

Reproducibility of Results in Decreasing Healthcare Associated Infections with the Use of Electronic Hand Hygiene Surveillance Technology

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Background

Healthcare associated infections (HAIs) cause the loss of thousands of lives and millions of dollars every year despite the widely accepted knowledge that hand hygiene (HH) is the most effective means of reducing HAIs. Clinical managers responsible for one Medical Center's post-surgical unit piloted an automated hand hygiene monitoring system and attained a 22% reduction in HAIs. In order to verify that these results were reproducible, the team expanded deployment of the technology to the Medical Intensive Care Unit (MICU). Results of the secondary deployment were measured and verified, and are presented here for consideration.

Design

Researchers selected their MICU because ICUs typically have higher infection rates due to complexity of patient mix, frequency of invasive device use, and higher severity of illness and comorbidity within the patient population. After recording two months of baseline dispensing activity, employees (77) were issued Radio Frequency Identification (RFID) badges for the pilot program. Dispensing counts from both alcohol-based hand solution and soap dispensers were automatically tracked by hour, day, and month with the same system. At the end of active monitoring, hand hygiene solution dispensing data was compared to HAI trends. Results were compared from the monitored months with the same months of the previous year to assess changes.

Methods

During the study period, caregivers wore RFID badges which allowed active 24/7 monitoring of hand hygiene activity. Proximity sensing of caregivers within the patient room determined hand hygiene opportunities and hand cleansing activity was confirmed by the activation of a sensor within the dispenser when the caregiver accessed a solution for hand washing. HAI data trends were assessed using an electronic proxy measure called a Nosocomial Infection Marker™.

Results

Researchers noted that during the first month of the study period, the MICU had a total of 9,995 hand hygiene dispenses, or 30.2 dispenses per patient day. For the sixth and final month, dispenses had increased to a total of 35,713, or 99.8 dispenses per patient day. During the same six months the MICU infection markers per 1,000 patient-days rate decreased by 35.1% when compared to the same months during the previous year. Based on previously published cost data, the reduction in NIMs corresponds to a decrease of 239 patient days and reduced net losses of \$200,079.

Conclusion

These results suggests the use of an automated hand hygiene surveillance and communication system can achieve reproducible increases in hand hygiene activity and associated reductions in HAIs, patient days, and net losses.

