

How clean is CLEAN?

New technologies, monitoring practices gain traction

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SPECIAL REPORT


The important link between environmental cleanliness and infection prevention has long been appreciated, but how best to achieve these objectives remains a source of ever-changing science and application. So how are hospitals faring in this all-important area and how are they responding to the rapid changes in cleaning technologies, processes and verifying proper cleaning procedures are followed?

More than four out of five are

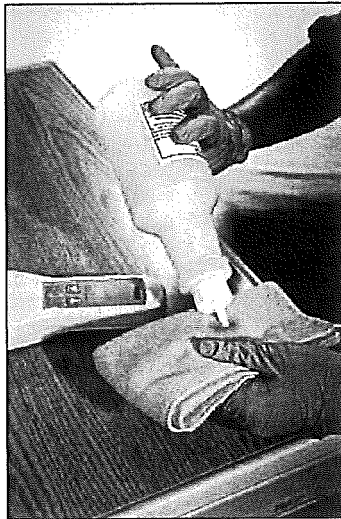
2009 Infection Prevention Hospital Cleaning Survey

either already using or planning to use advanced cleaning technology such as microfiber mops. Nearly one in four are augmenting observation-based audits and performance goals with newer technologies such as rapid environmental testing with chemical markers that fluoresce with ultraviolet light, or through environmental cultures. And many are turning to environmentally friendly cleaning products, even as they're requesting evidence-based data to confirm the value of these products.

These are among the many findings of a recent survey of environmental services managers and infection preventionists. The online survey was co-sponsored by *Health Facilities Management* and *Materials Management in*



John Scherberger, director of environmental services, pastoral care and guest services at Spartanburg (S.C.) Hospital for Restorative Care, is an advocate for teamwork between environmental services and infection prevention.



Thoroughly cleaning such items as monitors and TV remotes helps prevent health care-associated infections. In the far right photo, a cleaning agent is applied to a microfiber cloth that is then used to clean, which is proper cleaning protocol.

Health Care magazines, along with the American Society for Healthcare Environmental Services (ASHES) and the Association for Professionals in Infection Control & Epidemiology (APIC). The survey underscored that close collaboration between environmental services managers and infection preventionists is essential to achieving and monitoring performance standards for cleanliness of the patient environment, and for introducing new technologies and practices.

"It's really a team effort. We can't operate in silos," says John Scherberger, director of environmental services, pastoral care and guest services at Spartanburg (S.C.) Hospital for Restorative Care. "I have an excellent working relationship with our infection preventionist and nurse managers."

"The good working relationship between infection preventionists and environmental services showed all the way through the [respondents'] comments," observes Judene Bartley, vice president of Epidemiology Consulting Services in Beverly Hills, Mich. Bartley was the APIC-appointed expert for the survey.

"The survey data supports what ASHES has long believed," says Patti Costello, ASHES executive director. "Environmental services and infection preventionist professionals are essential partners in providing a clean, safe, comfortable and high-quality patient care environment."

"Pathogenic microorganisms are more resistant and persistently present in the environment, staffing benchmarks for infection preventionists and front-line cleaning technicians are problematic, the Centers for Medicare & Medicaid Services (CMS) and insurers are redefining reimbursement and dramatic health care reform is on the horizon," Costello adds. "The combined intel-

lectual capital and collaborative efforts between ASHES, APIC and other organizations will better position our appeal for improved staffing ratios, widely accepted staff competencies and health care cleaning/disinfection protocols, training, education and quality assurance as well as sound science behind the claims of new products and technologies."

The connection between environmental services and infection prevention is important in evaluating new products, training and educating staff about good hygiene practices, and even in eliminating products or procedures.

That was the case at St.

Joseph Mercy Hospital in Ann Arbor, Mich. "Our staff asked to stop using disinfectant on the floors because they were developing a cloud on the surface and environmental services was having to strip and clean them more often," reports Russ Olmstead, epidemiologist. "We did a literature review and found no evidence of increased health care-acquired infections from using detergents instead of disinfectants on the floor, so we allowed them to make the change." The updated Centers for Disease Control and Prevention (CDC) *Guideline for Disinfection and Sterilization in Healthcare Facilities*, which can be accessed at www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection_Nov_2008.pdf, also acknowledges that the use of germicidal chemicals to disinfect hospital floors and other noncritical items is controversial.

Monitoring cleanliness

Observation-based audits continue to be the mainstay for monitoring compliance with cleaning standards, with nearly 87 percent of respondents using that method. However, many health care institutions are finding ways to tighten observation protocols. For instance, Brigham and Women's Hospital in Boston maintains an electronic database of all rooms that environmental services supervisors access with handheld devices. This helps achieve the quality assurance goal of two inspections per employee per month.

"When a supervisor takes the handheld, it shows all the employees what that person is responsible for and randomly identifies the rooms to be inspected so we don't have a selection bias," explains Richard Bass, director of environmental services. The system also has a results reporting feature that can provide summaries by employee, supervisor, time period and item inspected.

Other respondents couple observation-based audits with detailed check lists to set and measure performance expectations.

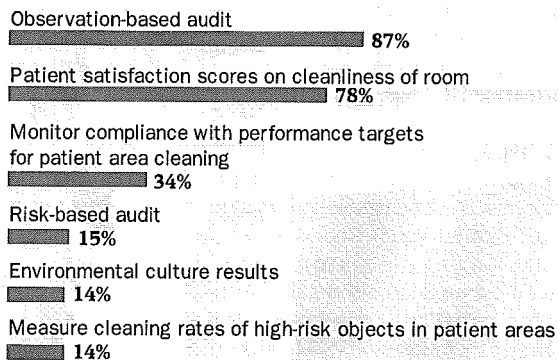
Pinckneyville (Ill.) Community Hospital is an example. "I developed a task list that covers basically every item and surface in the room. They vary depending on whether a patient is in the room during the cleaning, staying in the room but not present during the cleaning, or discharged," says Kevin Daugherty, environmental services manager. "We use this for our performance improvement standards and supervisors sign off on the lists when they check each room."

About the survey...

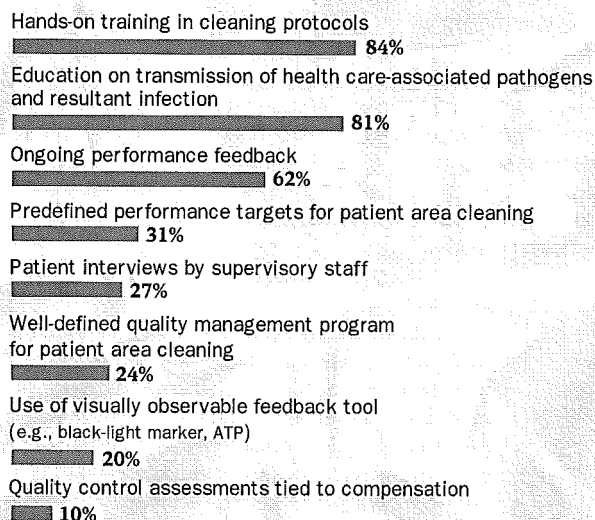
Health Facilities Management, *Materials Management in Health Care*, the American Society for Healthcare Environmental Services (ASHES) and the Association for Professionals in Infection Control and Epidemiology (APIC) teamed up to conduct the Infection Prevention & Hospital Cleaning Survey.

A random sample of 3,538 infection preventionists were contacted to find out what steps hospitals are taking to optimize cleaning protocols and reduce hospital-acquired infections. The survey response rate was 19.7 percent or 696 completed surveys.

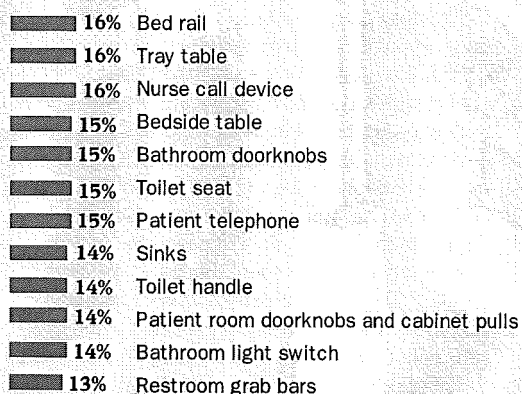
Top six ways hospitals measure compliance with cleaning standards in patient care areas



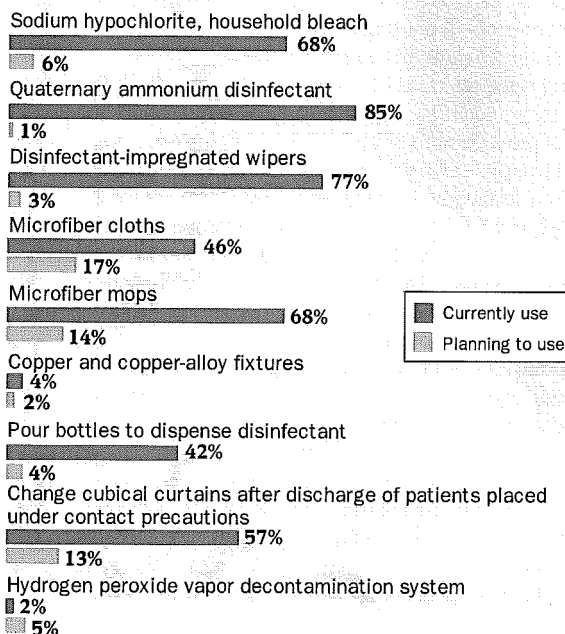
Step hospitals have taken to optimize environmental services staff performance



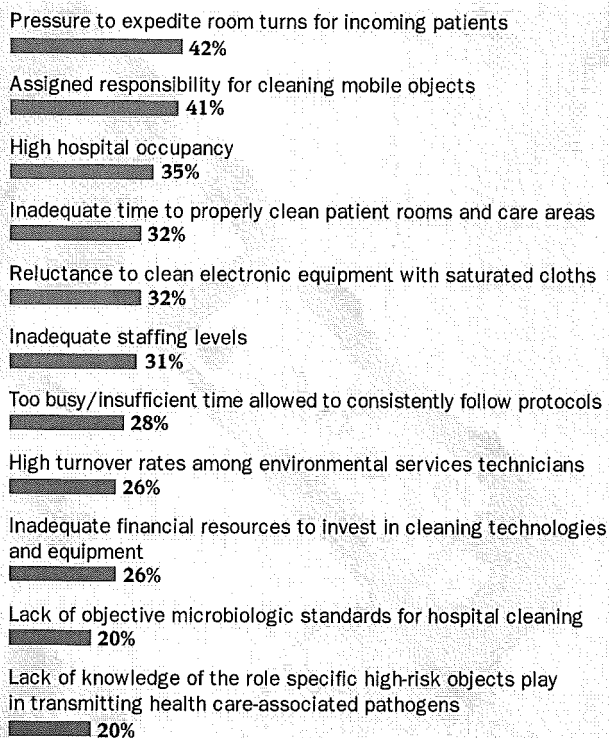
Hospitals using chemicals (e.g., ATP, fluorescing markers) to verify cleaning of the following high-risk objects



Cleaning practices and technologies hospitals routinely employ to disinfect patient rooms



Top 11 challenges to cleaning and disinfection of the patient environment



Nearly a quarter of the participants reported augmenting observation-based audits and performance goals with newer technologies such as rapid environmental testing with chemical markers that fluoresce with ultraviolet light, or through environmental cultures. The introduction of chemical markers in particular can have a profound effect on cleaning standards and protocols, according to Bartley.

"It's a more objective way of determining how well cleaning is taking place, and it can be very dramatic. It's a shock to find out that things you thought were clean in reality are not," she explains. These products are just beginning to gain traction in health care, Bartley adds, and it will be interesting to track their use and impact on cleaning in future surveys. (See chart on page 25.)

Just how quickly this area of infection prevention is changing was evident during the Society for Healthcare Epidemiology of America's (SHEA) annual scientific session in March. Results of a federally funded study were presented, concluding that risks of methicillin-resistant *Staphylococcus aureus* (MRSA) and vancomycin-resistant enterococcus (VRE) transmission could be lessened by immersing cleaning cloths in cleaning solution, educating workers and providing feedback on the removal of intentionally applied marks visible only under ultraviolet light.

Regardless of the specific compounds used, these visually observable feedback tools make for excellent training tools, particularly with staff who may not be fluent in English. "It immediately sends a message, no matter what language the individual is proficient in, that what they thought they removed is still there," notes Bartley.

Adopting new technologies

The survey also revealed that many hospitals are incorporating the latest technologies to achieve and monitor performance standards for cleanliness of the patient environment.

For example, more than 80 percent of respondents indicated

that they already use or plan to use microfiber mops, while 63 percent either already use or plan to use microfiber cloths (see chart on page 25).

Organizations that have switched report multiple benefits. Spartanburg Hospital, a long-term acute care facility, transitioned to microfiber mops and cloths about four years ago. "Since then, we've had no workers' compensation injuries, no slips and falls from wet floors, and our waste-water treatment has decreased by hundreds of thousands of gallons," says Scherberger.

Other survey respondents also gave the technology a thumbs-up. "It saves labor because it picks up more. The employee still uses a figure-eight motion, but you get a cleaner sweep," explains Bobby Dorsett, director of environmental operations at Scripps Memorial Hospital La Jolla (Calif.).

Microfiber products also minimize cross-transmission of microbes among patients, according to Cecilia DeLoach Lynn, senior manager of sustainable operations for Practice Greenhealth, a membership and networking organization for institutions committed to eco-friendly practices. "Because they don't require re-dunking in a mop bucket and using the same water or mop for two or three rooms without changing, they really cut down on cross-contamination," she says.

Copper or copper-alloy fixtures, a technology touted for its antimicrobial properties, has yet to gain traction among survey respondents. Less than 4 percent reported using the fixtures now, and nearly 94 percent indicated they have no plans to implement the technology. "In laboratory studies copper has been shown to have antimicrobial properties, but it's a challenge to take lab findings and apply them in a natural health care environment," observes Olmstead. "It's an interesting technology that's not quite ready for prime time."

On going green

Hospitals are beginning to implement environmentally preferred cleaning initiatives, but the health care industry is advancing cautiously for good reasons, according to Bartley.

"We've been slower to adopt the products because we know there are certain chemicals we have to use," she says. "Until there are safer materials and more science behind their use, we're left with infection preventionists doing risk assessments to determine where it's safe to use [environmentally friendly] materials and where it's required to use harsher ones." (See sidebar at left.)

The most common environmentally preferred actions among survey respondents included orientation and training about the hazards, use and disposal of cleaning products (64 percent), policies on limiting exposure to chemicals (54 percent) and on environmentally preferable cleaning (57 percent), use of pre-diluted disinfectant systems (53 percent) and use of equipment that doesn't negatively impact indoor air quality (52 percent).

At Brigham and Women's Hospital, the environmental safety department vets all new products, and use of the more toxic chemicals is limited to staff members with special training. In addition, the hospital uses fewer products than in the past. "The vast majority of our staff is of low skill-level

Putting 'green' in perspective

As hospitals seek ways to transition to environmentally preferred practices and solutions, teamwork between infection preventionists and environmental staff must come to the fore, according to Cecilia DeLoach Lynn, senior manager of sustainable operations for Practice Greenhealth, an organization promoting eco-friendly practices.

"They need to look at effectiveness first before putting on the green filter," she says. "Being sure of all the data and evidence takes close collaboration."

Lynn is encouraged by the responses on environmentally preferred practices in the Infection Prevention & Hospital Cleaning Survey, particularly the use of microfiber mops and cloths. "We've seen that technology really take hold in a lot of facilities," she says. "It's a win-win for infection prevention and the environment."



Practice Greenhealth encourages the use of products that have been certified as green. "We recommend third-party certification of green cleaners

because it holds the product to a standard and worker safety is ensured," she explains. "We recognize that it might be difficult for small companies in the innovation stage to afford the cost of obtaining green certification, but unfortunately others will slap a green label on a product that's not really green." Two organizations that certify health care products as green include Green Seal in the United States and the EcoLogo program based in Canada.

For facilities seeking to adopt environmentally preferred technologies, more information is available through the Web site of the *Green Guide for Health Care* at www.gghc.org. ■

and we've dropped the number of products we work with to about five or six versus dozens I've seen used in other hospitals," Bass says. "Our bottles are color-coded and bilingual."

Like Brigham and Women's, many facilities reported streamlining the number of products used and minimizing worker exposure to chemicals.

For instance, Spartanburg Hospital for Restorative Care now uses only four products, and all are green-certified except the disinfectant. "All our chemicals are in a dispenser and environmental services staff does not get involved in the mixing," says

Scherberger. "They press one button for a lot of the chemical, another for less, and I can check that their bottles are the proper dilution based on the color. We also stopped using trigger spray bottles. They're all pull-top so housekeepers saturate their cloths rather than spraying in the environment."

Some facilities, including Curry General Hospital in Gold Beach, Ore., have made the switch to all sustainable products. "We already used products from this distributor, so we researched their green products to make sure they killed MRSA and the like and would not be irritating to our staff—we have a lot of people with allergies," explains Kim Sharp, environmental services manager.

Challenges and opportunities

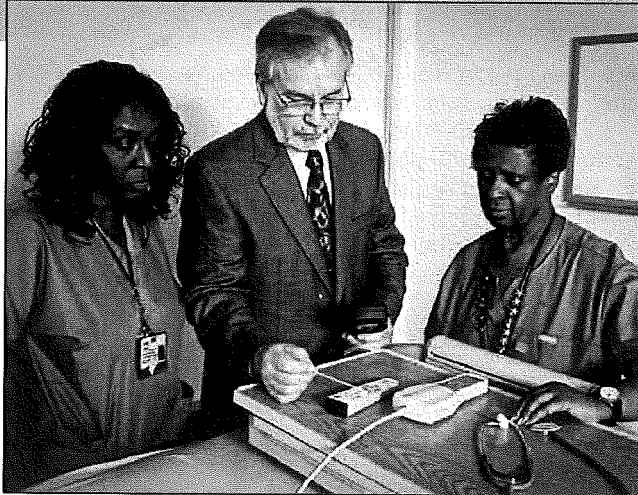
Even as hospitals have made strides in implementing new technologies and practices, they still face challenges in achieving performance improvement objectives. Of respondents, 42 percent cited high hospital occupancy rates and the need to expedite room cleaning for new patients as major challenges to cleaning patient care areas, and they have employed a number of mechanisms to address this ongoing dilemma.

St. Joseph Mercy Hospital redeployed environmental services staff from nonpatient care areas, and asked staff in those locations to pick up the slack by taking on tasks normally left to environmental services such as emptying trash and recycling bins, according to Olmstead.

Scripps Memorial uses a teletracking system to keep nursing, environmental services, emergency and bed control staff up-to-date on the status of rooms. "It gives everyone information on unoccupied beds in real time," says Dorsett. When a bed becomes unoccupied, nursing staff punch in codes via the telephone, which sends a page to appropriate staff. Environmental services staff use the same system to notify other departments when they begin and end the cleaning of each room. "This way, everybody at any given moment knows how many rooms are available, and how many are in the process of being cleaned. It helps with the anxiety around turnaround times," he explains.

Perhaps the most crucial element of achieving performance standards for cleanliness of the patient environment is the overall approach taken in training and supporting environmental services staff.

"People can be trained to mop a floor, but if they don't under-



John Scherberger, director of environmental services, pastoral care and guest services at Spartanburg (S.C.) Hospital for Restorative Care, trains two environmental services personnel on how to test for cleanliness.

stand the reasoning behind it, you won't get the effort needed," notes Daugherty. His staff receives ongoing, detailed education about the source of microbes and what it takes to clean surfaces appropriately. At Spartanburg Hospital, environmental services employees are assigned to specific units and attend staff meetings for those areas. "They're part of the team, and that provides positive reinforcement," Scherberger explains. "Environmental services has to understand they're just as important as any other part

of the team. We're the first line of defense in infection control."

Testing for cleanliness

The survey also revealed that the use of rapid environmental testing with substances that fluoresce under UV light is just starting to be adopted in health care. However, experts predict that adoption will become widespread soon.

While some technologies, such as adenosine triphosphate

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(ATP) bioluminescence meters, have been used for years to detect microbes in the food industry, the science behind them has only been applied recently to the patient care setting.

A leader in the field is Philip Carling, M.D., clinical professor of medicine at Boston University. Carling sought a way to improve on standard methods of verifying the cleanliness of patient care areas, primarily observation-based audits and less commonly, culturing of selected surfaces. He came up with a mixture that people jokingly refer to as "Carling's Goo," which is a transparent, easily cleaned, environmentally stable marking solution that fluoresces when exposed to UV light.

Carling and a consortium of participating hospitals have demonstrated in a series of studies that certain high-risk objects such as tray tables, toilet handles, bathroom light switches and bathroom and room doorknobs typically are not well-cleaned. Research shows that out of 14 high-risk objects, the lowest mean rates of cleaning were found for toilet doorknobs and toilet handholds (both 28 percent), bedpan cleaners (25 percent), room doorknobs (23 percent) and bathroom light switches (20 percent).

"Our findings are consistent that, on average, critical objects are only being cleaned about 50 percent of the time, and that there are several objects that are almost universally overlooked," Carling explains. "We've uncovered a systemic problem with the thoroughness of environmental health in hospitals because there was not a system for simple measurement in the past."

Subsequent research has shown that with a focused performance improvement initiative, including education and feedback

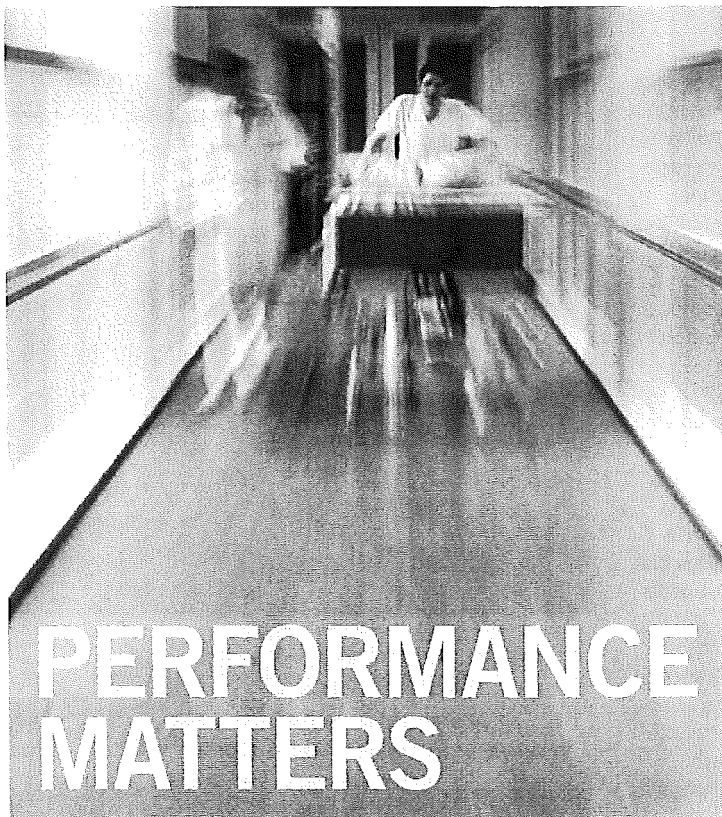
to staff, the average rate of cleaning can be increased from less than 50 percent to about 77 percent. "Once the cleaning staff understands they're critical to patient safety and are shown they're not doing well in certain areas, that's when the paradigm shift occurs," says Carling.

Use of a solution like Carling's can be an eye-opener even for facilities that have overall high rates of cleaning compliance, like Nebraska Medical Center in Omaha, which participated in Carling's studies.

"The program is fantastic. It's helped us identify various opportunities for improving our processes," says Mark Rupp, M.D., professor of infectious diseases at the University of Nebraska and director of epidemiology at Nebraska Medical Center. "We found there were objects and surfaces that no one was taking responsibility for cleaning. Many were electronic such as a computer mouse. This enabled us to go item-by-item and figure out who would be responsible for cleaning them." Rupp also is president of SHEA.

The utility of fluorescent marking is obvious even to facilities just beginning to use the solutions such as Scripps Memorial. "That's really exciting news, and it's going to revolutionize the industry," Dorsett says. "We'll be able to tell what's clean and what's not." **HFM**

Gina Rollins is a Silver Spring, Md.-based freelance writer who frequently covers health care topics. Suzanna Hoppszallern is senior editor of data and research for *Health Facilities Management's* sister publication, *Hospitals & Health Networks*.



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