Feedback Intervention with an Automated Hand Hygiene Monitoring System Improves Hand Hygiene Performance

Lori Moore BSN, RN, MPH

Jeff Quinn, PhD

Robert Pelz MBA, PMP

Poster presented at:
APIC 2018
June 13-15, 2018 • Minneapolis, MN

BACKGROUND

Automated hand hygiene monitoring systems (AHHMS) are increasingly popular for measuring hand hygiene performance (HHP).[1] One benefit is their ability to provide near real-time (NRT) feedback to healthcare personnel (HCP). Ample evidence shows that feedback facilitates behavior change.[2-4] AHHMS can present feedback in a variety of ways; some may be more effective than others in leading to behavior change. In this study, we investigated two ways to provide feedback: (1) unit-level HHP and (2) hallway-level HHP. We analyzed AHHMS data and observed improved HHP with more granular feedback at the hallway level.

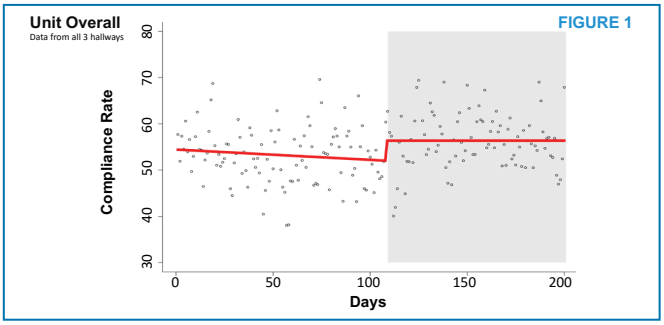
METHODS

The hospital unit layout consisted of three hallways in a U shape. Feedback monitors installed in each hallway displayed HHP rates from AHHMS (HH events/ HH opportunities). We examined HHP rate data for a six-month period. During the first three months, monitors displayed only unit-level rates. In month four (study day 109), we implemented an intervention in which we displayed both hallway-level and unit-level rates.

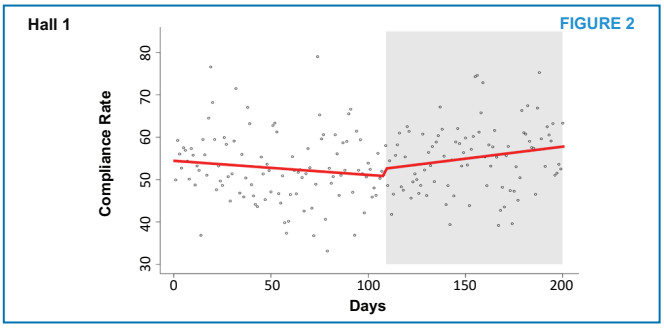
RESULTS

We compared HHP before and after the intervention with segmented regression analysis. This approach enabled us to estimate: (1) the pre-intervention slope, (2) the change in HHP that occurred at the time the intervention was delivered, and (3) the difference in slope before and after the intervention. ARIMA models were used to account for autocorrelation.

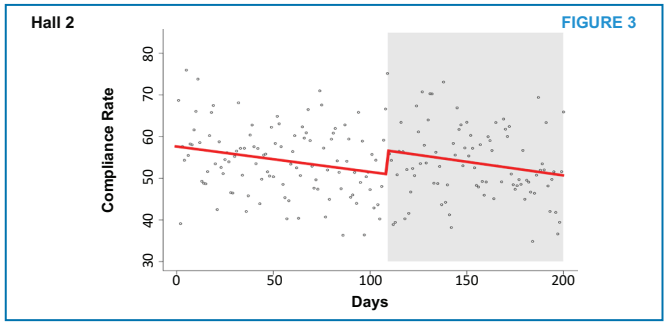
Our first segmented regression model examined the combined data from all three halls (see Figure 1). HHP rose 3.97 points at the time the intervention was delivered ($z = 2.02$, $p<0.05$). The post-intervention slope did not differ significantly from the pre-intervention slope, indicating minimal change in HHP from its elevated post-intervention level.

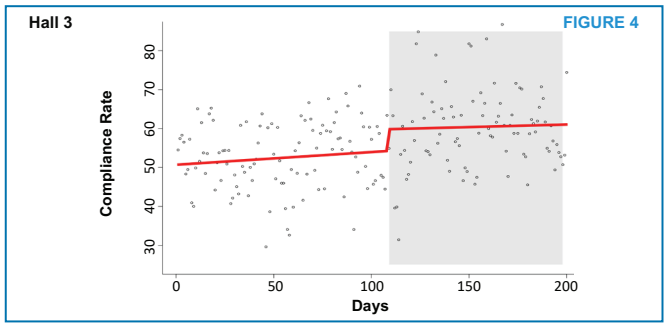


Next, we constructed separate models for each hallway. Hall 1 data showed an increase in HHP following the intervention (see Figure 2). During the pre-intervention period, HHP was declining slightly over time (slope = -0.06, $z = -2.14$, $p<0.05$). HHP increased 2.70 points at the time of the intervention. This immediate increase did not reach statistical significance. However, HHP rose steadily (and significantly) following the intervention, as reflected in the positive slope during this period (a change in slope of 0.12 compared to the pre-intervention period, $z = 2.68$, $p<0.01$).



In Halls 2 and 3 (Figures 3 and 4, respectively), changes in HHP looked similar to those observed for the unit as a whole. HHP increased at the time the intervention was delivered. In Hall 2, the increase was statistically significant (5.37 points, $z = 2.03$, $p<0.05$). In Hall 3, the increase (2.61 points) did not achieve statistical significance. In both of these halls, the post-intervention slope did not differ significantly from the pre-intervention slope.





CONCLUSIONS

This study demonstrates that HHP can be improved by providing HCP with more granular NRT performance data. HCP depend on timely feedback to better understand how they are performing. Plausibly, the more granular data may make feedback more actionable or help HCP feel more accountable.

Our intervention improved HHP which was sustained for three months using only AHHMS and feedback monitors and required no additional personnel resources.

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For additional information contact:
Lori Moore, GOJO Industries, Inc.
Email: moorel@gojo.com

#25286 (5/2018)