

Impact of Electronic Monitoring and a Hand Hygiene Improvement Program on Compliance Rates

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ABSTRACT

Background/Objectives

Hand hygiene is the most important intervention for preventing the spread of disease. However, rates of hand hygiene compliance continue to be low. Additionally, the gold standard for monitoring hand hygiene compliance, visual observation, is plagued by the Hawthorne effect and often overestimates hand hygiene compliance rates. Recently a number of electronic hand hygiene monitoring systems have been introduced, and are used more frequently as an adjunct to visual observation. The study objective was to determine the impact on compliance rates by introducing a hand hygiene program that includes an electronic compliance activity monitoring system in an acute care facility.

Methods

The study was conducted from June through October 2012 in Med/Surg and Infectious Disease units in a hospital in Fort Worth, TX. A compliance activity monitoring system was installed that monitors all patient room entries and exits (each one is considered an opportunity) and all hand hygiene events from automatic soap or sanitizer dispensers. Compliance was measured as # of events / # of opportunities, and included the entire community (based on room entry), not only HCWs. Baseline compliance measurements were taken without HCW knowledge from 6/8-6/18. Then the study period ran from 6/19-9/9, and included implementation of a comprehensive hand hygiene program that included HCW, patient and visitor education, development of a hand hygiene improvement goal, leadership support and feedback for the staff. Then a post-study assessment was done to determine whether the changes in compliance rates were sustainable from 9/10-10/28. Statistical comparisons were made using a probability value from a paired-difference t-test.

Results

There was a 92% increase in compliance rates from 16.5% to 31.7% from the baseline to study period. This difference was significant ($P < 0.0001$). Additionally, the compliance rate dropped to 25.8% in the post-study period, but still represented a significant increase over baseline ($P < 0.0001$).

Conclusions

Implementation of a hand hygiene program that includes a compliance activity monitoring system resulted in a significant, sustained improvement in hand hygiene compliance rates. Additionally, this study likely underestimates the actual compliance rate of the HCWs, since non-HCWs are also tracked by the system. Use of electronic monitoring can be a valuable tool for educating HCWs on their hand hygiene performance, and tracking hand hygiene performance improvements. Additional studies are needed to determine the impact of the compliance monitoring system on clinical outcomes, including infection rates.

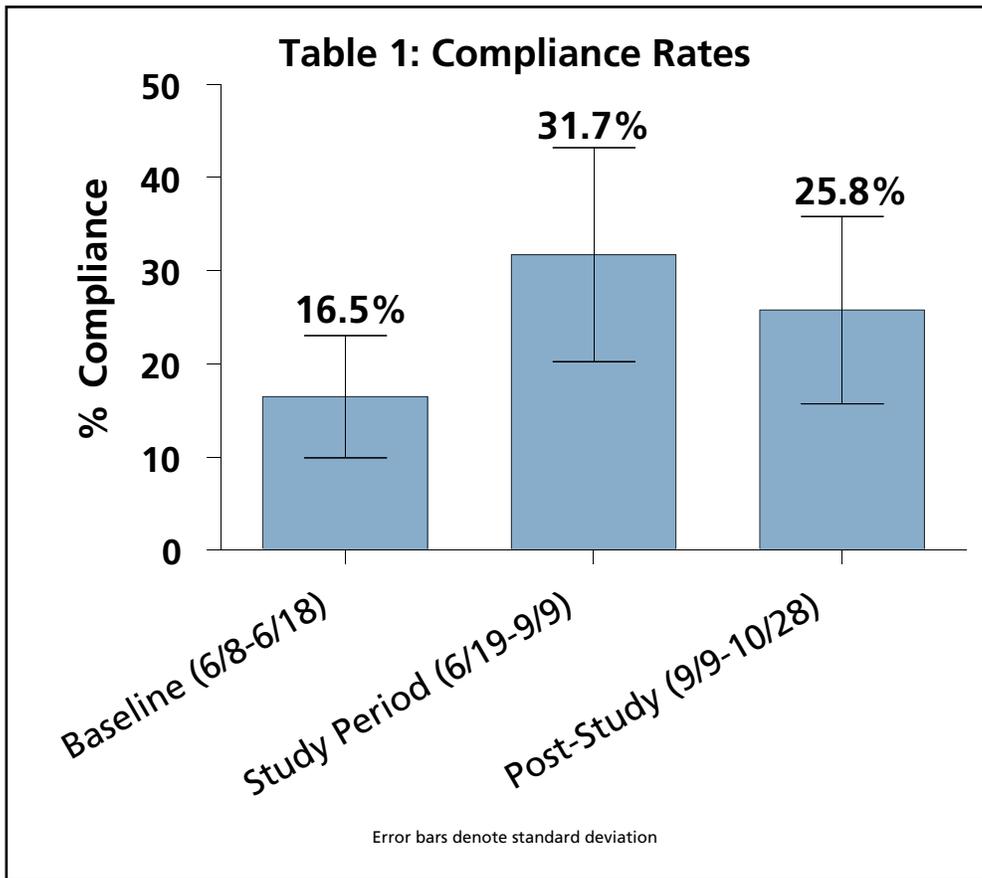
METHODS

The study was conducted in an Infectious Disease unit (15 rooms) and Medical-Surgical unit (16 rooms) in an acute care facility in Ft. Worth, TX from June 2012 to October 2012. The GOJO® Activity Compliance Monitoring System was installed in all soap and sanitizer (PURELL® Advanced with Aloe Instant Hand Sanitizer) dispensers on the units. It calculated compliance rates as number of hand hygiene events divided by the number of total hand hygiene opportunities (room entries / exits). The system measures "community-based" compliance as it is measuring all entries/ exits, not just healthcare workers (HCW). From 6/8/12-6/18/12 the baseline data was calculated without HCW knowledge of the system. A hand hygiene program then commenced which included designing / implementing an improvement goal, and educating HCWs on use of the system. The Clinical Application to implement this program used the Six Sigma DMAIC (Define, Measure, Analyze, Improve, Control) process. Going through a Root Cause Analysis exercise, positive deviants of bedside caregivers (the Performance Improvement Team) from both units identified possible reasons

initial compliance was low and then determined solutions to help improve compliance. All staff delivering care on both units were educated about the compliance system and solutions selected by the Performance Improvement Team. The Clinical Application also included biweekly conference calls between the GOJO Compliance Team and Infection Prevention staff and the Unit Directors from JPS. The study period with the active hand hygiene program was from 6/19/12-9/9/12. A post-study period from 9/10/12-10/28/12 was also assessed to determine if the changes in compliance rates were sustainable. Statistical analysis of the results was then conducted using a probability value from a paired-difference t-test.

The objective of the study was to determine the impact of implementing an electronic monitoring system and clinical application on hand hygiene compliance rates as measured by the electronic compliance monitoring system.

RESULTS



Results Summary

- There was a 92% increase in compliance rate from 16.5% at baseline to 31.7% during the study period.
- There was a 56% increase in compliance rate from 16.5% at baseline to 25.8% during the post-study period.

Statistical Summary

- There was a significant increase in compliance rate from the baseline to the study period ($P < 0.0001$).
- There was also a significant increase in compliance rate from the baseline to the post-study period ($P = 0.0012$).
- However, there was a significant drop in compliance rate from the study period to the post-study period ($P < 0.0001$).

KEY LESSONS LEARNED

- Hand hygiene compliance rates with electronic monitoring were far lower than visual observation
 - Visual observation rates during this period were about 95.4%.
 - It is known that visual observations can be elevated due to observer bias, the Hawthorne effect and lack of data for evening and night shifts
- Electronic monitoring provided an enormous amount of data (>90,000 opportunities), which would have been impossible to obtain through visual observations
- Electronic compliance monitoring alone may not be sufficient to raise compliance rates. It is what you do with that data that is most important
 - After the clinical program concluded there was a significant drop in compliance rates so it is important to continue to monitor hand hygiene rates and promote the program to sustain increased compliance.

CONCLUSIONS

- **Implementation of electronic hand hygiene compliance monitoring with a clinical program significantly increases hand hygiene compliance rates, with rates during the study period being almost 2x as high as baseline.**
- **Additional data is needed to understand the impact of the electronic compliance monitoring program on clinical outcomes such as infection rates.**

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