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Compliance with HandHygiene

Overview: It has long been known that hand hygiene among health care workers plays a central role in preventing the transmission of infectious agents. But despite a Joint Commission requirement that Centers for Disease Control and Prevention hand hygiene guidelines be implemented in hospitals, compliance among health care workers remains low. The authors argue that hospitals may best improve compliance by assessing the barriers to it, measuring the rates of compliance, educating staff on the importance of hand hygiene, making sanitizing products more available for staff use, and holding staff accountable. The authors emphasize as well that lasting improvement in hand hygiene is a collaborative effort that depends on the committed support of hospital administrators.

Each year in U.S. hospitals there are approximately 1.7 million health care–associated infections and nearly 100,000 associated deaths.¹ Many states now require hospitals to publically disclose their rates of hospital-acquired infections, and in October the Centers for Medicare and Medicaid Services will no longer make payments for the treatment of eight hospital-acquired conditions, including some types of infections.² It has been proposed that several other types of infections be added to that list in 2009; many private insurers are also refusing payment for such conditions.

Nurses and other health care workers are frequently reminded of the importance of hand hygiene in preventing infections. And yet in a review of studies conducted between 1980 and 2001, the Centers for Disease Control and Prevention (CDC) found that among all health care workers, compliance with “recommended hand-hygiene procedures” was “poor,” occurring an average of 40% of the times that it should have.³

The compliance rate isn’t low because the importance of hand hygiene hasn’t been well established. In a 1988 review of more than 100 years of studies, one of us (ELL) wrote that “the collective evidence from experimental and nonexperimental studies is consistent with the hypothesis that handwashing is causally associated with a reduction in risk of infection”⁴; more recently, Bryan and colleagues as well as the CDC have provided summaries of the overwhelming evidence supporting the efficacy of hand hygiene in reducing infections.^{3,5}

CDC guidelines. The CDC published the latest *Guideline for Hand Hygiene in Health-Care Settings* in 2002.³ In it were two major new recommendations:

facilities seeking accreditation to institute compliance-monitoring and compliance-improvement programs.⁶

The increased use of alcohol-based hand sanitizers at many health care institutions has made hand hygiene more convenient and less time-consuming. Hand sanitizers reduce the need for sinks. The dispensers are small and can be made accessible at every stage of patient care; some dispensers can be worn or carried in a pocket. A 1999 observational study in two ICUs by Earl and colleagues found that the availability of alcohol-based hand sanitizers “resulted in a sustained increase in hand antisepsis rates among health care workers.”⁷ In addition, a study by Boyce and colleagues comparing the effects of either using an alcohol-based sanitizer or washing hands with the hospital’s unmedicated soap found that the alcohol-based hand sanitizer was less damaging to nurses’ skin.⁸

BARRIERS TO ADHERENCE

Hand hygiene is simple, but it’s also repetitive and dull. Infections develop slowly after an initial exposure, and the direct connection between the poor hand hygiene of an individual nurse or physician and a particular patient’s infection is rarely obvious or observable. Positive feedback for acts of compliance is also rare. According to our experience and a review of the literature, common barriers to staff members’ compliance with hand hygiene guidelines include

- a lack of access to handwashing sinks.³
- insufficient time.⁹
- skin irritation.³
- ignorance about the problem.³
- individual preferences or habits.

Low staffing and high patient acuity can make

Guidelines

Where are we in 2008?

- Health care workers should use alcohol-based hand sanitizers for routine hand disinfection, saving traditional washing with soap and water for times when hands are visibly soiled.
- Health care facilities should establish ongoing monitoring programs for hand hygiene compliance.

The Joint Commission has since made such compliance one of its national patient-safety goals, requiring

compliance even more difficult. Whether individual units and hospital administrators value hand hygiene has also been associated with compliance rates.¹⁰ Ironically, there may be an inverse relationship between the importance of hand hygiene and its actual practice. Results of an observational study conducted in Geneva, Switzerland, by Pittet and colleagues showed lower rates of handwashing on crit-

Barriers to Hand Hygiene and Possible Solutions

A lack of access to sinks

Put alcohol-based hand sanitizers in areas where sinks are not readily available.

A lack of time

Alcohol-based hand sanitizers can be placed in many patient care areas (check with your local fire department for restrictions) and can increase opportunities for quick hand hygiene.

Dry, chapped skin on hands

Alcohol will sting unhealed areas, and some staff members may tolerate particular products better than others. Involve staff in trying several alcohol-based hand sanitizers before deciding on one, and involve employee health services in creating a plan to manage hand-skin problems among staff. Alcohol-based sanitizers that have lotion in them can be helpful for staff who have very sensitive skin. Alternative products—such as an antibacterial liquid soap, or a mild, nonantimicrobial soap—may be necessary for some staff.

Ignorance

Discuss the following topics with staff:

- when to use alcohol-based hand sanitizers and when it's necessary to wash with soap and water
- strategies to improve the health of their skin when using hand hygiene products
- hand hygiene initiatives and the level of compliance on the unit.
- patients at the institution who have health care-associated infections.

A brief, simple Web tutorial about hand hygiene practice provided by the Centers for Disease Control and Prevention can be found at www.cdc.gov/handhygiene/training/interactiveEducation.

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The high cost of products and initiatives

Ask your infection prevention and control or quality improvement colleagues what programs your facility has in place. There may be a budget already approved for hand hygiene products and initiatives; if not, let your administrators know that this is an important safety issue.

A divided health care culture

Promote a work environment in which hand hygiene is seen as a collaborative effort in which both providers and community members have a stake. Invite members of the public to participate in meetings at which infection control and patient safety are discussed. Approach respected clinicians about being models of compliance with hand hygiene protocols. A system at one hospital involved recorded messages from unit leaders reminding staff to perform hand hygiene, resulting in improved compliance rates.¹ Unit leaders should encourage staff to point out colleagues' noncompliance without fear of reprisal.

Insufficient personal accountability

Use performance reviews to grade employees' infection control performance, including hand hygiene compliance. Report uncorrected or repeated errors in hand hygiene practice. Some institutions use anonymous incident-tracking databases. Call your infection prevention and control department. Often a word from the epidemiologist or a letter for a health care worker's personnel or credentialing file will correct the situation. Institutions may mandate additional infection control training for the noncompliant, and some have gone as far as dismissing staff for unsafe practices involving poor hand hygiene.

ical care and surgical units than on other hospital units, as well as before procedures—such as IV or respiratory care and those involving moving “between a dirty and a clean body site”—that carried a “high risk” of transmission.¹¹ Nurses, they found, washed their hands more often than did other health care workers, a finding qualified by the authors' observation that nurses also had far more opportunities to wash their hands than did other workers.

One of us (ELL) has developed a tool with colleagues at the Columbia University School of Nursing to assess barriers to compliance. Some of the factors the tool assesses are staff knowledge, attitudes, and availability of hand hygiene products.¹² (The tool is available upon request from Elaine L. Larson at ell23@columbia.edu.)

The challenge of accountability. Another major barrier to compliance is that there is no universally accepted standard for measuring it. The three major methods for compliance measurement are

- direct observation.
- measurement of product usage.
- self-report.

Institutions may use any of these methods, and there are advantages and disadvantages to each.

Direct observation of hand hygiene behavior is the best way to assess the specific circumstances in which health care workers do or do not comply with recommendations; however, it is very labor intensive and is subject to observer bias and the “Hawthorne effect,” a term used to describe improvements in a worker's behavior that result from being observed.

Also, the sample examined may not be representative of the norm within a department.¹³ The Institute for Healthcare Improvement suggests observing complete patient encounters—rather than just individual acts of compliance or noncompliance—in order to confirm that all aspects of an institution's hand hygiene protocol are followed.¹⁴ (This type of observation may not be feasible in certain situations, such as when curtains are closed to protect a patient's privacy.)

The measurement of *hand hygiene product use* per patient day or patient visit gives an overall estimate of hand hygiene compliance and is less time-consuming than direct observation.¹³ But some institutions don't have a good method of tracking product volume use, nor does this method provide specific information about who is using the product (staff, patients, or families) or which health care workers need to improve their practices or which steps in the hand hygiene process need improvement. Because of this, targeted improvement methods may require additional observational monitoring. Although there are devices in development that electronically compute the number of times that a product is used, such devices can't measure the relation of that use to specific clinical indications or provide meaningful data on the rate of compliance.

Measuring compliance by *self-report* is not expensive; however, its validity has been called into question in a number of studies.^{12,15}

DETERMINING WHAT WORKS

Most health care facilities now put some effort into programs to improve compliance. Some strategies to overcoming common barriers to hand hygiene adherence are described in *Barriers to Hand Hygiene and Possible Solutions*, page 42.

"Have you cleaned your hands?" One recent change that may increase the attention given to hand hygiene is the 2007 Joint Commission patient safety requirement that hospitals encourage patients and families to become involved in the patient's care.⁶ For example, the Partners in Your Care program, developed at the University of Pennsylvania School of Medicine, encourages patients and their families to ask health care workers whether they have cleaned their hands before they provide care; increases in hand hygiene compliance of 35% to 60% have been reported when this program is used.¹⁶

A multifaceted initiative. In an observational study, Pittet and colleagues measured the rates of hand hygiene compliance before and during implementation of a program of hand hygiene improvement in Geneva, Switzerland. This hospital-wide program resulted in an increase in the rate of compliance from 48% to 66% over a three-year period and significant decreases in the number of hospital-acquired infections.^{11,17}

The program, which continues to this day, was designed to be multidisciplinary, multifaceted, and

Alcohol-Based Hand Sanitizers: Not a Panacea

Their use is just one part of an infection-control program.

Among the barriers to the consistent use of alcohol-based hand sanitizers is the fact that the dispensers need regular maintenance. As the Institute for Healthcare Improvement stated in its 2006 *How-to Guide: Improving Hand Hygiene*, ongoing monitoring of both the placement and functionality of the dispensers is integral to improving rates of compliance.¹ Also, while Rupp and colleagues found a "significant and sustained improvement in the rate of adherence to hand hygiene among broad groups of healthcare workers that was strongly associated with the availability of an alcohol-based hand hygiene preparation," they also noted that rates of nosocomial infection were not significantly lower in ICUs in which they were used.² They ascribe this to the fact that "prevention of nosocomial infection is a multifaceted issue and hand hygiene is only one part of the equation," among other possible reasons.

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sustained over years rather than months.¹⁷ It included a promotion program in which color posters were displayed in 250 locations in the hospital. Health care workers collaborated on the posters; their ideas were then translated by an artist into cartoonlike messages. Topics included hand hygiene, hospital-acquired infections, and protecting hands with creams, among others. The hand hygiene project team gave hospital-wide recognition to the units that created the posters; three to five poster designs were displayed at any one time and changed weekly.

The program also made a priority of increasing the availability of bottles of alcohol-based hand sanitizer at each bedside as well as providing pocket-sized bottles to staff. Enhancing the accessibility of hand sanitizers made hand hygiene more convenient.

Perhaps the most important factor in the success of the program was that members of the hospital administration made it a hospital-wide priority, dedicating some funding to it, encouraging the participation of senior staff, participating themselves in meetings, and voicing support for the program.

Hand hygiene is simple, but improving compliance requires leadership, collaboration, accessibility of hand hygiene products, feedback on compliance and infection rates, and individual accountability. ▼

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which are mentioned in this article. Elaine L. Larson is associate dean of research at the Columbia University School of Nursing, New York City. She is the scientific advisor to the Joint Commission's Consensus Measurement in Hand Hygiene project, which is partially funded by GOJO Industries. In the past, she received funding from GOJO Industries for a comparative study of hand-sanitizer dispensers and from 3M for a study of an alcohol-based sanitizer (Avagard) it produces. The authors have disclosed no other significant ties, financial or otherwise, to any company that might have an interest in the publication of this educational activity. Contact author: Janet P. Haas, jh2012@columbia.edu.

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- discuss the problem of noncompliance with hand hygiene guidelines.
- summarize the identified rates of compliance and various methods for monitoring adherence with hand hygiene guidelines.
- describe strategies for increasing compliance with hand hygiene guidelines.

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