The Struggle to Improve Hand Hygiene: Don’t Wash Your Hands of It.

Background:
Effective hand hygiene programs reduce the rates of healthcare-associated infections, including central line-associated bloodstream infections (CLABSIs), ventilator-associated pneumonia, and surgical site infections. Thus, improving hand hygiene adherence at your hospital will improve patient care and save money.

Opportunities for improvement:
The Society for Hospital Epidemiology of America (SHEA) recently estimated that overall average rates of compliance with hand hygiene in American hospitals were less than 50%. Reasons for these poor rates of compliance are numerous and include understaffing, employee complaints about skin irritation, lack of role models, and inconvenient location of sinks.

Current Hand Hygiene Surveillance Strategies:
Five different hand hygiene surveillance methods exist: 1) technology-assisted direct observation, 2) event count measurement or measurement of disinfectant product consumed, 3) advanced technologies for automated monitoring, 4) self-reporting, and 5) direct observation. We will discuss each method briefly. The advantages and disadvantages of each surveillance method are discussed in further detail in existing SHEA guidelines.

Technology-assisted direct observation such as the use of electronic devices to either videotape or record hand hygiene observations. Such methods, although less labor intensive, have huge up-front costs, are less reliable than direct observation, and may they frequently cause thorny problems related to patient privacy.
Product volume or event count measurement systems measure the volume of hand sanitizer usage or the number of hand hygiene events that occur over a specific time period. These methods avoid the “Hawthorne Effect” (discussed in the next section) and observation biases, but they are indirect, expensive and are unable to provide feedback to healthcare workers.⁵

Advanced technologies for automated monitoring utilize radiofrequency identification (RFID) badges to monitor provider-patient encounters. RFID badges indirectly measure hand hygiene adherence based employee proximity to hand hygiene stations before and after patient contacts. This method eliminates biases associated with direct observation methods. However, accuracy of these methods is poor. For example, RFID badges accurately capture approximately 50% of actual episodes of hand hygiene.⁶

Self-reporting of hand hygiene compliance, although the least labor intensive method is universally recognized as unreliable and thus, this method is not recommended by The Joint Commission, SHEA, or DICON.⁵

Direct observation is the current “gold standard” for hand hygiene adherence and is endorsed by SHEA and DICON.⁵ We believe that direct observation by trained observers is the best of the five preceding methods for numerous reasons. It is the most accurate and reliable and it provides opportunities for immediate feedback if non-compliance is observed.

Limitations in Methods to Measure Compliance with Hand Hygiene:

Since direct observation is the most practical and best method of measuring compliance with hand hygiene, we will focus our discussion to the two limitations of this surveillance method: the “Hawthorne Effect” and observer and selection biases.

The Hawthorne Effect⁷ was first described by investigators working for the Western Electrical Company’s Hawthorne Works in Chicago. These investigators undertook a series of experiments designed to improve employee productivity. A progressive improvement in worker productivity occurred regardless of the intervention they utilized. In the end these investigators concluded that improved worker productivity occurred simply because the employees were under observation. Subsequent studies showed that the Hawthorne Effect is common and even predictable when individual behavior is directly observed. The impact of the Hawthorne Effect in measuring hand hygiene compliance is difficult to accurately measure, but one study estimated that hand-hygiene compliance increase by up to 250% when healthcare workers are under direct observation.⁸

Selection bias occurs when hand hygiene auditors preferentially undertake audits in hospital units where hand hygiene is known or expected to excellent.⁸ Such practices, although giving the appearance of excellent hand hygiene practices throughout the hospital, provide inaccurate data to hospital leadership.
Observer bias occurs when a hand hygiene monitor preferentially audits healthcare workers who are observed using hand hygiene but fails to record observations when healthcare workers fail to wash or clean their hand with alcohol gels or foams. This phenomenon is particularly and characteristically likely to occur when hand hygiene compliance monitors perform audits in the unit in which they work.

Covert observers or “secret shoppers” are utilized at some facilities to reduce these biases, but the usefulness of such methods is predictably limited and unsustainable. In our experience, “secret shopper” auditors routinely and even characteristically collect an inadequate number of observations, have no formal training in monitoring hand hygiene compliance, and fail to adequately record the type of healthcare worker they are observing.

**Hand Hygiene Improvement Strategies:**

The SHEA guidelines include multiple strategies to improve hand hygiene in hospitals. These guidelines are well known to auditors for The Joint Commission and are commonly used during inspections.

**Hand Hygiene Improvement Strategies**

- Develop a multidisciplinary team that includes representatives from administrative leadership as well as local (unit-level) champions
- Implement a multimodal strategy for improving hand hygiene adherence to directly address the organization’s most significant barriers
- Provide feedback to healthcare providers in multiple formats and on more than one occasion
- Consider rewards or recognition for wards modeling good hand hygiene behavior
- Provide meaningful data with clear targets and an action plan in place for improving adherence
- Collect hand hygiene data on all hospital units
- Trend hand hygiene performance over time to monitor for improvement and retention of predetermined compliance goals
- Educate, motivate, and ensure competency of healthcare personnel about proper hand hygiene
- Only use designated and properly trained hand-hygiene observers
- Use of hand held electronic data collection devices that can wirelessly transmit audit results to a central server for “real time” monitoring of compliance data

Hospitals are not expected to perform every intervention or strategy in the guidelines. But hospitals should include at least some of these strategies in their program.

Numerous success stories can also be found in the literature. For example, Duke University Hospital dramatically achieved and then sustained marked improvement in rates of compliance
with hand hygiene. Duke utilized trained hand hygiene observers with portable electronic devices that wirelessly transmitted data from each audit to a central data server. The server provided continuously updated unit-specific hand hygiene compliance scores.\textsuperscript{11} These scores were available in a convenient and easy to understand “dashboard” that was used to assess performance of individual care units and their leadership. Key reasons for the success of this program (which achieved sustained hospital-wide compliance rates >90%), was the use of dedicated auditors who performed thousands of audits each month and the direct involvement in the senior hospital leadership in the assessment of performance.

Currently, vendors exist who can provide wireless transmission of hand hygiene audit data collected by a variety of hand held-devices such as smart phones, ipods, and/or tablets without reliance on existing hospitals IT resources. These data are in turn used to provide time-trended highly specific data reports with “real time” feedback for costs as low at $3000/year for a typical 200-bed community hospital. Some community hospitals currently utilize hospital employees who are on light duty because of injuries or other disabilities or hospital volunteers to collect audit data; thus saving costs.

DICON can provide materials and criteria for training hand hygiene auditors to ensure consistency in data collection methods. In the near future, we anticipate providing benchmarked data reports on hand hygiene compliance analyzed and reported by type of healthcare worker, and unit location for all hospitals that choose to use DICON endorsed commercial vendors.

References:


