

Building a Reliable, Accurate and Efficient Hand Hygiene Measurement System

Growing concern about the frequency of healthcare-associated infections (HAIs) has made hand hygiene an increasingly important topic for hospital administrators. About 5% of all hospitalized patients in the United States contract HAIs each year¹, resulting in:

- Approximately 750,000 million infections²
- Almost 80,000 deaths, and²
- An economic impact in the billions³

Hand hygiene has emerged as a central focus in the effort to stem the spread of HAIs. Both the CDC and World Health Organization have published guidelines, and accrediting agencies now require healthcare facilities to develop infection control programs that include a measurement of hand hygiene, as well as a process to show improvement.

This white paper examines the underlying challenges facing hospitals in preventing HAIs and offers practical advice for using technology to drive sustained improvements in workers' hand hygiene.

Shortcomings of Direct Observation

The “pen and paper” approach of direct observation remains the most common method for measuring hand hygiene in hospitals. Despite its reputation as the gold standard for measurement, there are significant issues with relying on data captured through direct observation.

Direct Observation Leads to Small Sample Sizes

The most obvious drawback to direct observation is that humans are not omnipresent or omniscient. Observers cannot be everywhere at once or realistically expected to observe every hand hygiene opportunity. This leads to small sampling sizes, which in turn can lead to statistically insignificant data sets on which to draw conclusions about the effectiveness of hand hygiene compliance throughout a hospital.

Direct Observation Is Costly and Time Consuming

It takes immense manpower to sustain a meaningful direct observation program, which translates into a significant cost for hospitals. More importantly, this method leaves little time for coaching workers to improve their hand hygiene techniques. Merely compiling and reporting the data consumes most of the auditors' time.

Direct Observation Methodologies Can Be Inconsistent

Some facilities have multiple teams from different disciplines performing observations, which may include “secret shoppers” or even patient reporting. When observations aren't performed using a consistent methodology, the organization ends up with multiple sets of numbers, fueling confusion about the actual compliance rate.

Direct Observation Is Prone to Bias & The Hawthorne Effect

Observations made by people are of course subject to error. They're affected by individual experiences, assumptions, and biases. This subjectivity can significantly degrade the integrity of hand hygiene data. People tend to improve their behavior when they are aware they are being observed.

A landmark study published in 2014 sought to quantify the impact of the so-called Hawthorne Effect on reported hand hygiene compliance rates. Using an electronic monitoring system, researchers at a major acute care hospital compared the rate of hallway hand washes in areas with a visible auditor, relative to locations where an auditor was not visible. The results, published in the *BMJ Quality & Safety Journal*, showed that **hand washing rates were three times higher in areas monitored by a visible auditor.**⁴ Moreover, the increase was specifically found to occur after the auditor's arrival.

The study's senior author said in a press release that "human auditing of hand hygiene has been helpful to draw attention to this important preventative measure—we just can't stop focusing on it because our posted rates are not nearly as high as we think they are." He further explained that he believes healthcare professionals "need to change how we look at these complex problems" and shift the emphasis toward engaging workers and helping facilities develop practical, individualized solutions. Unfortunately, the labor-intensive nature of direct observation has made it difficult for organizations to pursue these opportunities.

Without the ability to intervene and engage workers, there is little chance to make a long-term impact on hand hygiene patterns. Compliance rates predictably spike when auditors are present and recede when they leave.

Direct Observation Remains Relevant

In spite of the shortcomings of direct observation, this practice continues to provide hospitals with useful information that cannot be captured or acted upon by contemporary electronic monitoring systems.

For example, a human observer may notice subtle hand hygiene issues stemming from the way a worker dons and doffs personal protective equipment, presenting a great coaching opportunity. Or, they may be able to give workers helpful feedback on their hand washing technique.

This situation suggests that electronic monitoring coupled with human auditing may be the most effective strategy for improving hand hygiene. A hybrid model promises to capture a larger, more objective data set while giving infection control teams more time to coach frontline staff.

Advantages of Electronic Compliance Monitoring Systems

Electronic compliance monitoring helps hospitals address three of the most pressing shortcomings associated with direct observation: 1) small sample sizes, 2) behavioral influences, and 3) time constraints.

Monitor 24/7

Unlike a team of human observers, an electronic monitoring system is always running. While it may never be possible to have a complete set of compliance data, 24/7 monitoring inevitably captures significantly more data points than even the most robust direct observation program.

Produce Unbiased Data

In addition to producing a much larger data sample, electronic monitoring also removes human biases from the observation process. The system does not care who is entering a room or make assumptions based on an individual's character. It simply registers hand hygiene opportunities and records workers' actions.

Generate Reports Quickly

Another critical benefit of electronic monitoring is that data can be reported almost instantly without any human intervention. This gives stakeholders near real-time insight into current hand hygiene patterns—and how those patterns change in response to different circumstances or interventions. In contrast, conventional reporting provides only a series of limited snapshots of compliance rates at single points in time.

Data can also be reported much more consistently, using standardized metrics. And without the need for staff to interpret observations, record the data on paper forms, and then input the data into spreadsheets, the risk of clerical error is eliminated.

Free Staff to Focus on Improving Care

With objective, timely, and robust data in hand, hospitals can be much more confident that they have an accurate picture of compliance rates. In turn, infection control teams can use their time to execute targeted interventions to address the most critical failure points in workers' hand hygiene behavior.

Drive Sustained Improvement Over the Long Term

When a hospital's hand hygiene compliance rates improve temporarily because workers know they are being watched, it does little to advance the organization's true goals: improving patient outcomes and reducing the cost of care. However, with an electronic monitoring solution running 24/7, the Hawthorne Effect becomes pervasive, and at a certain point, the improvement in hand hygiene compliance is no longer a temporary phenomenon—it's the beginning of a long-term cultural change.

What to Look For in a Compliance Monitoring Partner

Success with compliance monitoring requires a combination of technical solutions, clinical expertise, and support resources. Here are some specific things to look for.

Flexible, Modular Solutions with Multiple Monitoring Options

The right technical solution for a hospital varies based on two interrelated factors: the technical infrastructure already in place, and the unique culture of the hospital. It's valuable to work with a partner that offers flexible solutions and one that can address your facilities specific goals and culture.

For example, a hospital with a "zero tolerance" policy and an individual-accountability culture toward hand hygiene compliance might want to monitor healthcare workers at an individual level. This requires that each worker wear a badge and the hospital have real-time location system (RTLS) wireless infrastructure. For a hospital culture that would view that as too intrusive, monitoring workers at an area or group level might be more appropriate.

It's also valuable to work with a partner that offers flexibility to make technical changes, as well as extensibility. This requires products with modular designs so that, for instance, a hospital can shift from group or area monitoring to individual monitoring with minimal effort. Or, a hospital can integrate its monitoring system with third-party systems for enhanced reporting capabilities.

Training and Support Backed By Clinical Expertise

Implementing technology, alone, may not be sufficient to drive the shift to a high-compliance culture. Changing entrenched behaviors to improve hand hygiene requires time, focus, and people. An ideal compliance monitoring partner would work with hospitals to:

- Establish baselines and goals
- Identify and correct the root causes of hand hygiene lapses
- Educate staff on how to use the data
- Share best practices and tools to help reinforce behavior
- Provide ongoing support, including solutions for issues that emerge

To provide the highest level of training and support, it's valuable to have a partner with clinical expertise. This enables the partner to understand the unique dynamics of hospital environments, anticipate and engage in meaningful conversations about clinical issues, and jointly develop solutions. For instance, new hand hygiene protocols can initially cause skin health issues for hospital workers; a clinically-trained partner can recommend ways to protect workers' skin as they start washing and sanitizing more frequently.

A Committed Partner Who Understands Your Challenges

GOJO provides skin health and hygiene expertise to include innovative technology and support, not the other way around. SMARTLINK encompasses a portfolio of solutions that can be aligned with any hospital's unique needs and culture. Our tools will augment your direct observation initiatives to make your compliance program more reliable, accurate, and efficient.

We start by helping you prepare before you implement a new monitoring solution. We'll send our Clinical Specialists to conduct an initial assessment so that we understand your unique situation. Then, we'll educate your staff so they can make the most of the system as you move forward with implementation. And finally, we provide best-in-class clinical support to help you address challenges as they are encountered.

Contact us today to learn how we can help you achieve sustained improvement in hand hygiene compliance.

¹ Healthcare-associated infections. Centers for Disease Control and Prevention Web site. <http://www.cdc.gov/ncidod/dhqp/hai.html>. Published 2009. December 9, 2013. Accessed March 13, 2014.

² Magill et al, "Multistate Point- Prevalence survey of Health Care Associated Infections", N Engl J Med 370;13 March 2014.

³ Stone et al. "Economic Burden of healthcare associated infections: an American Perspective" Expert Rev. Pharmacoeconomics Outcomes Res. 9(5), 417-422 (2009).

⁴ Srigley, Jocelyn, et al. "Quantification of the Hawthorne effect in hand hygiene compliance monitoring using an electronic monitoring system: a retrospective cohort study." BMJ Quality & Safety Journal. 2014.



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