



# Using an Alternative to Real Time Locating System for Electronic Hand Hygiene Monitoring at a VA Hospital

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## BACKGROUND

- It is estimated that 60-minute direct observation periods captures approximately 2% of the average total number of opportunities per day at best and 0.5% at worst.<sup>1</sup>
- WHO recommends observing a minimum of 200 opportunities during each measurement period in each department or ward to allow for meaningful comparison.<sup>2</sup>
- Direct observation has become the gold standard for hand hygiene compliance monitoring but this methodology has several drawbacks including concern that these observations may negatively impact patient privacy or interfere with ongoing care.<sup>3,4</sup>
- Automated monitoring systems based on radiofrequency identification (RFID) technology, may miss half of all hand hygiene events.<sup>5</sup>
- Identification of alternative hand hygiene monitoring is a critical need.

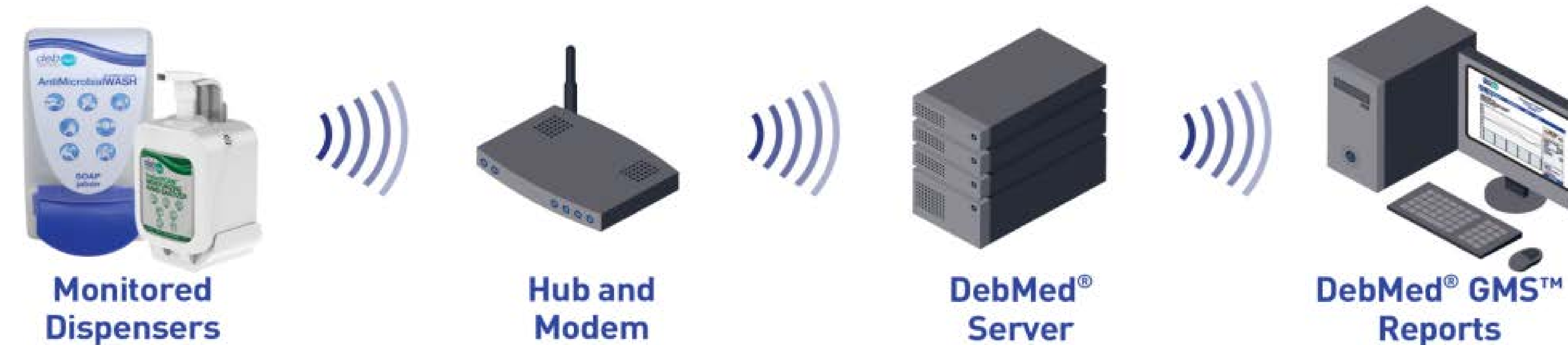
## AIM / GOAL

Describe the evaluation of a stand-alone wireless electronic hand hygiene monitoring system that does not require Real-time Locating Systems (RTLS) or radio-frequency identification (RFID) infrastructure.

## METHODS

- Comparative analyses of a pre- and post-hand hygiene staff engagement intervention
  - 7-bed ICU during a 6-month period from January to July 2014
  - 21-bed non-ICU unit during a 3-month period from October to December 2015.
- Staff hand hygiene compliance rates were collected using the wireless DebMed Group Monitoring System (GMS).  
**FIGURE 1 at top middle column**
- DebMed-GMS hand hygiene compliance is determined by the number of observed hand hygiene observations divided by the expected number of hand hygiene opportunities; expected opportunities are derived from staffing, patient census and World Health Organization (WHO) "Five Moments of Hand Hygiene" information.<sup>6,7</sup>
- The DebMed-GMS fosters team accountability through group monitoring and providing real-time feedback that actively engages staff.

**FIGURE 1: DebMed Wireless Technology**

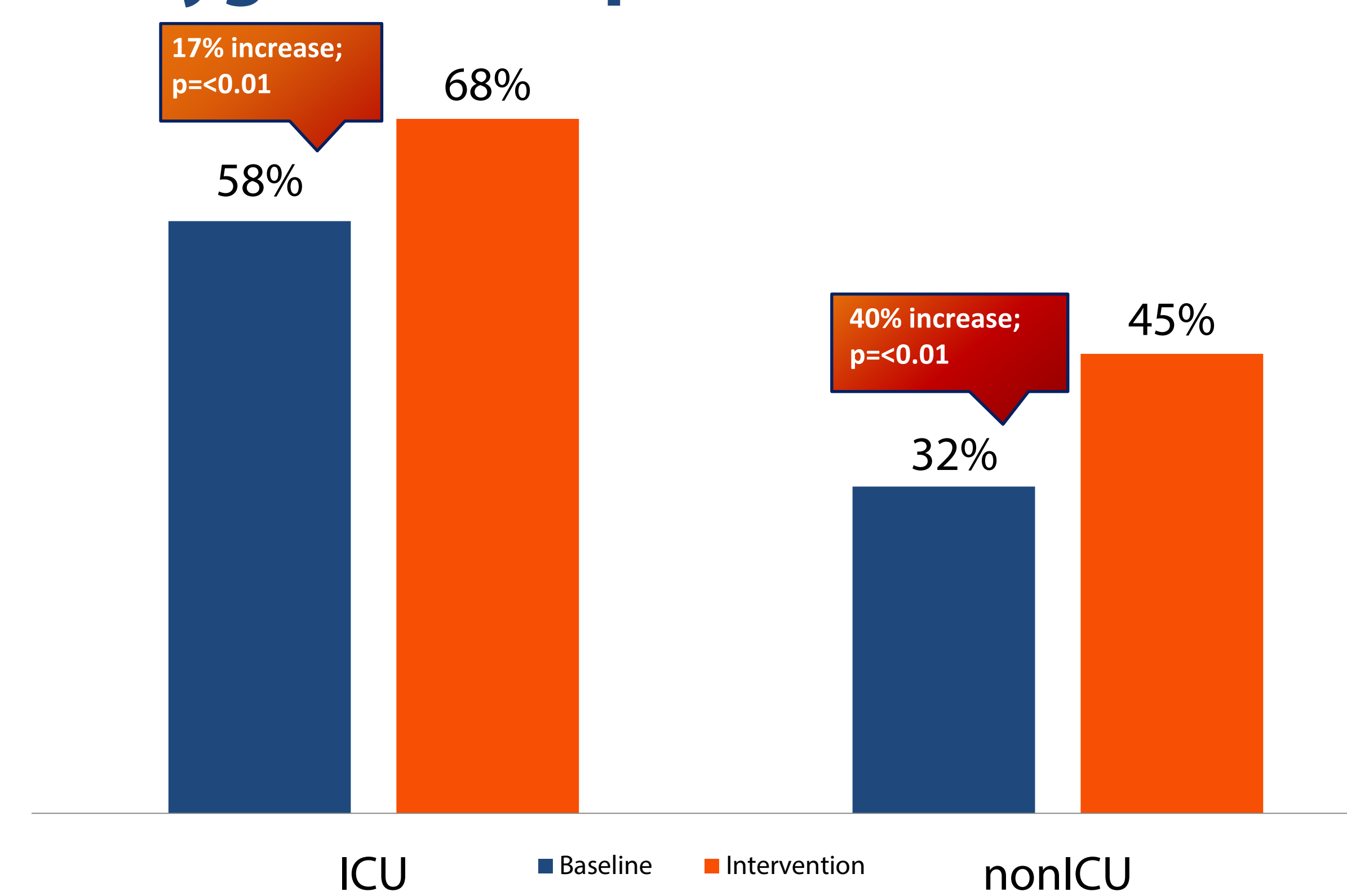


## RESULTS

### Improved Hand Hygiene Compliance

- In the ICU setting, hand hygiene compliance was 58% during the pre-intervention (baseline) period and 68% during the post-intervention period; a 17% increase ( $p < 0.001$ ).
- In the non-ICU setting, hand hygiene compliance was 32% at baseline and 45% during the post-intervention period; a 40% increase ( $p < 0.001$ ).

**FIGURE 2: Hand Hygiene Compliance Pre- and Post-Intervention**



### Reduced HAIs and Cost

- In the ICU setting, HAIs was 4.7 (4 HAIs/1000 patient days of care) during the pre-intervention (baseline) period and 0.0 during the post-intervention period.
- In the non-ICU setting, HAIs were 1.7 (3 HAIs/1000 patient days of care) during the pre-intervention period and 0.0 during the post-intervention period.

**FIGURE 3: HAI Rates per 1000 Patient Days Pre- and Post-Intervention**

	ICU	Estimated Cost <sup>8</sup>	NonICU	Estimated Cost <sup>8</sup>
Baseline	4.7 (N=3)	\$31,000	1.7 (N=2)	\$13,000
Intervention	0	\$0	0	\$0

## CONCLUSIONS

- Sustainable improvements in hand hygiene performance is achievable through observation and feedback of health care worker adherence rates.
- The accuracy and logistics of human observation of hand hygiene is challenging and usually limited to before and after patient contact.
- RTLS and RFID systems require technical and expensive infrastructure; The VA has a moratorium on purchasing electronic hand hygiene monitoring devices using RTLS.
- Alternative automated technologies are available for providing real-time feedback of hand hygiene compliance.

## REFERENCES

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