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## **HOW HOSPITALS ARE REDUCING INFECTIONS BY OVER 60%**

*The Power of the Voice to Finally Solve Hand Hygiene*

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## HAI<sup>s</sup> AND TECHNOLOGY

According to the CDC, 687,000 patients in the United States catch a healthcare-associated infection (HAI) every year. Of these, 72,000 will die.<sup>1</sup> Those who are fortunate enough to survive are frequently left with lifelong medical, psychological, and financial difficulties as a result of their experience.

Hand hygiene has been well established as the most important factor in reducing HAIs.<sup>2,3</sup> Yet, healthcare organizations continue to struggle with hand hygiene. Clinicians clean their hands, on average, around 40% of the times they should.<sup>4</sup>

Electronic hand hygiene systems have been on the market for a number of years, and they offer many benefits. In terms of measurement, they are far more accurate than the traditional method of having secret shoppers do direct observation.

**But the best systems don't just measure results; they also improve results.** They can remind clinicians to clean their hands in the moment when they forget, and they can provide organizational insights to help improve patient care.

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<sup>1</sup> Cdc.gov. (2019). Data Portal | HAI | CDC. [online] Available at: <https://www.cdc.gov/hai/data/portal/index.html> [Accessed 9 Jan. 2019].

<sup>2</sup> Allegranzi B, Pittet D. Role of hand hygiene in healthcare-associated infection prevention. *J Hosp Infect* 2009; 73:305-15.

<sup>3</sup> Pittet D. Compliance with hand disinfection and its impact on hospital-acquired infections. *J Hosp Infect* 2001;48 (Suppl A): S40-46.

<sup>4</sup> Erasmus V, Daha TJ, Brug H, Richardus JH, Behrendt MD, Vos MC, et al. Systematic review of studies on compliance with hand hygiene guidelines in hospital care. *Infect Control Hosp Epidemiol* 2010;31:283-94.



## THE POWER OF THE VOICE

Real-time reminders can take many formats. Some are lights, alarms or beeps. While these are certainly more effective than no reminder, they are liable to cause alarm fatigue. This is the well-documented trend of providers subconsciously tuning out lights and beeps because there are so many in hospitals.<sup>5</sup>

In addition, some reminders are positive, while others are punitive. There are systems that force clinicians to wear a “red badge of shame” on their chest, showing patients that they have not cleaned their hands. This approach tends to demoralize hard-working providers, which is particularly concerning with the growing challenge of nurse shortages and turnover. It is not necessary to use shame and embarrassment with healthcare providers—they are hardworking, compassionate, and highly educated professionals.

The Clean Hands – Safe Hands system uses a positive and helpful approach. Our Real-Time Voice Reminder™ is an actual human voice, offering a gentle reminder to “Please sanitize.” (The message can be customized if desired.)

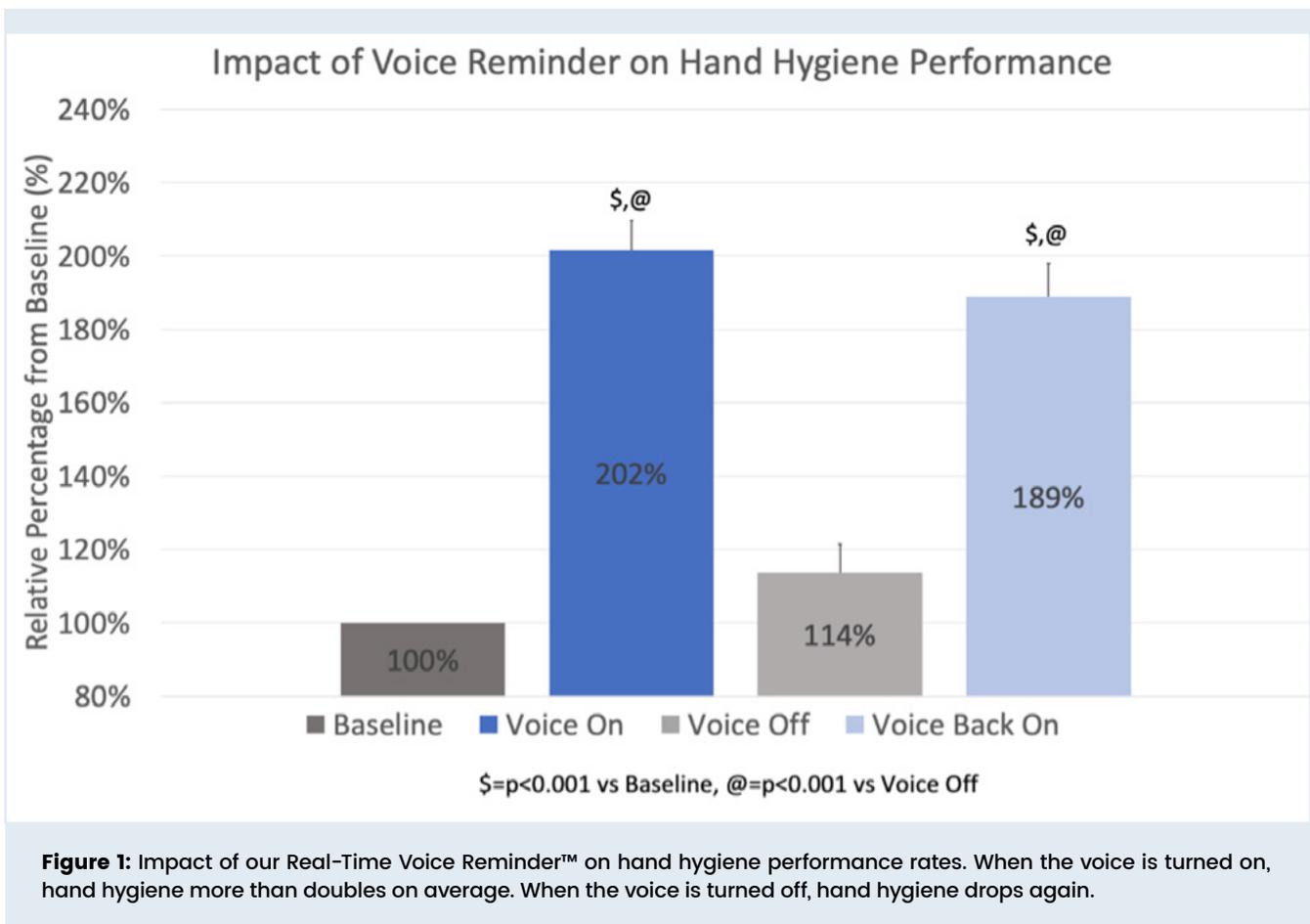
**Across our hospital customers, once the voice reminder is turned on, hand hygiene performance more than doubles on average.** When we first install our system, we do it with the voice off to allow us to collect data which is used to customize our sensors to each individual unit or room. This also allows us to get a very accurate baseline of the hospital’s hand hygiene performance. As seen in Figure 1, we took performance data from several of our hospitals and normalized it to this baseline (dark gray bar). After we turn the voice reminder on, hand hygiene statistically more than doubles, with some hospitals even tripling their hand hygiene rates.

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<sup>5</sup> The Joint Commission. (2013, April 8). The Joint Commission Sentinel Event Alert [PDF]. Available at: [https://www.jointcommission.org/assets/1/18/SEA\\_50\\_alarms\\_4\\_5\\_13\\_FINAL1.PDF](https://www.jointcommission.org/assets/1/18/SEA_50_alarms_4_5_13_FINAL1.PDF) [Accessed 18 Jan. 2019].

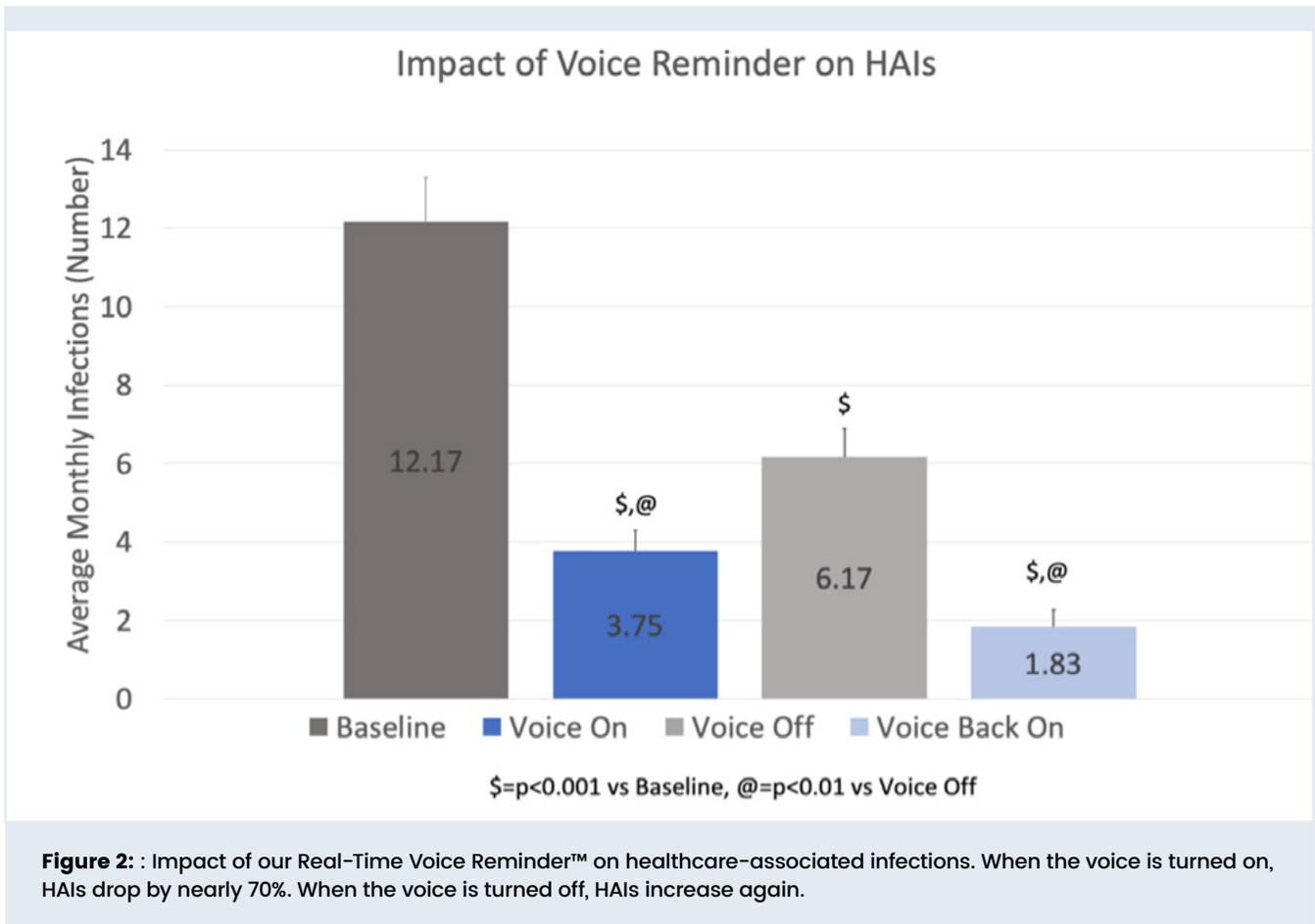


We have had hospitals turn the voice reminder off due to a research study or to upgrade sensors. Within six weeks of the voice being turned off, hand hygiene performance drops back (Figure 1) to this baseline in every case. We have seen numerous times **that hand hygiene performance is not sustainable without that in-the-moment reminder every time it is needed.**





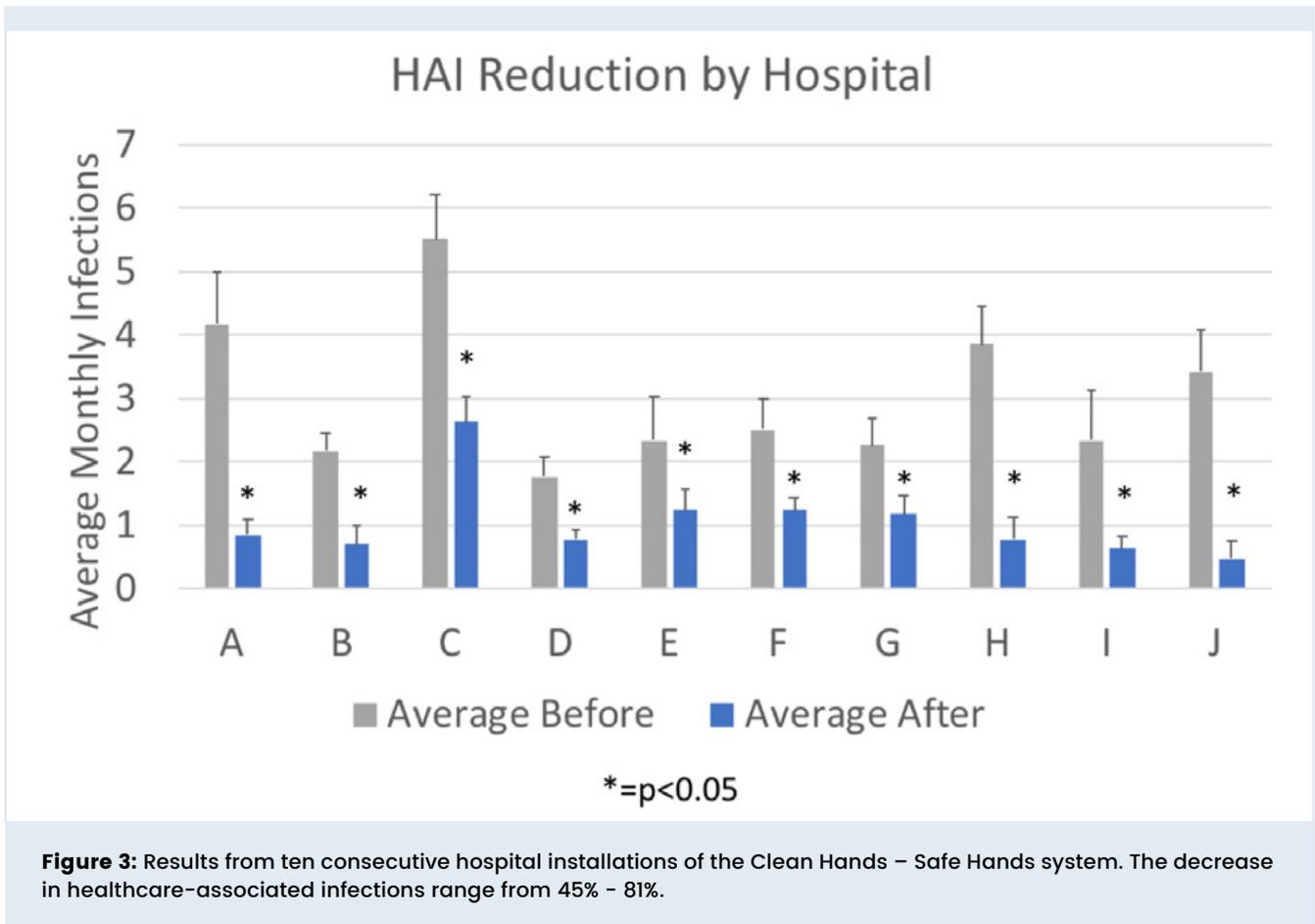
While seeing hand hygiene improve is gratifying, the real benefit of using our system is reducing HAIs. We pulled infection data from the same hospitals as the figure above and looked at the average number of monthly HAIs during each of the four periods. **Once the voice was turned on, there was a statistically significant 69% reduction in HAIs** (Figure 2). After the voice was turned off, HAIs nearly doubled. When the voice was turned back on, HAIs dropped back again to roughly the same level as the first time the voice was on.





## HAI REDUCTION RESULTS

While HAIs have been a major challenge for hospitals for at least the last 150 years, we have finally been able to reliably solve the problem using the combination of our Real-Time Voice Reminder™ and our patent-pending process. We analyzed HAI data for the last ten consecutive hospitals that installed our technology and followed our process for at least six months. We compared the average number of monthly HAIs prior to the installation of our system to after the voice was turned on. **All ten consecutive hospital installations significantly reduced infections, ranging from 45% - 81%** (Figure 3).

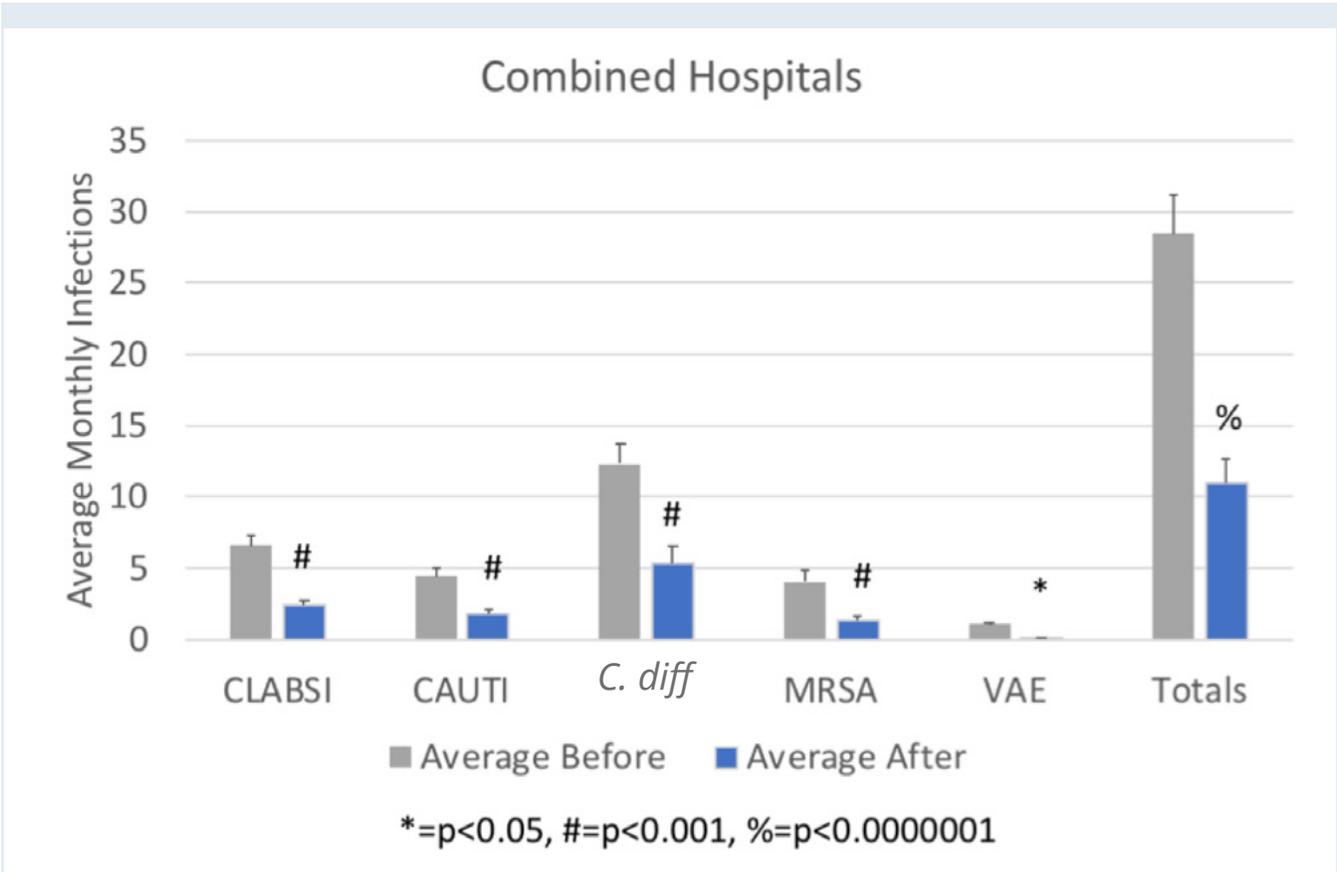


**Figure 3:** Results from ten consecutive hospital installations of the Clean Hands – Safe Hands system. The decrease in healthcare-associated infections range from 45% - 81%.



The results above represent all HAIs, and we wanted to examine the impact of hand hygiene on each type of infection as well. HAI data from the same ten hospitals was aggregated and analyzed by infection type, again comparing before and after the voice reminder was turned on. This includes CLABSI (central line-associated blood stream infections), CAUTI (catheter-associated urinary tract infections), *C. diff* (*Clostridium difficile*), MRSA (Methicillin-resistant *Staphylococcus aureus*) and VAE (ventilator-associated events). After the voice was turned on, there was a significant reduction in every type of HAIs (Figure 4).

**When analyzing data from all ten hospital installations and all infection types, on average there was a statistically significant reduction in all HAIs of 61.4%.**



**Figure 4:** Results for healthcare-associated infections by type, from ten consecutive hospital installations of the Clean Hands – Safe Hands system. Every type of HAI decreased.



## SAVING MONEY, SAVING LIVES

What's the impact of the reduction of HAIs in these ten consecutive hospital installations of the Clean Hands – Safe Hands system?

**Money saved. Nearly \$10 million per year in direct costs alone** (Figure 5). This does not include any readmission penalties, HAC list penalties, the cost of extra time required from providers to care for HAI patients, nor the increase in length of stay.

TYPE OF HAI	HAIs PREVENTED/YEAR	DIRECT COST PER HAI <sup>6</sup>	ANNUAL SAVINGS
CLABSI	91	\$45,814	\$4,186,695
CAUTI	61	\$896	\$55,083
<i>C. diff</i>	143	\$11,285	\$1,612,540
MRSA	56	\$51,252	\$2,895,344
VAE	20	\$40,144	\$800,410
<b>TOTALS</b>	<b>372</b>		<b>\$9,550,071</b>

**Figure 5:** For these ten hospital installations alone, using the Clean Hands – Safe Hands system is preventing an estimated 372 infections per year and saving over \$9.5 million annually.

While cost savings are critical for the survival of the modern hospital, the real benefit is the impact on the patients. The ten hospital installations featured here are preventing a total of 372 HAIs a year.

<sup>6</sup> Zimlichman E, e. (2019). Health care-associated infections: a meta-analysis of costs and financial impact on the US health care system. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/?term=23999949> [Accessed 17 Jan. 2019].



**More importantly, they are saving lives.** Nearly 10.5% of patients with an HAI will die.<sup>7</sup> Since these hospitals are preventing 372 HAIs annually, that means they are saving 39 lives a year.

Those 39 people get to carry on with their lives, working in their careers, loving their families, celebrating milestones with their friends. And all 372 people will avoid the suffering, the personal financial costs, and the potentially lifelong compromised health that an HAI could have imposed on them.



**The ten hospital installations featured here alone are saving almost 40 lives a year through using Clean Hands – Safe Hands to reduce HAIs.**

<sup>7</sup> Cdc.gov. (2019). Data Portal | HAI | CDC. [online] Available at: <https://www.cdc.gov/hai/data/portal/index.html> [Accessed 9 Jan. 2019].



## WOULD YOU LIKE TO SEE THESE RESULTS IN YOUR HOSPITAL?

It's surprisingly easy and straightforward. Install simple and cost-effective technology. Turn on the Real-Time Voice Reminder™. Follow the patent-pending process. Watch HAIs decrease by an average of over 60%. Save potentially millions of dollars a year. Send more healthy patients home to their families.

There is no reason to continue to let patients suffer and incur needless healthcare costs when there's a technology solution that can affordably help solve the problem. It is possible to reduce HAIs, increase patient safety, save money, and improve the patient experience.

## Contact Us Today to Find Out How We Can Help You Increase Hand Hygiene Performance and Reduce HAIs

Email [info@cleanhands-safehands.com](mailto:info@cleanhands-safehands.com) or Call **404.975.1686**



### BY CLINICIANS, FOR CLINICIANS

*Clean Hands – Safe Hands began through a research consortium of the Centers for Disease Control and Prevention (CDC), Emory University, Children's Healthcare of Atlanta, the Georgia Institute of Technology and the Georgia Tech Research Institute. Knowing that the primary accepted method of direct observation is ineffectual in reducing HAIs, physicians and technologists worked together to develop an innovative solution to the problem.*

Our Voice Resonates.™

[www.cleanhands-safehands.com](http://www.cleanhands-safehands.com)