Immediate Feedback and Patient Zone Monitoring Yields Immediate Impact

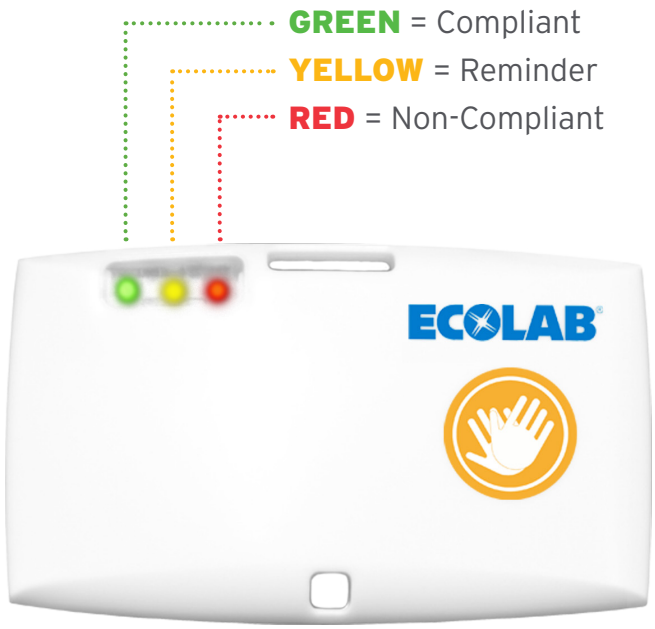
How an Individual-Based Electronic Hand Hygiene Compliance Monitoring System Influences Change in Healthcare Worker Behavior

The importance of hand hygiene compliance in healthcare environments is well accepted as being a key component to reducing the risk of healthcare-associated infections (HAIs).[1,2,3]

Numerous studies have shown that improving hand hygiene compliance and sustaining that improvement requires ongoing measurement of hand hygiene performance and direct feedback of results to healthcare workers.[4,5,6] With traditional monitoring methods such as direct observation, the time and human resources required to effectively monitor performance and give timely feedback are difficult to sustain. There are also many studies that show that hand hygiene will improve in response to a specific intervention, but then will decline again as energy and focus moves on to other things.[7]

Ecolab's individual-based Electronic Hand Hygiene Compliance Monitoring (EHHCM) System allows monitoring to be done consistently for all shifts and all healthcare workers who wear a badge. This includes direct patient care staff (nurses, physicians, physical therapists, etc.) as well as auxiliary functions (dietary staff, environmental services staff, etc.). The healthcare workers wearing the EHHCM badge get immediate feedback on their hand hygiene status, which gives them the opportunity to adjust their behavior in real time. The Ecolab EHHCM badge gives feedback through LED lights via a simple "traffic light" concept, which can be combined with alert tones to remind the healthcare worker even if the badge is not visible (e.g., worn under PPE). Green is compliant, yellow is a reminder that hand hygiene needs to be performed and red is non-compliant.

The power of this feedback is demonstrated when the system is installed for a trial, used for a period of time, and then taken away. During trials of the system, the communication network and dispenser monitors are installed first (Phase 1). This allows collection of data on how many dispenses (hand hygiene events) happen at each dispenser, as well as the time and date of the hand hygiene event. The dispenser information is the numerator. This information alone is not measuring compliance because compliance requires some measure of the number of opportunities for hand hygiene. These opportunities are often referred to as a denominator in the compliance equation where the number of hand hygiene events divided by the number of opportunities equals hand hygiene compliance (# HH Events/#HH Opportunities = HH Compliance). However, dispenses alone still gives insight into the level of hand hygiene activity prior to system installation, which can be used to calculate a rough baseline measurement.



HAND HYGIENE COMPLIANCE EQUATION

# of HH **Events** ÷ # of HH **Opportunities** = HH **Compliance**

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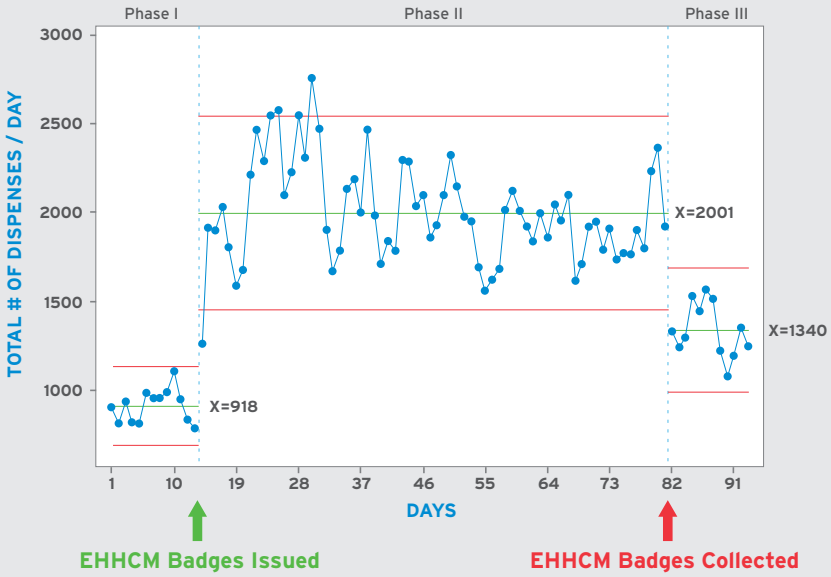
During the second phase of the trial, patient zone monitors are installed, and healthcare workers are issued individual badges. The patient zone monitor creates a virtual "bubble" around the patient bed, checking the hand hygiene status of each badged healthcare worker as they enter or leave the patient's immediate surroundings. The Ecolab EHHCM creates a patient zone around the bed, rather than at the threshold to the room, which allows unique opportunities to be assessed when more than one patient is present in a room (semi-private rooms, PACUs, etc.). Healthcare workers receive training on what the badge feedback means, when their badge is assigned. Once the patient zone monitors are in place, and healthcare workers have individual badges, it is possible to tie hand hygiene events to entry to and exit from patient zones and to determine a true hand hygiene compliance rate.

Graph 1 below is an example of the hand hygiene frequency results seen during a system trial in a 32-bed unit.

GRAPH 1: HAND HYGIENE DISPENSING TOTALS PER DAY



PHASE I
Communications network installed, and dispenser monitors collect hand hygiene events (2 weeks)

PHASE II
Patient Zone monitors installed, and individual healthcare worker badges issued (2 months): Feedback given to healthcare workers during this phase

PHASE III
Healthcare worker badges collected and dispenses only monitored (2 weeks): No feedback given to healthcare workers during this phase

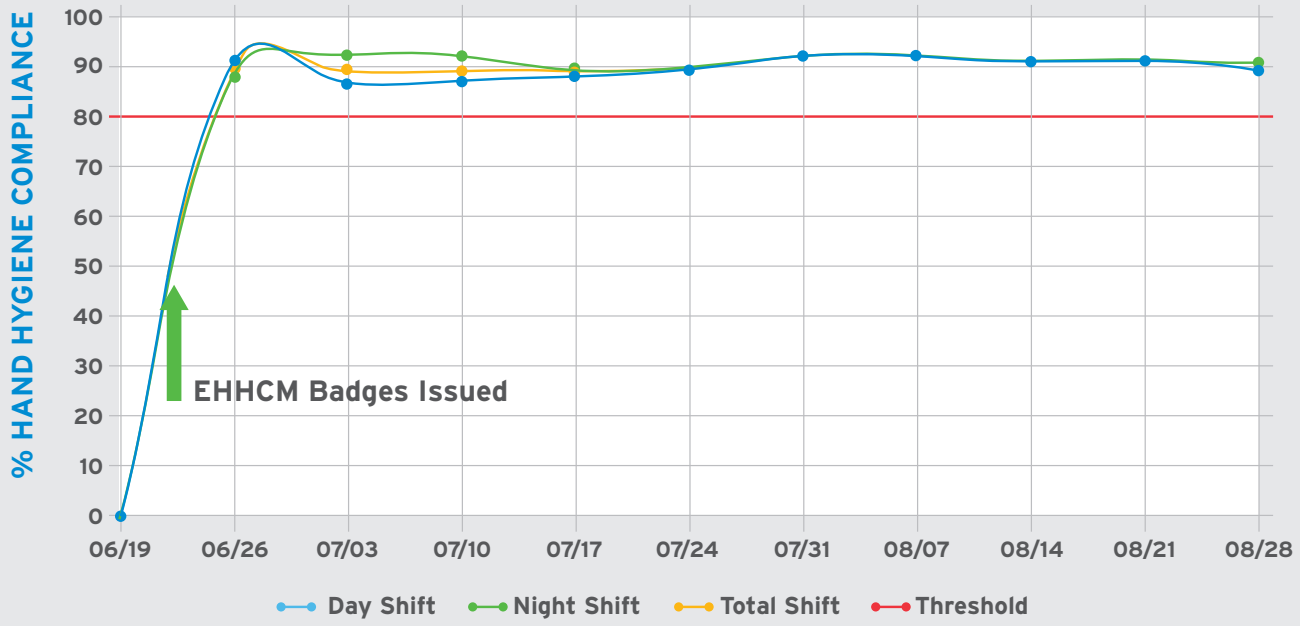
Graph 1 shows that the number of dispenses per day jumped up dramatically on the day that badges were first issued, and healthcare workers were trained to understand badge feedback. Immediately after the healthcare worker badges were collected, and no immediate feedback was being given to healthcare workers, the average total dispenses per day sharply decreased. While the rates were still higher than in Phase I, they were significantly lower than Phase II.

While the number of dispense events is interesting, the most important aspect is the level of compliance that this represents. Looking at the daily dispense graph, there are "spikes" that appear throughout the course of the trial. The obvious question is, how does that relate to actual hand hygiene compliance?

That answer is found in Graph 2. Once badge handout and training was completed, compliance rates were maintained at a high level (ca. 90%) for both day and night shift, over the course of the trial. The variations seen in the daily dispense rates in Graph 1 can be attributed to variations in census and staffing levels, and show a definite periodicity (e.g., sharply down on weekends).

The hand hygiene compliance rate in Graph 2 looks at handwashing before and after entry to the patient zone, and does not show this fluctuation because it reflects whether hand hygiene events are taking place at the correct time and place (before and after patient contact) regardless of the number of patients or staff present on the unit.

GRAPH 2: HAND HYGIENE COMPLIANCE DURING PHASE II
(Patient Zones and Healthcare Worker Badges Deployed)



The data presented here reinforces how powerful the impact of giving healthcare workers immediate, direct feedback is on improving and sustaining hand hygiene compliance. It also demonstrates why monitoring dispensing patterns alone is not enough to determine actual compliance. The Ecolab EHHCM System allows you to provide immediate hand hygiene feedback to every healthcare worker on every shift, and to maintain that level of feedback while at the same time freeing up your Infection Preventionist resources to focus on other challenges that require their knowledge and skills.

Giving healthcare workers immediate, direct feedback

improves & sustains

hand hygiene compliance.

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The Ecolab Hand Hygiene Compliance Monitoring System

The Ecolab Electronic Hand Hygiene Compliance Monitoring (EHHCM) System is a complete offering that helps hospitals monitor and standardize hand hygiene compliance while driving measurable clinical, operational and financial value. Ecolab's EHHCM allows hospitals to accurately record hand hygiene events by individual, driving a 2x average improvement in hand hygiene compliance from a hospital's average observed baseline of 35-45%, resulting in sustained post-implementation levels of 80-90%. By arming healthcare workers with a badge and patient beds with monitors, the system tracks when a healthcare worker approaches a patient and reminds them via a subtle beep and blinking light when they have forgotten to wash or sanitize their hands. Customizable, clinician-friendly dashboards collect data, allowing hospitals to lead process improvements where they are needed most.

To learn more,
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Ecolab Healthcare

Ecolab, a global leader in infection prevention and environmental hygiene, is driven to help health systems and hospitals realize clinical, operational and financial value through repeatable and measurable workflows. Our products, training, consultative service, standardized processes and digital dashboards provide actionable insights and opportunities for corrective actions that help reduce the costs and inefficiencies of infections, while improving margins and keeping patients and staff safe.

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