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Infection Prevention and Control

Current Awareness Bulletin

September 2026

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1. **Current issues in hand hygiene**

Authors: Boyce, John M.

Publication Date: 2026

Journal: American Journal of Infection Control 54(9), pp. S13–S24

Abstract: Achieving optimum levels of hand hygiene adherence among health care personnel (HCP) remains a challenge in many health care facilities. The purpose of this article is to review recent guidelines and new findings of potential importance, and suggest strategies for continued improvement of hand hygiene practices among HCP. A search included articles that addressed important issues related to HCP hand hygiene. The 2022 SHEA/IDSA/APIC Practice Recommendations on hand hygiene provide an extensive list of evidence-based recommendations for improving hand hygiene practices among HCP. The accuracy of direct covert observations can be improved by having "secret shoppers" limit observation sessions to 15-20 minutes and by randomly selecting units to observe. A standard method is needed for

determining an adequate sample size of direct covert observations in facilities with varying levels of baseline adherence. Combining direct covert observations with automated hand hygiene monitoring will likely provide the most robust data on hand hygiene practices of HCP. Greater attention should be devoted to improving hand hygiene technique. Continuing efforts are needed to maximize hand hygiene practices among HCP. • Hand hygiene adherence rates continue to be suboptimal in many facilities. • Adequate sample sizes for monitoring hand hygiene are a matter of continued debate. • Use of direct covert observations plus automated monitoring has several advantages. • Improving hand hygiene technique requires greater attention.

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2. **Transmission of dry surface biofilm via and through cotton bedsheets: implications for hospital infection control**

Authors: Chowdhury, D.;Tahir, S.;Legge, M.;Wang, M.;Deva, A. K.;Vickery, K. and Hu, H.

Publication Date: 2026

Journal: The Journal of Hospital Infection 175, pp. 104–111

Abstract: Background Dry-surface biofilms (DSBs) have been found to persist on hospital beds and pillows. Aim This study aimed to investigate whether cotton bedsheets prevent transmission of DSB-related pathogens to patients. Methods Staphylococcus aureus DSB was cultured on polycarbonate coupons. DSB transmission was simulated via 150- or 250-thread/in^2 cotton bedsheets directly onto surfaces, or through cotton sheets onto hands and then onto surfaces, both before and after neutral detergent treatment by colony-forming unit (cfu) counts. Quantitative real-time polymerase chain reaction (qPCR) and scanning electron microscopy (SEM) were used to evaluate bacterial biofilm contamination on hospital mattresses and pillow covers. Findings Lab simulations: Bacterial transfer counts (cfu) differed significantly across all experimental conditions. Specifically, bacterial transmission was significantly higher for cotton sheets with a thread count of 150 threads/in^2 than in those with a count of 250 threads/in^2 (P (P (P (P ^{5}±6.8×10^4 bacteria/cm^2 on mattress covers and 7.5±3.7×10^4 bacteria/cm^2 on pillow covers; SEM directly visualized DSB embedded in surface pits of mattress covers, confirming real-world clinical contamination. Conclusion Cotton bedsheets show high transmissibility for DSB, especially when wet. DSB can persist on mattresses and could be transmitted through bedsheets, highlighting the need for rigorous cleaning, frequent sheet changes, and higher-thread-count sheets to reduce pathogen transmission and hospital-acquired infections.

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3. **Updates to instrument processing standards and guidelines: Practical implications for sterile processing, endoscopy, and infection prevention programs**

Authors: Drosnock, Mary Ann

Publication Date: 2026

Journal: American Journal of Infection Control 54(9), pp. S53–S55

Abstract: Reprocessing guidance changes as evidence, technology, and outbreak

investigations refine expectations for safe practice. Infection prevention programs need a practical way to track these changes and translate them into survey-ready processes. Consensus standards and technical information reports relevant to medical device reprocessing were reviewed, along with select draft international guidance and multisociety publications. Updates were organized by operational domain and translated into implications for policy, documentation, competency, and auditing. Common themes included stronger expectations for monitoring, traceability, and storage controls in endoscope processing, and clearer facility-facing guidance for semi-critical devices often processed outside sterile processing (eg, ultrasound probes and dilators). Water quality requirements have become more specific and frequently require coordinated ownership across sterile processing, infection prevention, and facilities/engineering. Updates to steam sterilization and chemical sterilization/high-level disinfection reinforce the need for objective process checks, defined acceptance criteria, and reliable quality system practices to manage changes and nonconformities. Infection prevention programs can reduce risk by keeping policies aligned with current standards, validating staff competency, and using targeted audits with simple data trending to monitor adherence over time. This review focuses on high-impact updates and practical implementation considerations; it is not an exhaustive review of all available guidance. • Major reprocessing standards have been updated with stronger monitoring expectations. • Clearer guidance addresses semi-critical devices (probes, dilators) outside the SPD. • ST108 water quality standards need cross-departmental ownership and response plans. • Steam and chemical sterilization updates stress verification, documentation, and QA. • Targeted audits and quality metrics help maintain survey-ready reprocessing programs.

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4. **Applying small tests of change to advance infection prevention in nursing homes**

Authors: Jones, Karen M.;Catherine Sunlin, M.;Hua, Hsinhui and Krein, Sarah L.

Publication Date: 2026

Journal: American Journal of Infection Control 54(10), pp. 1120–1125

Abstract: In nursing homes (NHs), infection prevention and control quality assurance and performance improvement activities using structured methodologies are poorly defined. Small tests of change (STOC) are small-scale projects designed to test interventions quickly. This study describes STOCs implemented by 24 NHs participating in a 12-month long collaborative to reduce healthcare-associated infections. With limited external project team support, facilities developed targeted STOCs. Findings highlight how NHs can effectively initiate STOC projects to enhance infection prevention and control outcomes. • QAPI activities are essential in nursing homes and enhance resident safety. • Small tests of change (STOCs) can be used to address infection prevention concerns. • STOCs emphasizing infection prevention may improve resident safety and engage staff.

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5. **Indicators for monitoring the quality of surgical site infection prevention: A scoping review**

Authors: Lovegrove, Josephine;Marshall, Jessica;Kuruppu, Nipuna;Shinners, Lucy;Carlini, Joan;Colquhoun, Janelle;Liang, Rhea;Havers, Sally M. and Gillespie, Brigid M.

Publication Date: 2026

Journal: The Journal of Hospital Infection

Abstract: Background Surveillance of surgical site infection (SSI) prevention is important to detect unwarranted variations in practice that require address to avoid patient harm. Performance indicators quantify the quality of care, but the availability of such measures for clinical use across the surgical journey is unclear. This scoping review aimed to identify and summarise indicators (structure, process, outcome) developed and/or used to monitor the quality of SSI prevention care. Methods Databases and guideline repositories were searched for research, guidelines and technical documents which specified indicators for SSI prevention in any setting and inclusive of the whole surgical journey. Screening and data extraction were performed by two independent reviewers. Narrative synthesis was based on the PAGER framework, with indicators mapped to categories and subcategories. Results Across 77 documents, 276 indicators were identified. Most were process indicators (n=152; 55.1%), followed by structure (n=65; 23.6%) and outcome indicators (n=59; 21.4%). Structural measures were mapped to eight subcategories, including presence of protocols for specific care components (n=25; 38.5%) and surveillance (n=19; 29.2%). Process indicators were mapped to 18 subcategories, with most related to antibiotic administration (n=100; 65.8%), and fewer to topics such as skin/area preparation (n=8; 5.3%), hand hygiene (n=6; 3.9%) and normothermia (n=6; 3.9%). Most outcome measures reported SSI incidence (n=54; 91.5%). Conclusion There is a need for standardised and validated indicators aligned across structure, process and outcome domains, which can be nuanced to specialty, procedure and local context. This would support organisations and clinicians globally to implement local monitoring and quality improvement mechanisms.

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6. **How AI-supported intelligent systems support infection prevention and control training in healthcare: A systematic review of educational functions and outcomes**

Authors: Park, Ha-Young and Kim, Yoojin

Publication Date: 2026

Journal: Nurse Education Today 167, pp. N.PAG

Abstract: Artificial intelligence (AI)-supported intelligent systems have been increasingly incorporated into infection prevention and control (IPC) education and training, primarily to support the monitoring of observable behaviors and the provision of feedback. However, existing evidence has focused largely on short-term compliance outcomes, with limited synthesis of the educational role of AI-supported intelligent systems in supporting sustained IPC competence. This systematic review examined how AI-supported intelligent systems have been designed and used to support IPC education and training, with a focus on system characteristics, educational functions, and reported outcomes. A systematic literature search was conducted across the PubMed/MEDLINE, Embase, Cochrane, and CINAHL databases. A total of 18 studies met the inclusion criteria. Findings were qualitatively synthesized according to system design characteristics, educational functions, and outcome domains. Methodological quality was appraised using the Mixed Methods Appraisal Tool. Most AI-supported intelligent systems focused on hand hygiene and relied on fully automated monitoring systems to capture

behaviors and provide performance feedback. Educational functions were predominantly limited to performance assessment, automated feedback, and reminders. Outcomes were mainly measured using compliance or performance metrics, whereas sustained behavioral change and decision quality were rarely assessed. AI-supported intelligent systems have been used primarily to reinforce short-term IPC performance and compliance. However, their current applications for supporting sustained competence over time remain limited. The findings of this review suggest that AI-supported intelligent systems may serve as maintenance-oriented educational support by extending learning beyond initial instruction through repeated practice and feedback. Future research should prioritize outcome measures that capture the durability of performance and decision-making processes to better align AI-supported intelligent systems used in IPC education and training with the educational demands of clinical practice. • AI's role in IPC education remains narrowly defined. • Most AI systems monitor hand hygiene but rarely support clinical learning decisions. • Evidence favors short-term compliance over sustained professional competence. • This review reframes AI as a tool for sustaining IPC learning beyond initial training.

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7. **Simulation of healthcare professional teams in infection prevention and control: A scoping review**

Authors: Passerini, Isabela;Pereira, Erica Gomes;Galvão Fernandes Alves, Isabela and Padoveze, Maria Clara

Publication Date: 2026

Journal: Journal of Infection Prevention 27(5), pp. 222–229

Abstract: Background: Healthcare-associated infections (HAIs) are a major public health concern. Although interprofessional education (IPE) is recognized as a promising strategy, there is limited robust evidence demonstrating its effectiveness in reducing infection rates in healthcare settings. Aim/objective: To identify studies on interprofessional simulation for healthcare teams focused on infection prevention and control (IPC). Methods: This scoping review followed the PRISMA-ScR checklist and was registered on the OSF platform (https://osf.io/bj6uc/). Six databases (MEDLINE, Embase, Web of Science, CINAHL, ERIC, Scopus) were searched, yielding 632 citations. After screening and applying exclusion criteria, 11 studies were included. Finding/results: Among the selected studies, four (36.4%) originated from the United States. Five studies (45.5%) employed simulation practices based on evidence or expert consensus. Seven studies (63.6%) involved teams comprising three or more professional categories. All studies addressed infectious diseases requiring rapid response, mainly COVID-19 (55%) and Ebola (45%). Most (81.8%) used patient simulators. The most frequently addressed IPE competencies were teamwork (90.9%), roles and responsibilities (81.8%), and interprofessional communication (72.7%). Discussion: Findings indicate a reliance on expert-driven simulation practices and a concentration on emergency contexts. There is a lack of studies evaluating interprofessional simulation in routine care environments, such as primary health care and long-term care. Additionally, the absence of medium- and long-term outcome assessments limits our understanding of the sustained impact of interprofessional simulation on IPC. Further research is needed to support evidence-based implementation in diverse healthcare settings.

8. **Multifaceted infection prevention protocol is associated with reduced surgical site infection after spinal fusion: a before-and-after study**

Authors: Sohn, Hyuk-Joon;Cho, Jae Hwan;Lee, Dong-Ho;Hwang, Chang Ju and Park, Sehan

Publication Date: 2026

Journal: The Spine Journal : Official Journal of the North American Spine Society
Abstract: Background Context Surgical site infection (SSI) after spinal instrumentation surgery is a serious complication with substantial clinical and economic consequences, and evidence on multifaceted prevention protocols in spine surgery remains limited. Purpose To evaluate the effectiveness of a multifaceted SSI prevention protocol after spinal fusion surgery. Study Design Retrospective single-center before-and-after intervention study. Patient Sample A total of 631 consecutive patients who underwent spinal instrumentation surgery (NHSN procedure code FUSN) between April 2023 and October 2024 (pre-intervention, n=377; post-intervention, n=254). Outcome Measures Incidence of SSI within 3 months after surgery, defined according to the CDC/NHSN surveillance criteria. Methods The protocol, implemented in December 2023, comprised (1) universal preoperative povidone-iodine nasal decolonization, (2) chlorhexidine gluconate bathing, (3) enhanced perioperative glycemic control, and (4) reinforced intraoperative aseptic techniques. Demographics, surgical variables, and SSI rates were compared between groups, and multivariate logistic regression was performed. Results The SSI rate decreased from 2.9% (11/377) to 0.4% (1/254) after implementation (absolute risk reduction 2.5%, 95% CI 0.7-4.4%; p=0.033). Groups were comparable in sex, body mass index, smoking status, normothermia, ASA classification, operative time, NNIS risk index, and number of fused levels, although the post-intervention group was younger (median 65.5 vs 68 years; p=0.006). The protocol was an independent protective factor against SSI (Firth-penalized adjusted odds ratio 0.18; 95% CI 0.02-0.76; p=0.017). Conclusions A multifaceted SSI prevention protocol was associated with a significant reduction in SSI after spinal instrumentation surgery, supporting the adoption of standardized, multi-target prevention strategies.

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9. **Overestimation of personal hand hygiene performance and barriers to hand hygiene among healthcare providers**

Authors: Srikanth, Sonia;Ching, Patrick R.;Rittmann, Barry;Pedersen, Laura;Wooten, Ryan;Olkonen, Tina;Cooper, Kaila and Doll, Michelle

Publication Date: 2026

Journal: American Journal of Infection Control 54(10), pp. 1062–1065

Abstract: Hand hygiene (HH) performance in our facility declined during the COVID-19 pandemic and failed to return to baseline despite a widespread education campaign and increased HH rounding. To better understand provider perceptions and inform future interventions, we conducted a survey examining self-evaluation of HH performance. The survey assessed perceived HH performance relative to peers, opportunities for improvement, factors causing variation in personal HH practice (workload/acuity, time of day, and patient characteristics), and burnout using a validated, single-item scale. Surveys were conducted in-

person with clinical providers on high-performing and lower-performing units. Non-clinical staff were excluded. Self-perception of performance was compared against other variables using the Kruskal-Wallis test, using SAS 9.4, Cary, NC. One hundred surveys were completed. The majority of those surveyed believed themselves to be in the top quartile of HH performers (87%). The actual HH compliance measured on these 4 units for 1/2024-11/2024 was 65% based on 7,436 directly-observed opportunities. No one selected bottom quartiles. There was no difference in perceived performance by unit (P =.4006), years of experience (P =.9679), or burnout (P =.2621). HH performance was perceived to be better than average by the majority of inpatient healthcare providers surveyed, despite data from these units indicating opportunities. Further improvement in HH will be difficult without efforts to move perception closer to reality for individual healthcare providers. • Personal HH performance was perceived to be above average by most of those surveyed. • Local observation data demonstrated a need for improvement in HH performance. • Most providers believed acuity or patient characteristics influenced HH practices. • Most providers reported seeking ongoing improvement in HH practice. • HH campaigns need to close the gap between perceived and actual performance.

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10. **Impact of an Infection Prevention Bundle Modification on Post-Cesarean Delivery Surgical Site Infections**

Authors: Steelman, Morgan;Sutton, Desmond and Fox, Nathan S.

Publication Date: 2026

Journal: American Journal of Perinatology 43(12), pp. 1697–1699

Abstract: Objective: This study aimed to evaluate the impact of a modified surgical site infection (SSI) prevention bundle, focused on closing-phase equipment changes, on post-cesarean SSI rates. Study Design: We conducted a retrospective cohort study of cesarean deliveries performed by a single, large, obstetrical and maternal–fetal medicine practice from April 1, 2018, to February 28, 2025. The amended bundle, implemented in September 2021, introduced universal glove changes, light handle replacement, suction catheter tip removal, Bovie replacement, sterile re-draping, and a new surgical tray and instruments for fascial closure. Standardized prophylactic antibiotics, abdominal and vaginal preparation, and dressing protocols remained unchanged. Deliveries were categorized as preimplementation (April 2018–August 2021) and postimplementation (October 2021–February 2025). SSI was defined as wound separation requiring packing or wound infection necessitating antibiotics within 30 days. Logistic regression models adjusted for maternal age and gestational age. Subgroup analyses stratified by labor status, primary versus repeat cesarean, and body mass index (BMI). Results: A total of 2,467 cesarean deliveries were included, with 1,271 in the preimplementation and 1,196 in the postimplementation group. SSI occurred in 2.6% of preimplementation versus 3.3% of postimplementation deliveries (adjusted OR = 1.27, 95% CI: 0.80–2.04; p = 0.313). No significant temporal trends were observed before (p = 0.151) or after (p = 0.221) bundle implementation. Subgroup analyses by labor status, prior cesarean, and BMI similarly showed no significant associations between the bundle and SSI risk. Conclusion: Introducing closing-phase equipment changes on top of standardized SSI prevention practices did not reduce post-cesarean SSI rates. These findings suggest that once core measures such as antibiotics, prep, and dressings are standardized, additional equipment

changes alone may not provide incremental benefit. These findings highlight the importance of rigorously evaluating process changes before widespread implementation. Key Points: Closing-phase equipment changes did not lower cesarean SSI rates. Bundle showed no effect in subgroup analyses by labor status, prior cesarean, and BMI. Findings question the value of costly closure-phase SSI prevention bundles.

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11. **Impact of a Plan-Do-Check-Act Hand Hygiene Bundle on Compliance, Infection Rates, and Nursing Quality: A Controlled Before-and-After Study**

Authors: Tian, Fei;Chen, Wenfeng and He, Jingyi

Publication Date: 2026

Journal: Journal of Visualized Experiments : JoVE (235)

Abstract: Hand hygiene remains one of the most important measures for preventing hospital-acquired infections, yet sustained compliance in routine inpatient care remains difficult to achieve through reminders or training alone. This study evaluated the effect of a Plan-Do-Check-Act (PDCA)-based hand hygiene governance bundle on hand hygiene compliance, hospital-acquired infection rates, and nursing management quality. A controlled before-and-after study was conducted in 16 inpatient wards of a general hospital. Eight wards received a PDCA-based hand hygiene governance bundle, while eight control wards continued routine hand hygiene management. The study covered a 12-month period, including a 6-month pre-intervention period and a 6-month post-intervention period. The ward-month was used as the main analytical unit. The primary outcome was monthly hand hygiene compliance. Secondary outcomes included hospital-acquired infection rate per 1,000 patient-days and nursing management quality score. Difference-in-differences models were used to estimate intervention-associated changes. Hand hygiene compliance increased from 66.2% to 83.2% in the intervention group and from 63.1% to 66.8% in the control group. The adjusted difference-in-differences odds ratio (OR) for hand hygiene compliance was 2.38 (95% CI: 2.19-2.59, P < 0.001). Hospital-acquired infection rates decreased from 7.07 to 4.37 per 1,000 patient-days in intervention wards, with an adjusted incidence rate ratio of 0.60 (95% CI: 0.52-0.69, P < 0.001). Nursing management quality scores increased more substantially in intervention wards than in control wards. The PDCA-based hand hygiene governance bundle was associated with improved hand hygiene compliance, lower hospital-acquired infection rates, and higher nursing management quality. Embedding hand hygiene into repeated ward-level governance cycles may provide a practical strategy for strengthening infection-control management.

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12. **Mobile simulation pilot: A novel approach to infection prevention education**

Authors: Trudeau, Kirsten T.;Frith, Julia;Furmanek, Stephen;Chandler, Thomas R.;Sikes, Kendra L. and Forton, Melissa

Publication Date: 2026

Journal: American Journal of Infection Control 54(10), pp. 1047–1052

Abstract: Infection prevention and control training is vital to keeping patients and healthcare

workers safe. Simulation is an established tool for healthcare education but novel to the context of infection prevention and control. Experiential learning theory supports the use of simulations to create experiences adults can learn from. The Kentucky Infection Prevention Training Center (KyIP) sought to fill this gap with infection prevention simulations and conduct a program evaluation. To provide hands-on training in a location convenient for the learners, KyIP piloted mobile simulation training for Infection Prevention. Of 247 learners trained, 72 completed the survey, yielding a 29% response rate. Compared to a benchmark rate of 85%, nearly all respondents reported they will use the information they learned in the simulation (99%, P =.001), found the simulation to be impactful (96%, P =.008), and reported an increase in confidence (89%, P =.224). Mobile simulation training for infection prevention is useful and impactful to the learner. Further studies are needed to determine effects on behavior change and infection rates. These findings suggest that mobile simulation may serve as a scalable model for infection prevention training across diverse healthcare settings. • Mobile simulations in infection prevention are useful and impactful to learners. • A nonpunitive approach supports risk recognition and behavior change. • Low fidelity simulations are reproducible and cost effective.

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