Improving hand hygiene compliance with innovative technology solutions

Virtua Memorial is a 433-bed, full-service regional medical center serving the community of Burlington County, N.J. The hospital has demonstrated a strong commitment to improving hand hygiene. The organization participated in the Hand Hygiene Project, a patient safety initiative of The Joint Commission’s Center for Transforming Healthcare, and was recently recognized as an Institute for Healthcare Improvement (IHI) Mentor Hospital for Hand Hygiene.

In 2009, GE Healthcare and Virtua began a collaboration to develop, test, and refine a proprietary technology solution to measure, monitor, and improve hand hygiene compliance. A radio frequency (RF) and infrared (IR) light system tracks the entry and exit of badged clinicians with room-level specificity and records whether or not they washed their hands when entering and leaving each room. The system was piloted in two areas: a medical/surgical (med/surg) unit and a critical care unit (CCU).

Four Virtua executives recently spoke about how the GE Hand Hygiene Solution is helping the hospital reach its goals for hand hygiene compliance and further the understanding of this complex issue. They are James Dwyer, DO, MBA, executive vice president for physician services; Sheila Simms, RN, BSN, MBA, NE-BC, administrative director of critical care; Kate Gillespie, RN, Six Sigma Black Belt and project manager for operations improvement; and Gina Cavalli, BSN, RN, nursing director for critical care.

Why is hand hygiene compliance a problem?

Dwyer: When we looked initially at hand hygiene, we realized that staff sometimes wash in and sometimes wash out, but when we used both actions as our criteria, the percentage of compliance was not where we wanted it to be. We wanted to get under the surface of the problem to understand the dynamics and create systems that would help to support better hand hygiene.
Simms: When a staff member goes into a room, they go in for a reason. And the thought process is: If I'm not going to touch the patient, then I don't have to wash my hands. Here's a good example. One day I was on one of the pilot units with the nurse director. She wanted to show me a portable air conditioner. We walked into a room and I suddenly realized we hadn't washed our hands. Here we are—leaders of the project—and we hadn't washed our hands because our intent was to look for an air-conditioner unit. It’s subliminal—that's why trying to change this behavior is such a challenge.

Whether you're going into a room to deliver a tray, move the fan or just talk to a patient, that's a hand hygiene opportunity, because you don't know if you're going to touch the patient.

Dwyer: Like most organizations, we have used observational tracking—the so-called "secret shopper" method. However, we didn't feel those metrics were completely reliable. When staff members see somebody walking around with a clipboard, it doesn't take them long to figure out what's going on. Plus, we weren't getting measures during all the shifts. We would record a higher number of observations during the week and during the day, fewer at night and on the weekends.

Prior to implementing the technical solution, how did you attempt to monitor hand hygiene compliance?

Dwyer: The GE technology solution helped us improve the reliability of performance tracking. We were able to get large numbers of observations at all times of the day. We also could track performance on an individual basis, so we weren't just looking at unit or facility performance.

How did the GE technology approach address these issues?

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When we began using the technology tracking tool, we continued to do parallel observational tracking. We quickly realized that the observational numbers were so variable that they weren't reliable. One week we'd have 40% compliance, the next week 95% compliance. When you compare observational data against a method that allows you to capture every encounter all the time, there's no comparison.
What issues emerged from the data?

Gillespie: GE provided weekly charts by healthcare provider and by room. The nursing managers were able to see the traffic in each room over a 24-hour period and who was assigned to each room. The data was valuable because it enabled us to see process flow. Based on the data, we could ask questions: “Why is this nursing assistant going in and out of a room so much? Is it overwork? Is she forgetting things?” The technology allowed us to explore why people were having a difficult time.

If a patient acquired an infection, you could use the data to assess the hand hygiene compliance within that room. The technology also enabled us to see trends over a 24-hour period. When was the highest noncompliance rate? Was it at change of shift? When do staff wash their hands the most? That’s very valuable.

How was the data shared with staff?

Gillespie: Another great thing about the GE technology was being able to share the weekly scores with staff members, each of whom had a unique code. Next to the code would be: total hand-washing opportunities, number of times they washed, number of times they missed, and—based on those numbers—the percentage of compliance. It also showed the number of opportunities per hour, so staff members could see how often they were going in and out of rooms. Staff members were able to see how well they were doing each week, which was key. The “ah-ha” moment was when we were able to push the scores out to the staff.

So actually seeing the data really helped motivate the people?

Gillespie: Absolutely. If an employee had low scores but could see others on the list with percentages up in the 80s, that person began to question his or her own performance and start looking at how other people were being more successful.

The managers incorporated the weekly ratings into their meetings and held sessions at night or at shift change to encourage dialogue with staff. It was an opportunity to brainstorm solutions in a nonthreatening way because no one was identified.

Dwyer: The technology tracking tool helped us feel confident about the metrics. As a result, we were able to begin addressing individual behavior in a collaborative and collegial way.
What role did the technology solution play in improving hand-hygiene compliance?

Dwyer: We have made significant progress. Our average compliance rate jumped 40 percentage points.

Simms: The technical solution was the major driver for our improved compliance. I never would have believed it until we did this pilot, but I believe it now. Prior to installing the system, we had worked very hard to get staff to understand the importance of hand hygiene. We educated and educated and educated. We had secret shoppers. We put out more gel stations. We rewarded people for washing their hands. But things didn’t really start to change until we put the technology in place. When we started posting the blinded data and each practitioner saw his or her weekly score in black and white, we began to see the change in our compliance. Once they saw the scores, they became more cognizant of the problem and very interested in improving their scores.

A key factor in staff acceptance was knowing that the results came from an unbiased technology source. Many staff members didn’t want to believe their scores but they were satisfied that the technology was accurate. And when they changed their hand-hygiene behaviors, their scores the next week reflected their efforts. That type of feedback was very effective.

Sheila Simms, RN, BSN, MBA, NE-BC
Administrative Director of Critical Care
Virtua Health

Which group had the greatest turnaround in hand hygiene compliance?

Gillespie: At the outset, our patient care technicians, or nurse’s aides, had the lowest hand hygiene compliance. We saw that their opportunities per hour were very, very high. We met with this group separately to brainstorm ways to streamline their processes. We asked: What issues are causing you not to wash your hands? And one was: I’m constantly leaving the room because I don’t have the tools that I need. The aides decided to create a cart stocked with all the common tools and supplies they might need in a patient’s room so they didn’t have to run in and out. On average, nurse’s aides’ compliance improved by 14.6 percentage points. And beyond that, they became more efficient and had more time for patients.

Cavalli: Once we got the patient care techs to gel in and out, we had a huge surge in our numbers. Some aides have up to 1,000 hand-washing opportunities a day—a number that we didn’t realize was so high until we had the data. RNs, in comparison, have about 500 opportunities.
**How did you engage physicians in the project?**

**Dwyer:** Medical staff leadership was critical to the project’s success. Our leaders communicated a clear expectation that staff are required to wash in and wash out when encountering patients. In the event of noncompliance, leadership has said that staff members have the authority and responsibility to speak up. There have been times when a staff member would go up to a physician and say, “Excuse me, but I noticed that you didn’t wash your hands going into the patient room.” That’s been a huge change for us. It’s not easy and not universally done, but it’s happened a few times, enough to make me believe that we’re moving in the right direction.

**Have you been able to link improvements in hand-hygiene compliance with clinical outcomes or cost of care?**

**Dwyer:** We haven’t been able to show that yet, because the initial phase of implementing the technical solution involved only two units. Data from other hospitals that have been doing this longer than we have confirms a reduction in overall hospital-acquired infections as the compliance rate increases. We just don’t have the track record yet to be able to show that.

**What role has GE’s Change Acceleration Process (CAP) methodology played in driving behavioral changes at Virtua?**

**Dwyer:** With this project, more than any that I can think of, cultural change is critical. So we’ve used CAP a lot to help people understand what we’re doing and why it’s important. Unless you can get buy-in from all the players, it’s going to be an uphill battle. We established a systemwide committee with clinical and administrative leaders and members from across the organization. These are the champions who are making sure that hand hygiene compliance is constantly reinforced.

**Simms:** The GE team was on-site for two weeks, and their people covered all shifts to help educate the staff. Those meetings were informal, and I think it was beneficial for the staff to see hand hygiene education coming from someone other than our managers. The GE folks would ask staff how they thought they were doing—and there was an opportunity for some back and forth.
What has been your experience working with the GE Healthcare Performance Solutions team?

Dwyer: They have been amazingly supportive, working to help managers and staff members understand the technology. They've helped us adjust the tool from a technical perspective, as well—for example, refining the sensitivity to make sure that the sensors were picking up true defects rather than just recording encounters.

Gillespie: The GE team was instrumental in pushing us toward sharing scores with the staff. Because our nurses are unionized, there were some barriers to doing that. GE helped us brainstorm on how we could present the case to the union and facilitated the meetings. We were able to finally break down those barriers (with the double-blind coding system). I'm glad GE gave us that push because we would have never had the success with the pilot if we hadn't shared the scores.

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Kate Gillespie, RN
Six Sigma Black Belt and Project Manager for Operations Improvement
Virtua Health

What does the future hold?

Dwyer: For us, this is another step toward using technology tools to assure standards and performance. Technical solutions like this can help us reduce human errors in judgment and get us closer to our hand hygiene compliance goals.

For more information, email gehealthcaresolutions@ge.com or visit performancesolutions.gehealthcare.com/quality-safety.