hand hygiene (HH) indicators for environmental services (EVS) staff in medical institutions, thereby providing clear guidelines on the appropriate moments for EVS staff to perform HH, offering monitoring and feedback metrics for their HH practices, and utilizing the collected monitoring data to evaluate the effectiveness of these practices and serve as a basis for implementing improvement measures.; Methods: We conducted non-participant observations to document the workflows of EVS staff across 38 clinical departments within a single tertiary hospital in China, creating a textual corpus. Utilizing the Latent Dirichlet Allocation (LDA) modeling, we identified thematic work tasks for EVS staff in medical settings. We analyzed HH protocols based on standard operating procedures for each task and synthesized these with literature insights to derive HH guidelines for EVS staff. The Delphi method was employed to refine these guidelines and establish their relative importance through hierarchical analysis.; Results: Our research identified and labeled twelve themes of janitorial tasks. Through a meticulous examination and extraction process based on detailed standard operating procedures for each task, we delineated seven HH moments for EVS staff: before handling clean items, before cleaning or disinfection, before donning personal protective equipment (PPE), before doffing PPE, after cleaning or disinfection, after touching highly contaminated surfaces or items, and

after doffing PPE. Following two rounds of Delphi consultation, experts reached a consensus and five indicators were retained based on importance, feasibility, and coefficient of variation. The final HH indicators for healthcare EVS staff, ranked by importance, included: after touching highly contaminated surfaces or items, before handling clean items, after cleaning or disinfection, before cleaning or disinfection, and after doffing PPE.; Conclusion: The formulation of HH indicators for cleaning personnel not only clarifies when and under what circumstances HH should be performed but also fosters further advancements in HH management for EVS staff. (© 2025. The Author(s).)

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#### **14. Multisociety guidance for infection prevention and control in nursing homes.**

**Authors:** Mody L.;Advani S.D.;Ashraf M.S.;Bartlett A.H.;Bradley S.F.;Burdsall D.P.;Hanrahan J.A.;Huang S.S.;Jump R.L.P.;Nicolle L.;Roghmann M.C.;Stone P. and Murthy, R. K.

**Publication Date:** 2025

**Journal:** Infection Control and Hospital Epidemiology , pp. 1–28

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#### **15. New Hand Hygiene Guidelines From WHO and UNICEF.**

**Authors:** Pant, S.

**Publication Date:** 2025

**Journal:** JAMA (pagination), pp. Date of Publication: 31 Oct 2025

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#### **16. Explainable AI for infection prevention and control: modeling CPE acquisition and patient outcomes in an Irish hospital with transformers.**

**Authors:** Pham M.K.;Mai T.T.;Crane M.;Brennan R.;Ward M.E.;Geary U.;Byrne D.;O'Connell B.;Bergin C.;Creagh D.;McDonald N. and Bezbradica, M.

**Publication Date:** 2025

**Journal:** BMC Medical Informatics and Decision Making 25(1), pp. 391

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#### **17. Virtual reality for infection prevention training: moving from feasibility to measurable impact**

**Authors:** Rattanapitoon, Nathkapach K.;La, Nav;Thanchonnang, Chutharat and Rattanapitoon, Schawanya K.

**Publication Date:** 2025

**Journal:** Infection Control and Hospital Epidemiology , pp. 1

## 18. Infection Prevention Approaches for *Clostridioides difficile*

**Authors:** Vance, Jesse and Turner, Nicholas A.

**Publication Date:** 2025

**Journal:** Infectious Disease Clinics of North America 39(4), pp. 685–707

**Abstract:** Competing Interests: Disclosure Dr Vance reports no relevant conflicts of interest. Dr Turner reports grants to his institution through the CDC, United States (including on *C. difficile* epidemiology and infection prevention), the NIH, and research contracts with PDI and Purio (including for conduct of microbiologic efficacy studies of cleaning products).; *Clostridioides difficile* prevention is challenging as spores are highly resilient and transmission sources diverse. Hand hygiene, contact precautions, and environmental decontamination are fundamental infection prevention strategies. Antimicrobial stewardship is highly effective at reducing *C. difficile* risk at both the individual and institutional level. Supplemental control measures such as no-touch disinfection technologies and screening/isolation of carriers are generally reserved for situations in which fundamental control measures prove insufficient. Reducing host vulnerability through immunization, prophylactic antibiotics directed against *C. difficile*, or products that protect/augment the microbiome may offer promise in the future. (Copyright © 2025 Elsevier Inc. All rights reserved.)

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