Efficacy of cleaning and disinfection methods against *C. difficile*

*Clostridium difficile* infections can be serious and lead to substantial morbidity and mortality, especially in the elderly. A recent study of 28 community hospitals showed that *C. difficile* has replaced methicillin-resistant *Staphylococcus aureus* (MRSA) as the most common cause of nosocomial infections.

Though environmental contamination has been shown to be an important component of patient-to-patient transmission of *C. difficile*, the best method to clean contaminated surfaces has not been completely assessed.

In this study, researchers from the University of North Carolina, Chapel Hill, tested the effectiveness of disinfectants and wipe methods against *C. difficile* spores. Among the findings:

- Wiping with nonsporicidal agents (physical removal) was effective in removing more than 2.90 \( \log_{10} \) *C. difficile* spores.
- Wiping with sporicidal agents (physical removal and/or inactivation) eliminated more than 3.90 \( \log_{10} \) *C. difficile* spores.
- Spraying with a sporicide eliminated more than 3.44 \( \log_{10} \) *C. difficile* spores, but did not remove debris.

Drying times with wiping were 2-6 minutes, and drying times for spraying with no wiping were 28-40 minutes.

The researchers concluded that the use of a wiping procedure with a sporicidal agent provides excellent removal and inactivation of *C. difficile* spores. The prolonged drying times for spraying without wiping were unacceptably high for routine use. In addition, spraying alone did not remove dirt and debris and therefore is not recommended.


Comparison of indicators of GI endoscope cleanliness

Gastrointestinal (GI) endoscopes are used for various examinations, procedures, and treatments related to lesions of the GI tract. The surfaces and channels of GI endoscopes are often contaminated by blood, mucus, tissue, and organ contents. Therefore, components of blood, mucus, or tissue may serve as indicators of contamination level when assessing cleanliness.

This study from Japan evaluated 3 potential indicators of GI endoscope cleanliness: adenosine triphosphate (ATP), microbiological load, and protein. Adenosine triphosphate is present at high concentrations in animals and plants, including microorganisms.

A total of 12 GI endoscopes used in 41 patients were included in the analysis.

Before cleaning, ATP values were 10,417 relative light units (RLU) from the exterior surface of the endoscope, and 30,281 RLU from the suction/accessory channel rinsates.

After cleaning, ATP values were decreased to 82 RLU and 104 RLU, respectively, a statistically significant difference.

A similar trend was seen with microbiological load, 5,143 colony-forming units (CFU) reduced to 1 CFU, but the change in residual protein from before cleaning to after was not significant.

The researchers concluded that ATP measurement provides a reliable, rapid, and practical assessment of endoscope cleanliness.

Impact of work-home conflicts that affect surgical workforce

Surgeons work an average of 60 hours per week, spend 16 hours in the OR, and are on call 2 nights per week. Few feel they have enough time for their personal and family lives.

Though 62% of women and 48% of men surgeons reported substantial work-home conflicts in a 2008 American College of Surgeon’s study, little remains known about factors contributing to work-home conflicts and their personal and professional consequences.

In this multi-center study, researchers surveyed members of the American College of Surgeons to evaluate the relationship between work-home conflicts and the personal and professional characteristics of US surgeons. The study also explored potential personal and professional ramifications of work-home conflicts.

Of 7,197 respondents, 3,380 (47%) reported a recent work-home conflict.

On multivariate analysis, factors independently associated with work-home conflicts included practic-
ing within the Veterans Administration or an academic medical center vs private practice, having children, working more hours per week, being younger, and being a woman. Increased age and surgical specialty reduced the risk.

A recent work-home conflict was strongly associated with burnout, quality of life, depression, relationship difficulties, alcohol abuse/dependency, and career dissatisfaction.

After controlling for other personal and professional factors, work-home conflicts also were independently associated with surgeons reporting a moderate or higher likelihood of reducing their clinical work hours within the next 12 months and leaving their current practice in the next 24 months for a reason other than retirement.

The researchers concluded that work-home conflicts are a major factor in surgeons’ decisions to reduce work hours and/or move to a new practice, with potential substantive manpower implications for the surgical workforce. In an era when the projected size of the surgical workforce is already inadequate, further reductions will exacerbate this problem.


Reducing neurosurgical adverse events

Neurosurgery, a high-risk surgical specialty, is pursuing systematic approaches to measure and improve outcomes.

In this review, researchers from Brigham and Women’s Hospital, Boston, identified patterns and frequencies of adverse events in neurosurgery as background for future efforts to improve quality and safety in the specialty.

Among the contributing factors in neurosurgical adverse events:

- absence of outcomes monitoring and accessible data
- variations in quality of surgical technique
- clinical and technical variability
- technology and/or hardware variability
- communication failures.

The researchers identified 5 recommendations for improving outcomes for neurosurgical patients:

- development and implementation of a national registry for outcomes data and monitoring
- more widespread regionalization and/or subspecialization to decrease variations in quality of surgical technique
- integration of the World Health Organization

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• activity by neurosurgical societies to increase standardization for the safety of specialized neurosurgery equipment
• establishment of data-driven protocols.

Adoption of policies in support of these recommendations is a powerful starting point for improving outcomes and patient safety in neurosurgery, the authors concluded.


Quality improvement

Most postop UTIs in patients exempt from SCIP Inf-9

Indwelling urinary catheters account for 80% of urinary tract infections (UTIs). The Surgical Care Improvement Project (SCIP) Inf-9 guideline promotes removal of urinary catheters within 48 hours of surgery.

In this study from Emory University School of Medicine, Atlanta, the researchers examined whether there is a relationship between adherence to the SCIP initiative and the rate of postoperative UTIs.

The researchers used data from the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) from Oct 1, 2009 to June 30, 2011.

Of 2,459 patients analyzed, SCIP compliance increased over time, but this was not associated with improved monthly UTI rates.

Of the 69 UTIs found, 61 were compliant with SCIP; however, 49 were considered exempt from the guideline, and the catheters were not taken out within 48 hours of surgery. Patients can be deemed exempt from SCIP if there is appropriate documentation from a physician stating the necessity of and justification for leaving the catheter in place.

Review of 100 random controls showed a similar compliance rate but a lower rate of exemption. The odds of developing a postoperative UTI were 8 times higher in patients deemed exempt from SCIP.

The researchers concluded that most UTIs occurred in patients deemed exempt from SCIP Inf-9. The SCIP guidelines should be modified with fewer exemptions to facilitate earlier removal of urinary catheters.


Surgical site infection

Efficacy of preop chlorhexidine showers, baths for preventing SSIs

Whole-body bathing or showering with chlorhexidine gluconate has been shown to reduce bacterial colonization of the skin and is frequently recommended preoperatively to prevent surgical site infections (SSIs). However, the efficacy of this practice is uncertain.

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This meta-analysis from the University of Wisconsin, Madison, evaluates the use of preoperative chlorhexidine baths or showers for prevention of SSIs. Of 17,932 patients included in the analysis, 7,952 received a chlorhexidine bath or shower, and 9,980 were allocated to various comparator groups.

A total of 6.8% of patients in the chlorhexidine group developed SSIs, compared with 7.2% of patients in the comparator groups. Chlorhexidine did not significantly reduce the incidence of SSIs, compared with soap, placebo, or no shower or bath.

The researchers concluded that the findings do not support the routine use of preoperative, whole-body chlorhexidine showering or bathing for prevention of SSIs. However, many of the studies analyzed were suboptimal in design, and the manner in which the chlorhexidine was applied was not clearly described.


**Society for Ambulatory Anesthesia**

Society for Ambulatory Anesthesia Consensus Statement on Preoperative Selection of Adult Patients with Obstructive Sleep Apnea Scheduled for Ambulatory Surgery. The Society for Ambulatory Anesthesia developed a consensus statement for the selection of patients with obstructive sleep apnea (OSA) scheduled for ambulatory surgery. The suitability of ambulatory surgery for a patient with OSA remains controversial because of concerns of increased complications, including postdischarge death.

Among the recommendations:

- Patients with a known diagnosis of OSA and optimized comorbid medical conditions can be considered for ambulatory surgery if they are able to use a continuous positive airway pressure device postoperatively.
- Patients with a presumed diagnosis of OSA (based on screening tools such as the STOP–Bang questionnaire) and with optimized comorbid conditions can be considered for ambulatory surgery, if postoperative pain can be managed predominately with nonopioid analgesics.
- Patients with OSA and nonoptimized comorbid medical conditions may not be good candidates for ambulatory surgery.

This consensus statement differs from existing American Society of Anesthesiologists guidelines.
because of the availability of new evidence.


Society for Healthcare Epidemiology of America

Proposed Guidelines to Minimize Risk of Infections Associated with Use of Ultrasound Transmission Gel. Guidelines have been proposed by epidemiologists from Beaumont Health System, Royal Oak, Michigan, to reduce the risk of infection from contaminated ultrasound transmission gel.

The recommendations are based on the authors’ experience with a cluster of Pseudomonas aeruginosa infections in the cardiac intensive care unit. The outbreak was linked to bottles of ultrasound transmission gel that were contaminated during the manufacturing process. The gel was used for intraoperative transesophageal echocardiography. The investigation led to a national recall of the product.

The authors proposed recommendations include:
• Use sterile, single-dose ultrasound gel in any invasive procedure or procedures involving non-intact skin or fresh surgical wounds.
• Use sterile, single-dose ultrasound gel in newborns or critically ill children.
• Use multi-dose, non-sterile gel on intact skin, but containers should be sealed appropriately when not in use, and replaced when empty, rather than refilled.


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