



# **Hand Hygiene Compliance Monitoring: Empowering Hospitals to Protect Patients and Healthcare Workers Toolkit**

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**Hand Hygiene Compliance Monitoring: Empowering  
Hospitals and ASCS to Protect Patients and  
Healthcare Workers**

Intelligent  
**Observation**

 **Doylestown Health**

# Agenda

- I. Introductions
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# Presentation

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*Vice President of Sales & Marketing*  
*Intelligent Observation*



Intelligent  
**Observation**



**Bridget McEnrue BSN RN**  
*Director of Infection Prevention*  
*Doylestown Hospital*

# Intelligent Observation

Hand Hygiene Solution

## The Challenge

Hand hygiene compliance is still difficult to measure in healthcare facilities



### Low Compliance

Proper hand hygiene is the best way to prevent healthcare associated infections (HAIs) yet compliance with hand hygiene guidelines is less than 50% globally.



### Visual Observation is the Current Standard

Healthcare organizations primarily use direct observation (DO) as a method to track hand hygiene compliance.



### Missed Hand Hygiene Events

Research shows that at most, only 1.2% of hand hygiene events are captured by direct observation (meaning 98.8% of hand hygiene events are missed).



### Negative Impact of the Hawthorne Effect

Research shows that people behave differently when being observed (due to the Hawthorne Effect) leading to direct observation overstating compliance rates by up to 300%.

# Barriers to Historical Adoption

Here's why other  
technology  
solutions haven't  
been adopted!



Lack of consistent accuracy +  
reliability of legacy solutions  
engender data denial by staff –  
**All use RFID or RF technology**



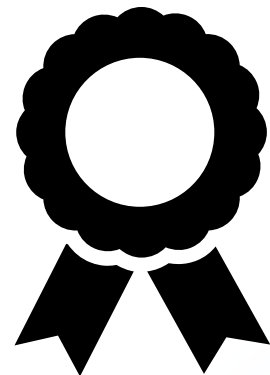
Complex systems to install  
and/or maintain; fail to fully  
engage front line staff and drive  
change



Expensive!!!!

# “We’ve cracked the code with Near Field Magnetic Induction (NFMI) technology”

NFMI technology is **centimeter level proximity detection in a wearable device** – it’s the same technology used in the automotive industry for cars with a key fob and push button ignition



Three years of development work resulting in a patented solution that’s **accurate, simple to engage and cost effective**

# Intelligent Observation Select Partners – *Now Partner with over 70 hospitals in US*



Hackensack  
Meridian Health



North Suburban  
Medical Center

HCA  
Healthcare

LIFEPOINT  
HEALTH



St. Elizabeth  
HEALTHCARE



Mass General Brigham  
Cooley Dickinson Hospital



SILVER CROSS  
HOSPITAL

inspira  
HEALTH



Virginia Mason



Swedish  
Medical Center



RIVERSIDE  
HEALTHCARE



ROSE  
Medical Center



Great Plains  
Health



Central Maine  
Healthcare



Nicklaus  
Children's  
Hospital



Doylestown  
Health



Sinai  
Chicago



GOOD  
SHEPHERD  
HEALTH CARE SYSTEM



OSCEOLA  
REGIONAL MEDICAL CENTER



Memorial Medical Center



PARKRIDGE  
HEALTH SYSTEM



West Florida  
HEALTHCARE



# NFMI vs RFID Technology for Monitoring Hand Hygiene

## NFMI Technology

- Designed for centimeter accuracy proximity detection
- Transmit/receive signal passes through liquids – like human bodies
- Ultra-low power technology
- Inexpensive hardware coupled with proprietary, patented system architecture, software and AI



## RFID & Bluetooth Technology

- Designed to track assets with +/- 3 meters of accuracy
- Transmit/receive signals absorbed by liquids (human body 60%+ liquid)
- Requires battery recharging or powered sensors
- Expensive hardware with no differentiation between RFID vendors – asset tracking solution modified for hand hygiene



# Benefits of Using Intelligent Observation



- ✓ Measures “**Bed Zone Proximity**” (accurate proxy for the WHO 5 Moments) and/or “**In and Out**” hand hygiene compliance standard
- ✓ Provides both **group** and **individual level** reporting
- ✓ Works with **any brand** of soap and/or sanitizer
- ✓ Captures/reports **hand washing duration** – only solution in the world to do so!
- ✓ Totally stand alone – **no integration with hospital** Wi-Fi, network etc. – no IT support required
- ✓ Helps facilities meet the monitoring requirements for **Leapfrog’s** Hand Hygiene Standard.
- ✓ Most **affordable** system available – **Hand Hygiene Monitoring as a Service** – single fee covers all hardware, software, badge and service costs

# Intelligent Observation – How it Works

## Step 1



**SMARTBADGE INTERACTS WITH SENSORS TO DETERMINE COMPLIANT/NON-COMPLIANT EVENTS AND UPLOADS COMPLIANCE DATA TO THE CLOUD**

## Step 2



**BATTERY OPERATED SENSORS PLACED STRATEGICALLY IN/AROUND PATIENT ROOM SETTING TO MATCH FACILITY'S HAND HYGIENE COMPLIANCE STANDARD**

## Step 3



**DASHBOARD WITH COMPLIANCE DATA, SCORECARD AND TRENDS IS ACCESSIBLE TO CREDENTIALLED STAFF VIA WEB**

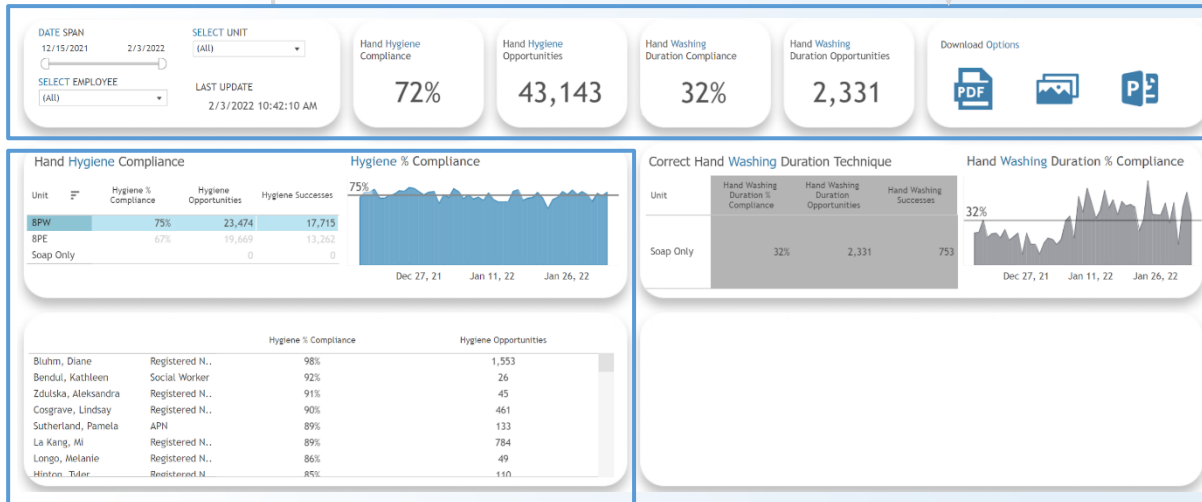
More **Accurate** than RFID • **Simple** to Install/Maintain • **Cost** Effective

# Intelligent Observation Dashboards

View data at the facility level  
(for IDNs, roll-up dashboards present data across all facilities)

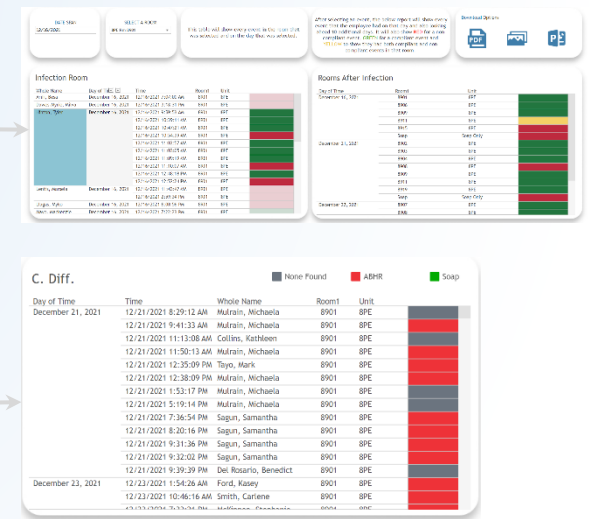
View hand washing duration  
with soap and water

View room level compliance  
(color coding at-a-glance, easy to monitor isolation rooms)

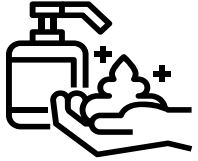


View data at the unit, role and  
down to the individual level

Easy to use Infection Tracing Tools (trace infection spread  
and monitor soap and water use for C.Diff patients)



# Intelligent Observation – Results Delivered



**36%**

Average hand hygiene compliance increase for Intelligent Observation customers in 2022

*A study concluded “...a 10% improvement in hand hygiene, associated with a 6% reduction in overall HAI”<sup>1</sup>*



**100%**

Intelligent Observation monitors 100% of hand hygiene opportunities 24/7/365

*Your hospital will no longer need to conduct direct observations, freeing up valuable time of your staff*

Intelligent  
**Observation**



## Intelligent Observation Case Study

HCA Hospital saw a **27% increase** in hand hygiene compliance in 2022, resulting in decreasing **MRSA infections to zero**.

This resulted in a **savings of ~\$250k**.

<sup>1</sup> National Library of Medicine <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4994356/>

# Annual Subscription Service

## One all inclusive fee, includes:

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- ✔ Installation of the Intelligent Observation solution – includes SmartBadges for all frontline healthcare staff\*
- ✔ Dedicated Account Manager – we manage badging for you!
- ✔ Training for your staff
- ✔ Ongoing support and maintenance of all hardware/devices
- ✔ Customized dashboards/scheduled “push” reports
- ✔ Annual technology refresh



**Guaranteed  
Lowest Price  
Point in the  
industry!**

# Hand Hygiene Compliance Monitoring: Empowering Hospitals to Protect Patients and Healthcare Workers

**Bridget McEnrue RN, BSN, CIC Director Infection Prevention**

**Doylestown Hospital**

## Hand Hygiene

The simplest and most effective procedure a HCP can do to prevention the spread of infections is to perform hand hygiene!

- ❖ Identified centuries ago (1847) by Ignaz Semmelweis
- ❖ Surgical scrub became routine in 1829's
- ❖ 1980s hand hygiene officially incorporated into American health care and release of the first national hand hygiene guidelines

Compliance today remains somewhere between 40%- 60%





## Collection of HCP Hand Hygiene Practices

- ✓ Observation
- ✓ Product use
- ✓ Electronic Monitoring Systems



## Why transition to an electronic surveillance system

- 200 observations per unit per month
- turnover of trained secret observers
- Accuracy of observations
- Just in time coaching



## Intelligent Observation System

- Does not tap into hospital IT system
- Objective not subjective
- One smartbadge for each associate
- Dashboard with data accessible to selected management team
- Soap and water duration compliance
- Identification of rooms with poor HH compliance
- Associate/Physician results by unit

## Onboarding associates

### Phases:

1<sup>st</sup>: Direct patient care associates

2<sup>nd</sup>: Rehab

3<sup>rd</sup>: Hospitalist

4<sup>th</sup>: ID physicians

5<sup>th</sup>: Additional physician groups

## Who we are not onboarding

Procedural areas:

- ✓ Periop
- ✓ Cathlab

Manually collected data, submit to IP department, produce graphs and share results

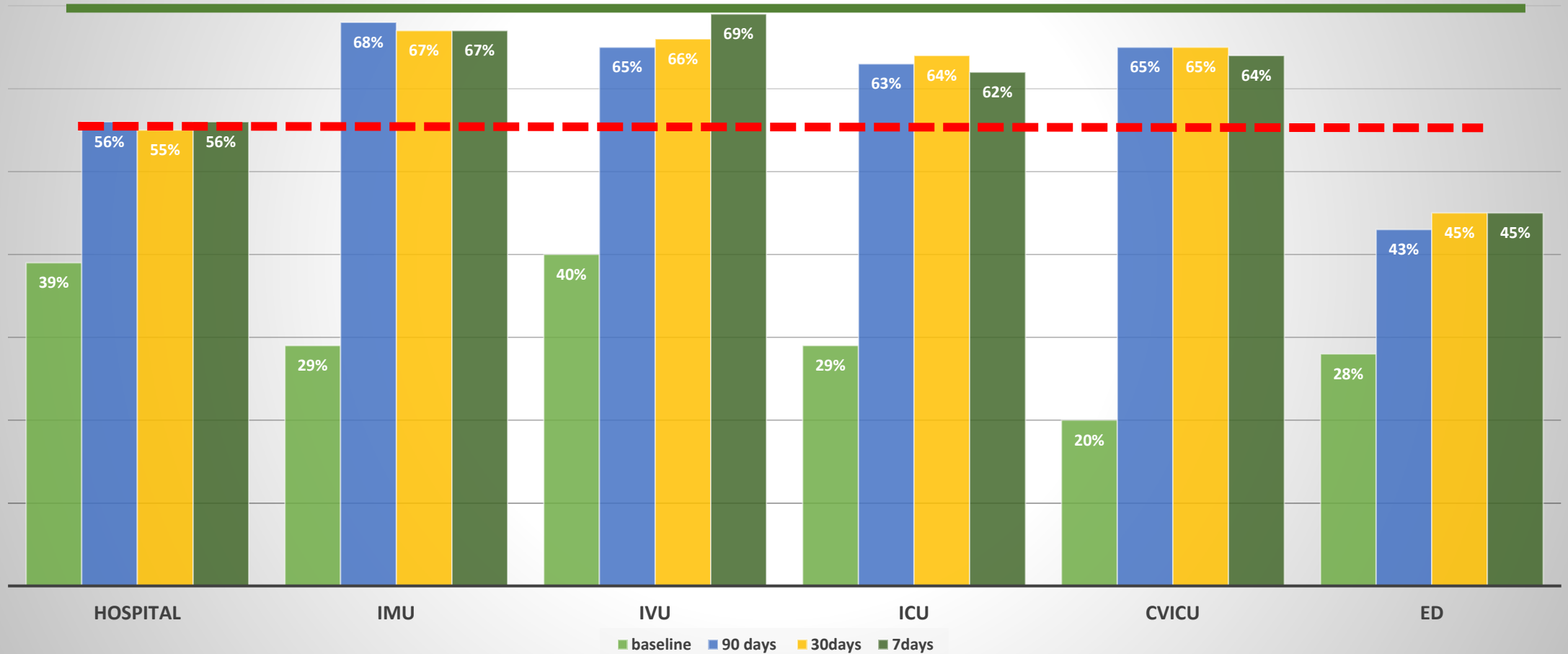


# Results

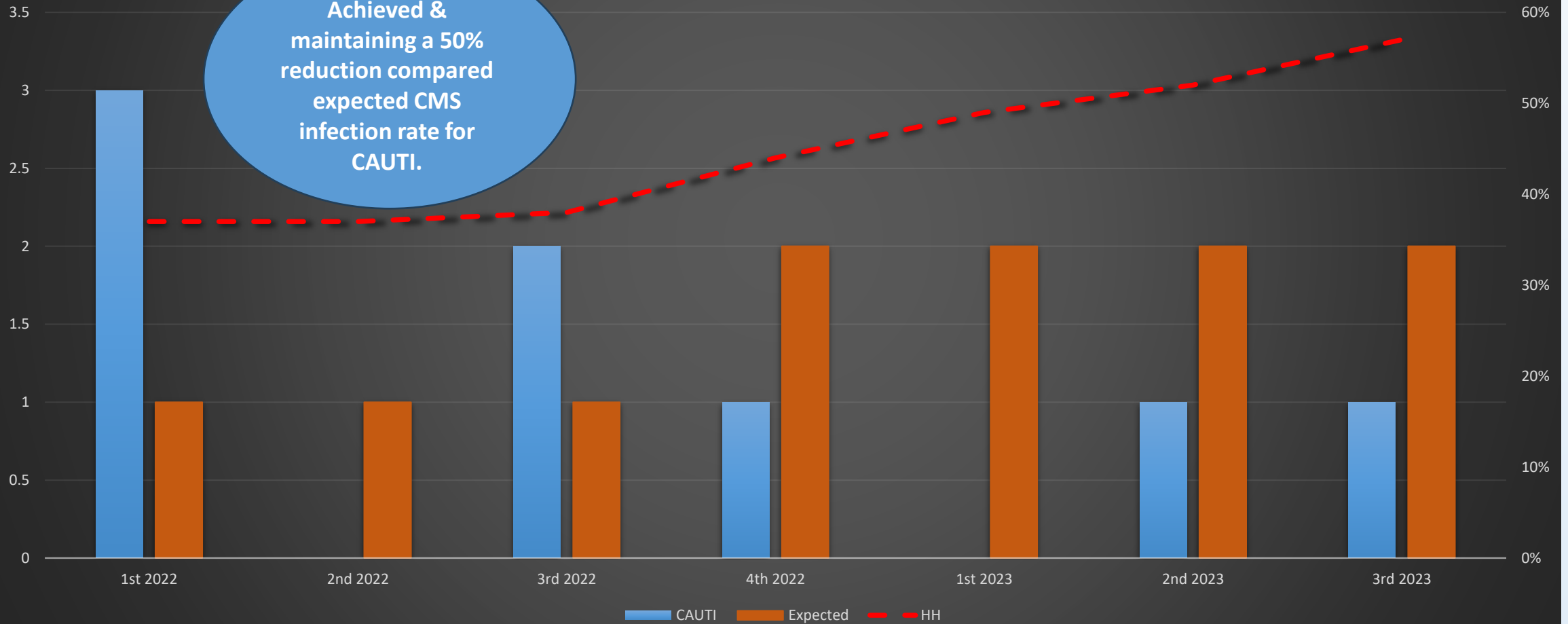
All CC units are maintaining a 65% or higher HH compliance.

Critical Care HH @ Baseline & Previous 90, 30 & 7 Days ( as of 1/22/2024)

Hospital compliance goal: 70%

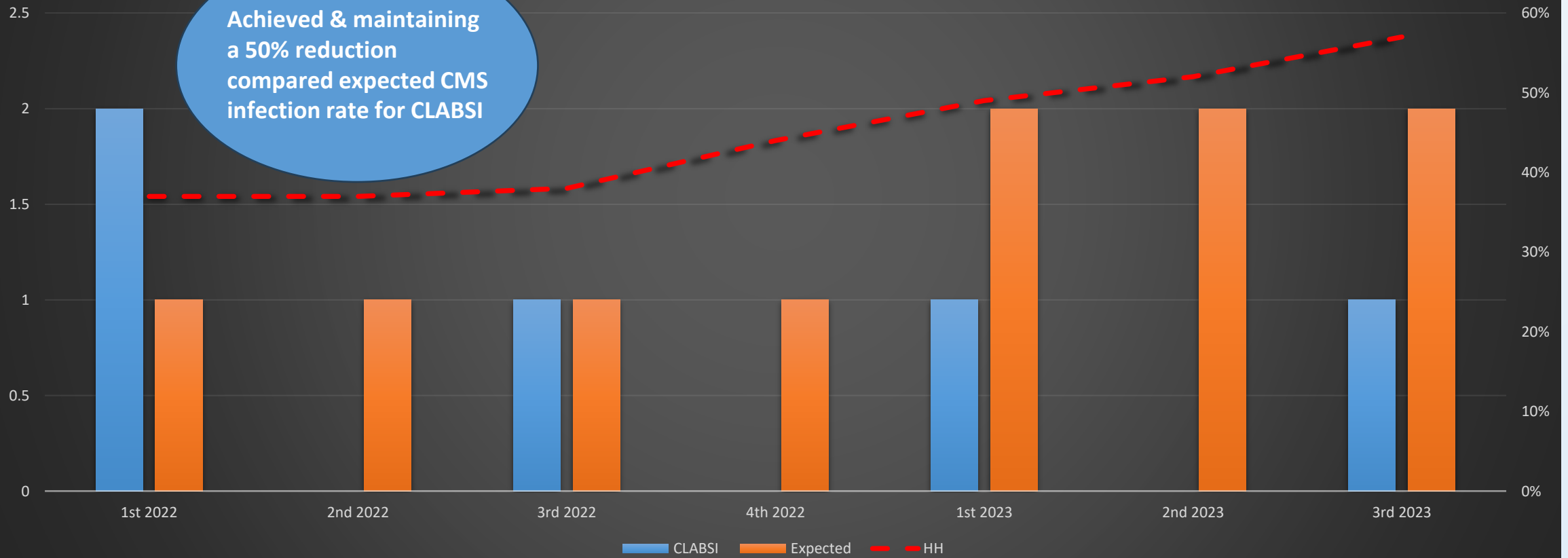


# Urinary Catheter Associated Urinary Tract Infections



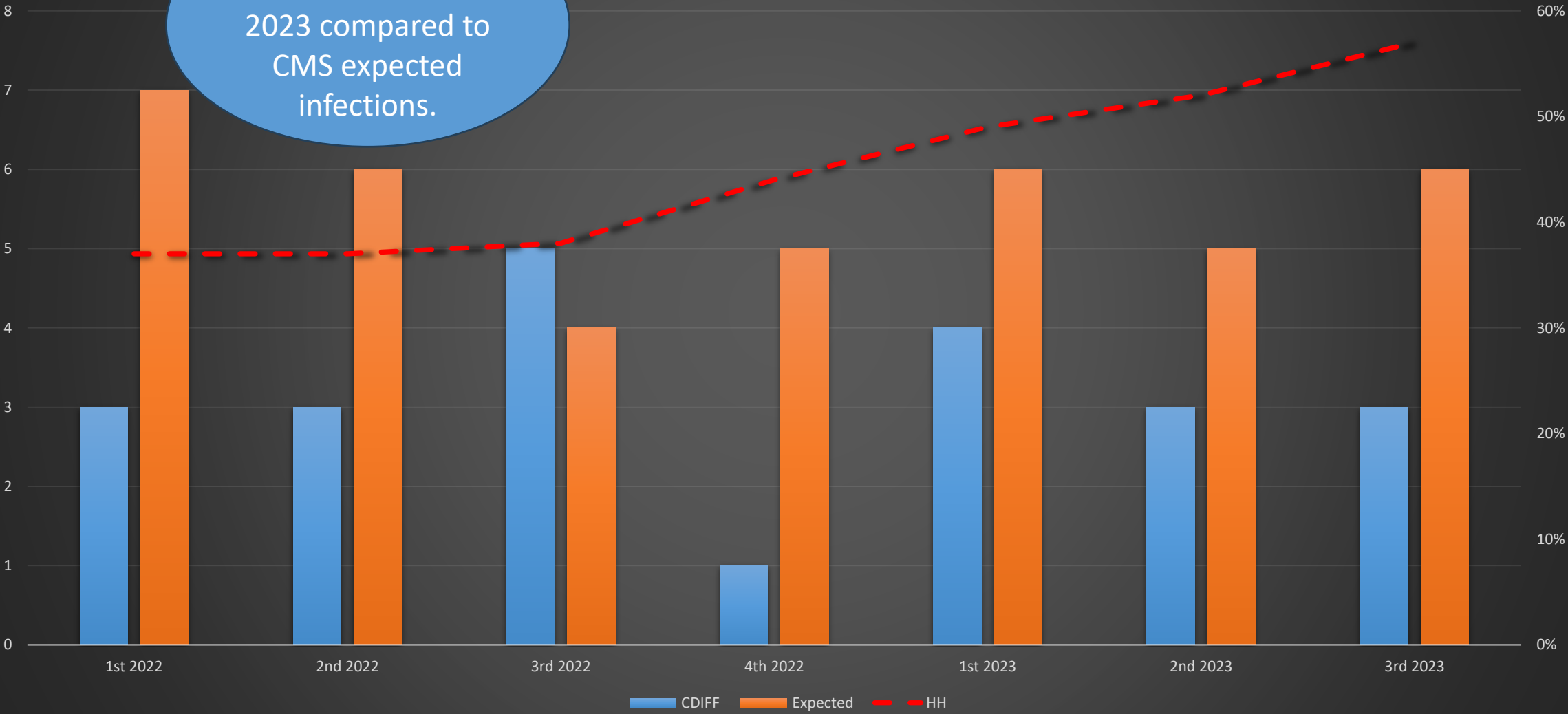


# Central Line Associated Bloodstream Infections



# Cdiff Infections

48% reduction in C-diff infections in 2023 compared to CMS expected infections.



## Positives

- Weekly push reports includes 7-day, 30-day, and 90-day HH %'s
- Daily dashboard checks
- Results include compliance and opportunities
- Unit based and associate results
- Accountability
- Review HH soap/water compliance in patient rooms housing *C diff* diagnosis
- Quick and timely response from the IO team
- Regular onsite visits

## Challenges

- Wearing device appropriately
- Addressing alcohol-based flyby's
- Associate buy in
- Process for requesting badges: New & termed associates



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**Observation**



Questions?

# Appendix

# Intelligent Observation Devices

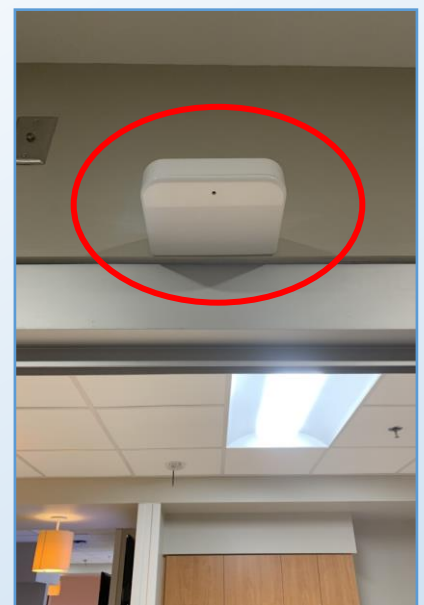
## IntelObserve Device Overview



**Alcohol Based Hand Rub (ABHR) Beacon**



**Soap Beacon**



**Door Beacon**



**CloudGate LoRa Hub**



**SmartBadge**

## Measure Background

Unclean hands are one of the primary ways pathogens are transmitted throughout the health care environment. Evidence shows that microorganisms can survive on hands for varying lengths of time, some surviving for multiple hours.<sup>1</sup> If those caring for patients do not take the proper steps to clean their hands, these pathogens can easily be transmitted from one patient to another patient. In addition to patient-to-patient transfer of pathogens, contaminated hands can also transfer bacteria to clean surfaces. It is estimated that up to 13% of contact between contaminated hands and clean surfaces can result in cross-contamination.<sup>1</sup> This risk of spreading bacteria in a health care environment makes hand hygiene a pivotal patient safety practice.<sup>2</sup>

Despite the clear evidence and guidelines for proper hand hygiene procedures, studies have shown that on average, health care providers clean their hands less than half of the times they should.<sup>3</sup>

## Why is Hand Hygiene Important?

While it is difficult to definitively measure the impact of improved hand hygiene on rates of healthcare-associated infections (HAI), evidence does support the notion that improved hand hygiene practices drastically reduce HAIs.<sup>4</sup> Multiple studies have demonstrated a temporal relationship between improved hand hygiene practices and reduced HAI rates.<sup>4</sup> For example, a study of hand hygiene compliance for hand washing and the use of alcohol-based hand sanitizer demonstrated that an increase from 48% to 66% compliance over a three-year period was correlated with a reduction in nosocomial infections from 16.9% to 9.9% and a reduction in methicillin-resistant *Staphylococcus aureus* (MRSA) transmission from 2.16 to 0.93 episodes per 10,000 patient-days.<sup>5</sup> Some have even demonstrated the elimination of MRSA from various care settings solely due to improved hand hygiene practices.<sup>6</sup>

## Hand Hygiene Standard

Leapfrog's hand hygiene standard focuses on adherence to "best practice" hand hygiene practices identified by a national [Hand Hygiene Expert Panel](#) and adapted from the World Health Organization's "[Hand Hygiene Self-Assessment Framework](#)."<sup>7</sup>

Leapfrog's hand hygiene standard includes five domains: monitoring, feedback, training and education, infrastructure, and culture. The standard encourages facilities to adopt a multimodal approach to hand hygiene, emphasizing the importance of monitoring and feedback.

Hospitals achieving the Hand Hygiene standard...

- Adhere to the [monitoring domain](#) by:
  - Collecting hand hygiene compliance data on at least **200** hand hygiene opportunities (or a minimum threshold number of hand hygiene opportunities based on unit throughput), **each month, in each patient care unit**;
  - Providing individuals who touch patients or who touch items that will be used by patients with feedback on their hand hygiene compliance; and,
  - Using an electronic compliance monitoring system and/or direct observation methods that meet Leapfrog's criteria for collecting hand hygiene compliance data
- Adhere to the [feedback domain](#) by:
  - Providing feedback on hand hygiene compliance data to individuals who touch patient or who touch items that will be used by patients for monthly improvement work;
  - Using hand hygiene compliance data for creating action plans; and,
  - Providing feedback on hand hygiene compliance data to hospital or ASC leadership and holding leadership accountable for hand hygiene performance through performance reviews or compensation
- Adhere to two of the other following domains:
  - Training and Education
  - Infrastructure
  - Culture

OR

- Adhere to the [monitoring domain](#) by:
  - Collecting hand hygiene compliance data on at least **100** hand hygiene opportunities (or a minimum threshold number of hand hygiene opportunities based on unit throughput), **each month, in each patient care unit**;
  - Providing individuals who touch patients or who touch items that will be used by patients



- with feedback on their hand hygiene compliance; and,
- Using an electronic compliance monitoring system and/or direct observation methods that meet Leapfrog’s criteria for collecting hand hygiene compliance data
- Adhere to **all** the following domains:
  - Feedback
  - Training and Education
  - Infrastructure
  - Culture

Download the complete Leapfrog Hospital Survey scoring algorithms document at [Hospital Scoring and Results webpage](#).

## Why Purchasers Need to Get Involved

While compliance with proper hand hygiene appears to be an evidence-based method for preventing HAIs, facilities have demonstrated varying levels of adherence to adequate hand hygiene practices.<sup>8,9</sup> The issue of hand hygiene offers purchasers an opportunity to reinforce to hospitals that patient safety is important. And that by demonstrating compliance with Leapfrog’s hand hygiene standard, it will send a clear signal that the facility prioritizes patient safety.

Given the importance of ensuring that those caring for patients are practicing hand hygiene and the limitations of human observers, it is critical that purchasers send the message that they expect hospitals to consider implementing electronic hand hygiene compliance monitoring systems. Facilities that have adopted electronic compliance monitoring systems are better able to determine their actual hand hygiene compliance rate, creating the opportunity for more robust quality improvement initiatives. The potential cost savings to an employer of reducing HAIs are tremendous, though pales in comparison to the potential for reduced harm to employees.

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9. Stahmeyer JT, Lutze B, Von Lengerke T, Chaberny IF, Krauth C. Hand hygiene in intensive care units: a matter of time?. *Journal of Hospital Infection*. 2017 Apr 1;95(4):338-43.

For a comprehensive list of references please review the Hand Hygiene Bibliography, available at: <https://ratings.leapfroggroup.org/measure/hospital/2023/handwashing>



# Hand Hygiene Compliance Monitoring: Empowering Hospitals to Protect Patients and Healthcare Workers

## Contact Sheet

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