



# Healthcare Workers Perception Using an Electronic Hand Hygiene Monitoring System at a VA Hospital

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## ABSTRACT

**Background:** A cornerstone of healthcare-associated infection prevention is hand hygiene which has resulted in regulatory requirements to monitor hand hygiene compliance. Direct observation is the gold standard for hand hygiene compliance monitoring, but has several drawbacks. Electronic monitoring systems have begun to replace direct observation with several potential advantages including larger sample size and more timely feedback. End user acceptance and adoption is a critical step to evidence-based practice implementation.

**Aim:** To evaluate potential barriers and facilitators to adoption, we conducted a qualitative evaluation of nursing perceptions following a trial of an electronic hand hygiene compliance monitoring system.

**Methods:** We conducted four focus groups of 21 nursing staff on a medical/surgical inpatient unit at a tertiary care VA hospital. Nursing staff consisted of Registered Nurses, Nursing Assistants and Health Technicians of which there were 19 females and 2 males. Groups were audio recorded, and tapes transcribed. Content analysis of transcriptions was undertaken to identify codes, categories, and themes.

**Results:** Themes identified as facilitators included: 1) unit champion; 2) electronic observation (vs. human observation); and 3) timely feedback. Themes identified as barriers included: 1) concern with data accuracy; 2) feasibility of frequent (daily) goal setting; and 3) staff knowledge of how system works.

**Conclusions:** Nursing staff perceived electronic monitoring improved hand hygiene compliance. Staff verbalized negative perceptions with hand hygiene compliance monitoring but preferred electronic monitoring vs. human monitoring. Most barriers discussed revolved around the need to understanding how the electronic monitoring system works and need to believe the data is accurate. Implementation of this innovative technology will require extensive planning to address staff knowledge and understanding to ensure staff acceptance and adoption.

## BACKGROUND

Hand hygiene is a cornerstone for health care-associated infection (HAI) prevention.<sup>1</sup>

Audit and feedback is an evidence based method for improving healthcare workers performance<sup>2</sup> and research has shown this strategy is necessary for sustainable hand hygiene programs.<sup>1,3</sup>

Direct observation is the gold standard for hand hygiene compliance monitoring but has several methodological drawbacks (i.e., reporting delays, data standardization, Hawthorne effect, sample size, cost)<sup>4</sup> and may interfere with patient privacy and care practices.<sup>5</sup>

Technologies have become available that automate hand hygiene observations via electronic and video monitoring systems which address the methodological issues of human observation but data is limited on its ability to improve and sustain hand hygiene compliance.<sup>6,7</sup>

Few studies have examined healthcare worker's (HCWs) perception of automated hand hygiene compliance monitoring,<sup>8</sup> so there remains a gap in knowledge on the impact of these automated systems in HCW acceptability and challenges for implementation.

## AIM

Describe nursing perceptions and experience following a trial of an electronic hand hygiene compliance monitoring system to identify potential barriers and facilitators in preparation for future permanent implementation

## METHODS

Healthcare worker focus groups were conducted at a tertiary care VA hospital in Madison, WI

Evaluation met criteria for quality improvement and did not require human study review; employee consent for audio recording was obtained

Nursing staff were recruited by email and flyers; convenience sampling was used (i.e., volunteers).

Four focus groups of 21 nursing staff on a medical/surgical inpatient unit were conducted between 15-30 minutes; Nursing staff consisted of Registered Nurses, Nursing Assistants and Health Technicians of which there were 19 females and 2 males.

Moderators followed an interview guide, adding additional probing questions to facilitate discussion (TABLE 1).

Group discussions were audio recorded, and tapes transcribed.

Qualitative content analysis of transcriptions was used identify codes, categories, and themes; content analysis was chosen so that the data could be analyzed both qualitatively and quantitatively.<sup>9</sup>

## TABLE 1 Interview Guide

Interview Guide Questions	Examples of Probing Questions
How often were you aware of the daily and weekly hand hygiene adherence rates on your unit during the trial?	What was your general impression of these data? Where there any features of the data that had either a negative or positive influence on your impressions?
How engaged were you (and others) in the focus-of-the-day huddles?	What made you engage in and how valuable were the huddles? Why didn't you engage in the huddles?
How much impact do you think the system had on your (and others) hand hygiene behaviors?	Why do you think the trial had (positive/negative/no) impact on (your/others) behaviors?
What suggestions would you have for a better rollout of the system on other units?	Do you have any other comments you would like to share about the system?

## QUALITATIVE RESULTS

TABLES 2 and 3 provide codes, categories, and themes

### TABLE 2 Implementation Facilitators

Open Codes (examples)	Categories	Themes
"I can say that she did remind us a lot to do hand hygiene" "I mean, honestly, I think what helps is more like making sure we talk about it"	Unit Champion	Implementation Facilitators
"... the way we were monitoring it previously, with having our little secret agents of the hospital... they don't see what's going on..." "You know, whereas, this is still big brother, but at the same time, it's collecting the data without being as intrusive"	Electronic Observation	
"I felt like I made a stronger effort to after it was really brought up..." "I feel like, yeah, we all kind of came together and like said we're going to improve"	Timely Feedback	

### TABLE 3 Implementation Barriers

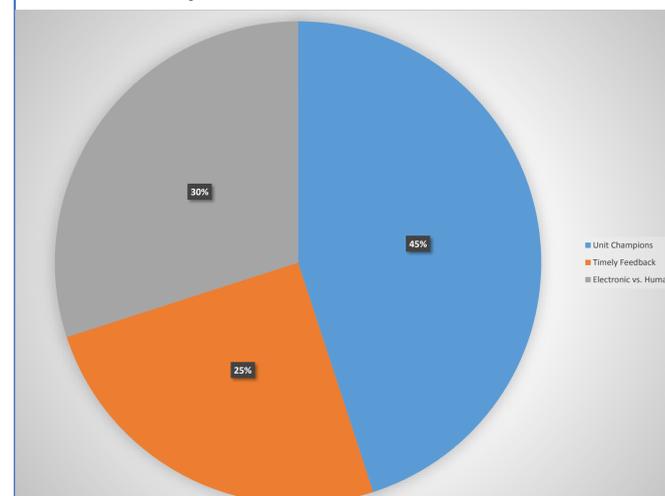
Open Codes (examples)	Categories	Themes
"I think I also wondered like the accuracy...you know what I mean, like how accurate it actually was" "Yeah, and like I feel like the, those sensors don't always take into consideration an isolation room..."	Data Accuracy	Implementation Barriers
"I don't really think that got going. I think there was an initial, when it was first started, I think it happened maybe once or twice" "I'm not sure they'll ever buy in...I mean, making goals, we all know what we're supposed to be doing"	Feasibility of Daily Goal Setting	
"So, wait, how does it track...it can't track when you're in the patient's room. Like it can't, there's not a little seeing eye that follows you everywhere..." "I just don't understand how they get...how many people go into the room, and how many people are actually washing their hands"	Staff Knowledge	

## QUANTITATIVE RESULTS

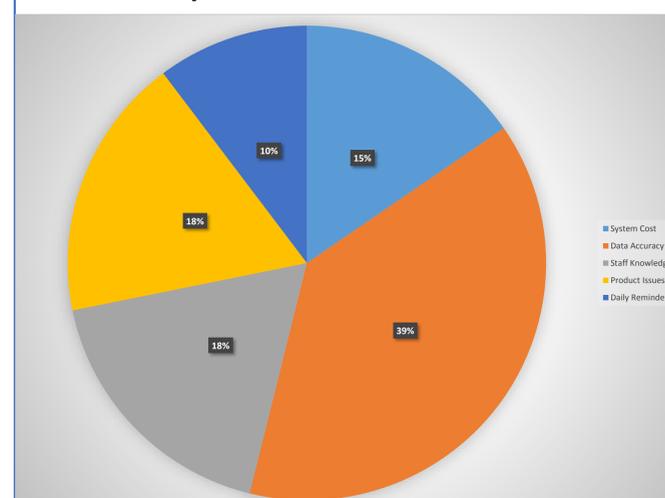
Hand hygiene compliance improved significantly during the trial of a electronic hand hygiene monitoring system in both the ICU (17%; p<0.001) and nonICU (40%; p<0.001) setting; results previously reported<sup>10</sup>

FIGURES 1 and 2 provide frequencies of reported implementation barriers and facilitators

### FIGURE 1 Implementation Facilitators



### FIGURE 2 Implementation Barriers



## CONCLUSIONS

Nursing staff perceived electronic monitoring improved hand hygiene compliance.

Staff verbalized negative perceptions with hand hygiene compliance monitoring\* but preferred electronic monitoring vs. human monitoring.

Most barriers discussed revolved around the need to understanding how the electronic monitoring system works and need to believe the data is accurate.\*

\*Findings consistent with previous reports in the literature<sup>8</sup>

Implementation of this innovative technology will require extensive planning to address staff knowledge and understanding to ensure staff acceptance and adoption.

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## DISCLOSURE

Nothing to disclose