

1322. Frequently Identified Infection Control Gaps Related to Hand Hygiene in Long-Term Care Facilities

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Background. Little is known about hand hygiene (HH) policies and practices in long-term care facilities (LTCF). Hence, we decided to study the frequency of HH-related infection control (IC) gaps and the factors associated with it.

Methods. The Nebraska (NE) Infection Control Assessment and Promotion Program (ICAP) in collaboration with NE Department of Health and Human Services conducted in-person surveys and on-site observations to assess infection prevention and control programs (IPCP) in 30 LTCF from 11/2015 to 3/2017. The Centers for Disease Control and Prevention (CDC) Infection Prevention and Control Assessment tool for LTCF was used for on-site interviews and the Centers for Medicare and Medicaid (CMS) Hospital IC Worksheet was used for observations. Gap frequencies were calculated for questions (6 on CDC survey and 8 on CMS worksheet) representing best practice recommendations (BPR). The factors studied for the association with the gaps included LTCF bed size (BS), hospital affiliation (HA), having trained infection preventionists (IP), and weekly hours (WH)/100 bed spent by IP on IPCP. Fisher's exact test and Mann Whitney test were used for statistical analyses.

Results. HH-related IC gap frequencies from on-site interviews are displayed in Figure 1. Only 6 (20%) LTCF reported having all 6 BPR in place and 10 (33%) having 5 BPR. LTCF with fewer gaps (5 to 6 BPR in place) appear more likely to have HA as compared with the LTCF with more gaps but the difference didn't reach statistical significance (37.5% vs. 7.1%, $P = 0.09$). When analyzed separately for each gap, it was found that LTCF with HA are more likely to have a policy on preferential use of alcohol based hand rubs than the ones without HA. (85.7%, vs. 26.1% $P = 0.008$). Several IC gaps were also identified during observations (Figure 2) with one of them being overall HH compliance of <80%. LTCF that have over 90% HH compliance are more likely to have higher median IP WH/100 beds dedicated towards IPCP as compared with the LTCFs with less than 90% compliance (16.4 vs. 4.4, $P < 0.05$).

Conclusion. Many HH-related IC gaps still exist in LTCF and require mitigation. Mitigation strategies may include encouraging LTCF to collaborate with IP at local acute care hospitals for guidance on IC activities and to increase dedicated IP times towards IPCP in LTCF.

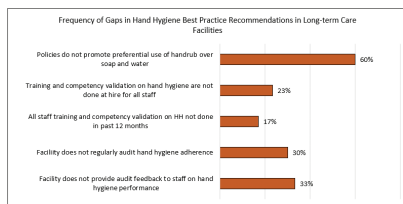


Figure 1. Frequency of infection control gaps related to hand hygiene identified by conducting interviews using CDC Infection Prevention and Control Assessment Tool in the long-term care facilities

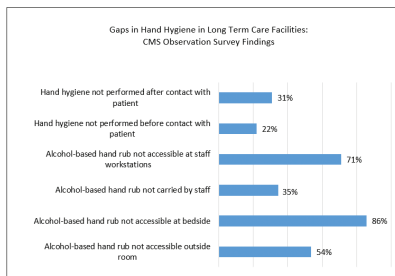


Figure 2. Frequency of gaps in hand hygiene in long-term care facilities identified by conducting on-site observations using CMS Hospital Infection Control Worksheet

Disclosures. All authors: No reported disclosures.

1323. Impact of Electronic Hand Hygiene Monitoring on Hospital-Acquired Clostridium difficile Infection Rates

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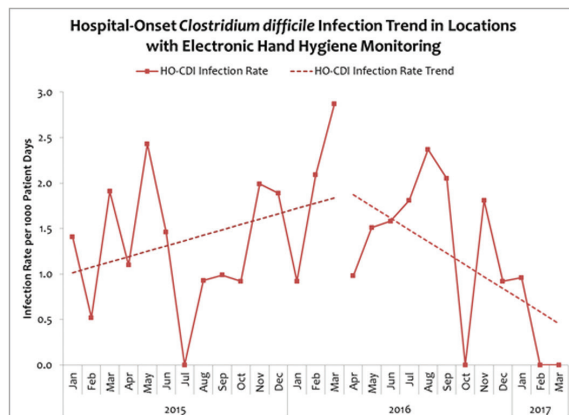
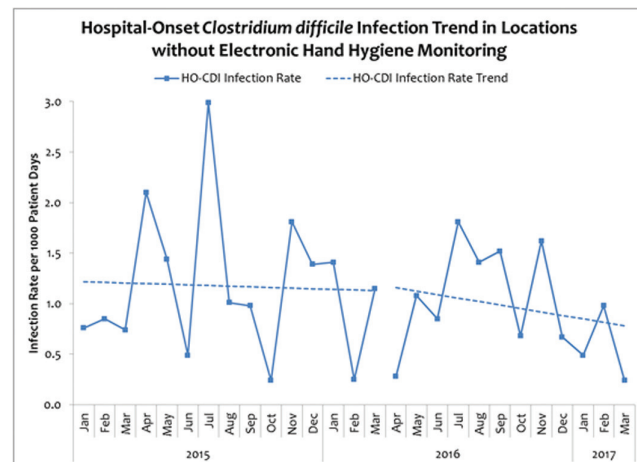
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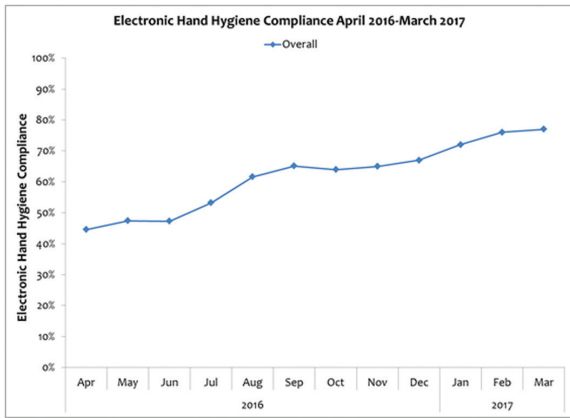
Background. Lower rates of hand hygiene adherence are linked to increased risk of nosocomial transmission of infectious pathogens, thereby increasing morbidity and mortality. Assessing true adherence is difficult using direct observation due to the low number of observations collected, heterogeneous observer training and bias, and the Hawthorne effect. We assessed whether radio frequency identification (RFID) hand hygiene monitoring resulted in changes to our hospital-onset *Clostridium difficile* (HO-CDI) rates. We also assessed whether electronically measured hand hygiene improved by the end of the intervention period.

Methods. The RFID system was installed in Apr 2016 in 2 medical/surgical units, a progressive care unit, and an intensive-care unit (study group). Registered nurses, certified nursing assistants, and selected physicians wore RFID badges to track hand hygiene adherence. Adherence is defined as washing with soap or alcohol-based hand rub within 1 minute before or after entering or exiting a patient's room. A second set of rooms (1 ICU, 1 short-stay unit, and 5 medical/surgical units) without the system served as the control group. HO-CDI rates were tracked monthly for each group using NHSN definitions. HO-CDI trends were compared for 15 months before and 12 months after installation of the system using interrupted time series analysis. Average electronic hand hygiene adherence for the first two months and last two months of the intervention period was compared using the Wilcoxon rank-sum test. Other interventions aimed at reducing HO-CDI were consistently applied to both the study and control groups.

Results. One hundred and eighty-six HO-CDI occurred: 73 in the study group and 113 in the control group. In the study group, the trend in HO-CDI rates changed from increasing in the pre-intervention to decreasing in the post-intervention ($P = 0.02$) (Figure 1). HO-CDI rates in the control group demonstrated no change in trend ($P = 0.69$) (Figure 2). In the study group, electronically tracked hand hygiene adherence increased from a mean of 46% in Apr-May 2016, to 77% in Feb-Mar 2017 ($P < 0.0001$).

Conclusion. Electronic RFID hand hygiene systems can have a tangible effect on hospital-acquired infection rates. This result strengthens the argument for using these systems to improve patient safety.





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1324. Sustained Improvement in Hand Hygiene Compliance Using a Decentralized, Technology-Based Approach

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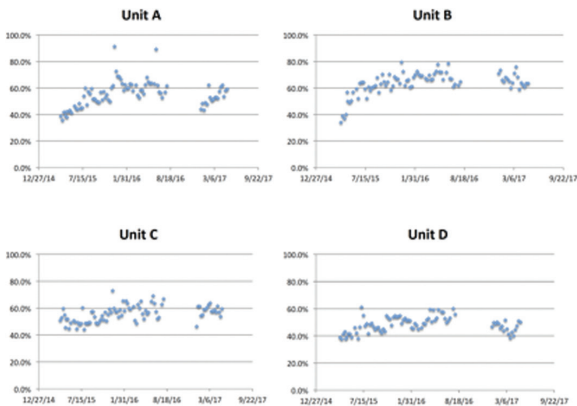
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Background. We aimed to use weekly PI calls in conjunction with 24/7 hand hygiene monitoring technology (HHMT) to engage front-line Intensive Care Unit (ICUs) clinicians in improving Hand Hygiene (HH) compliance

Methods. HHMT is used to monitor aggregate, unit-based HH compliance in real time and displayed on monitors at the nursing stations at our academic medical center. After installation and validation were completed, unit-based teams of nursing and physician leadership joined weekly 15-minute HH PI calls to discuss their previous week's compliance rate, next steps in their own PI plan, and share successes and failures. Calls were suspended for 6 months and restarted in early 2017.

Results. Graph representation of weekly HH compliance rates for the ICUs are shown in figure 1. Units A and B underwent physical moves during the break, Unit C had no change, and Unit D moved and consolidated with other ICUs constituting a major change in personnel and patient population. Each ICU participated in 84 calls and recorded approx. 50,000-100,000 HH opportunities during each month resulting in over 8 million opportunities for HH compliance recorded during the call-in periods. Unit A had an average compliance of 39% for the first 4 weeks of calls and 64% during the same 4 week period one year later ($P < 0.0001$). After 6 months without the calls, HH compliance was 48% ($P < 0.0001$ compared with baseline compliance) and unit A implemented 20 separate PI interventions over the course of the calls. Compliance was also significantly improved ($P < 0.0001$ for all comparison to baseline) for units B, C, and D (Unit B: 42% baseline, 71% at 1 year, 67% after the break, 23 interventions; Unit C: 54% baseline, 58% at 1 year, 59% after the break, 19 interventions; Unit D: 41% at baseline, 56% after 1 year, 49% after the break, 19 interventions). Attendance was >90% for nursing leadership and <25% for physician leadership.

Conclusion. Weekly 15-minute calls were successful in engaging local nursing leadership to undertake performance improvement interventions and significantly improved HH compliance that was sustained over 18 months of calls and did not drop back to baseline even after a 6 month break.



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1325. Electronic Hand Hygiene Monitoring: A Tool to Drive Improvement and Measure Impact

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Background. Hand hygiene (HH) is a basic principle of infection control, yet national HH adherence rates are only 40%. Challenges to improving HH rates include finding effective ways to promote and sustain change and collecting unbiased observations to measure the success of interventions. Our institution implemented an electronic HH (eHH) monitoring system on select hospital units with the goal of using this technology to both improve and measure HH rates.

Methods. In Apr 2016, Denver Health installed the HillRom Hand Hygiene Compliance Solution in 4 inpatient units (2 adult wards, 1 intensive care unit, and 1 progressive care unit). Sensors were installed on all HH dispensers and at the thresholds of patient rooms on the units. Registered nurses and certified nursing assistants wear badges that track HH upon entry and exit from the room. Appropriate eHH was defined as the use of waterless hand sanitizer or soap within 60 seconds before or after entering or exiting a room. Baseline data was collected for 2 months; a series of interventions, including public recognition of top performers, private individualized feedback, and posters emphasizing social pressures, were undertaken beginning in June 2016 (Figure 1). Descriptive statistics, chi-squared tests, and interrupted time series analyses were used to analyze the data.

Results. The median number of total daily observations was 4083 (IQR 3801-4437). The mean eHH adherence rate in the baseline period (Apr/May 2016) was 46% (IQR 44%-49%) and increased to 76% (IQR 75%-78%) in Mar 2017. Over the study period, there was a significant decreasing trend in the proportion of nurses with eHH rates <50% ($P < 0.0001$, Figure 2) and a significant increasing trend in the proportion of nurses with eHH rates ≥80% on all units ($P < 0.0001$, Figure 3).

Conclusion. eHH provides thousands of objective observations per day. eHH rates improved over the study period both due to an increase in nurses with eHH ≥80% and a decrease in the proportion of nurses with eHH <50%.

Figure 1. Timeline of electronic hand hygiene interventions and performance, Apr 2016-Mar 2017

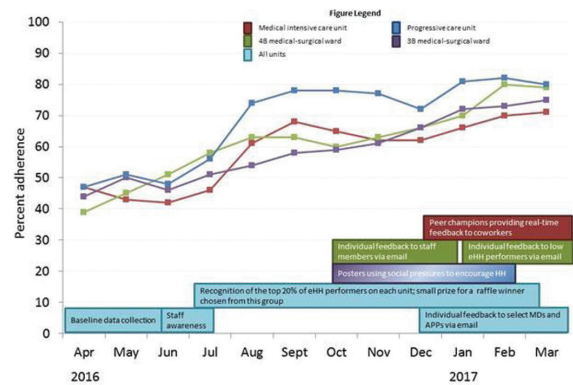


Figure 2. Proportion of nurses with electronic hand hygiene adherence <50%, Apr 2016-Feb 2017

