

# Hand Hygiene – New Frontiers in Messaging and Measurement

Dr. Kate Ellingson, Centers for Disease Control, Atlanta  
Teleclass Sponsored by Diversey Inc ([www.diversey.com](http://www.diversey.com))

## Hand Hygiene: New Frontiers in Messaging and Measurement

**Kate Ellingson, PhD**  
CDC, Division of Healthcare Quality Promotion

Hosted by Paul Webber  
[paul@webbertraining.com](mailto:paul@webbertraining.com)

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## Objectives

- Address “hot button” hand hygiene issues on recommendations and messaging
- Describe hand hygiene adherence measurement methods
  - Direct observation: issues and advances
  - Latest technologies for automated monitoring
- Review hand hygiene campaign efforts and provide resources for participation

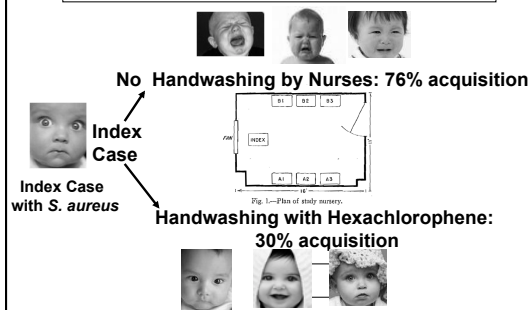
## Background

## Hand Hygiene is Historical Cornerstone of Infection Control

- 1847: Vienna General Hospital, Austria
- “Childbed fever” claimed up to 13% of mothers on medical ward compared to midwifery ward (2%)
- Medical students handled corpses before delivering
- Dr. Ignaz Semmelweis recommends hand washing before examining patients on maternity ward
- Mortality rates drop quickly and significantly



## NIH-Sponsored Prospective, Controlled Trial of Handwashing

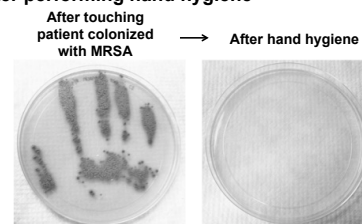


Mortimer EA et al. Am J Dis Child 1962;104:289  
Slide courtesy of John Boyce



## Hand Hygiene Reduces Microbial Burden on Hands

- In-vitro and in-vivo studies show significant log reductions in epidemiologically important pathogens after performing hand hygiene



Donskey CJ and Eckstein BC (2009) New England Journal of Medicine; 360(3)

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## Seminal Study: Impact of HH on MRSA University of Geneva Hospitals

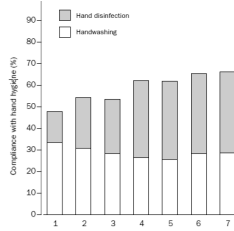


Figure 1: Hand hygiene compliance trend during seven consecutive hospital-wide surveys, University of Geneva Hospitals, 1994-97

Pittet et al. Ann Inter Med., 2000

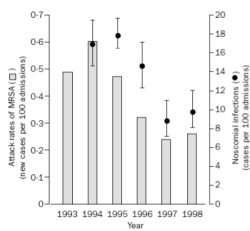


Figure 3: Trends in prevalence of nosocomial infections and annual attack rate of MRSA, 1993-98, University of Geneva Hospitals

## Subsequent Observational Studies

- Many observational studies support the association between HH and HAI reduction
  - >20 studies showed significant association between increased HH adherence and HAIs
  - Interventions used multimodal approach
  - In 2000s, increased availability of ABHR

Year	Hospital setting	Intervention	Impact on hand hygiene compliance	Impact on HAI	Duration of follow-up	Reference
2005	Hospital-wide	Alcohol-based hand rub introduction, hand hygiene observation, training, posters	Compliance increase from 62% to 81%	Significant reduction ( $P=0.01$ ) in hospital-associated respiratory infections	4 years	36
2005	Hospital-wide	Alcohol-based hand rub introduction, hand hygiene observation, training, posters, promotional jingles	Compliance increase from 21% to 42%	Significant reduction (57%, $P=0.01$ ) in MRSA bacteraemia	36 months	38
2007	Neurosurgery	Alcohol-based hand rub introduction, training, posters	NA	Reduction (54%, $P=0.09$ ) in overall incidence of SS; Significant reduction (92%, $P=0.007$ ) in superficial SS rates	2 years	39

B. Allegranzi, D. Pittet. J. Hospital Infection, 2009; 73: 305-315

## Relationship between HH and HAIs: More Complex than Often Conveyed

- Negative studies (e.g., Rupp 2008) highlight several important considerations
  - HH is one of many important IP strategies
  - Appropriate hand hygiene adherence thresholds poorly understood (i.e., optimal adherence rates)
  - Low rates of device-associated infections may make differences difficult to detect with HH intervention
- Hand hygiene is extremely important but need to temper unrealistic expectations about singular role of HH on HAI rates

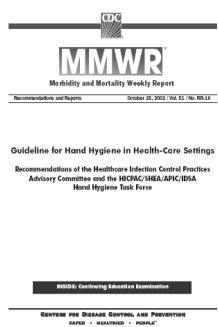
Rupp et al. Infect Control Hosp Epidemiol, 2008; 29: 8-15

## Hand Hygiene Adherence Rates Low Worldwide

- Review: 96 studies in industrialized nations show 40% overall adherence rate
  - Lower in ICUs
  - Lower among physicians versus nurses
  - Lower before versus after care
- Higher HH adherence associated with
  - "Dirty" tasks
  - Introduction of ABHR
  - Performance feedback
  - Accessibility of materials

V. Erasmus et al. Infection Control and Hospital Epidemiology, 2010

## Guidelines



- CDC Guidelines: 2002
- WHO Guidelines: 2009
- SHEA Compendium: 2013



## Quick Rundown of Hand Hygiene Agents

- Soap and Water: reliably removes dirt from hands; associated with skin irritation after repeated use
- Alcohol based hand rub (ABHR): active against gram- and gram+ bacteria, but not against spores
- Quaternary Ammonium Compounds (e.g., benzalkonium chlorides): weak activity against gram negative bacteria
- Triclosan: broad range of activity but relatively non-effective against gram- bacteria, persistent activity

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**Sampling of Hot Button Issues:  
 Frequently Asked Questions to CDC**

**Most Frequent Hand Hygiene  
 Inquiries to CDC in 2011-2012**

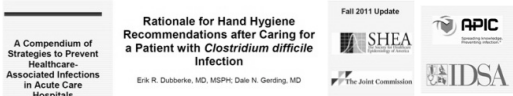
- ❑ Can you clarify CDC's position on soap and water versus alcohol-based handrub for patients *C. difficile* infection?
- ❑ What is CDC's position on increasingly popular gel nails for healthcare workers?
- ❑ Does CDC recommend hand hygiene before putting on non-sterile gloves?

**Role of Hand Hygiene  
 in *C. difficile* Prevention**

**Hand Hygiene in the Era of *C. diff.*  
 Soap & Water vs. ABHR**

- ❑ ABHR not efficacious against *C. difficile*
- ❑ 2009 WHO Hand Hygiene Guidelines:
  - Recommends S&W "if exposure to potential spore-forming organisms is strongly suspected or proven, including outbreaks of *C. difficile*"
  - For all other situations, ABHR recommended for routine hand hygiene in healthcare facilities
- ❑ SHEA/IDSA Clinical Practice Guidelines:
  - ❑ Preferential use of S&W for hand hygiene over alcohol-based hand hygiene products only in outbreak settings
- ❑ Why only in outbreaks?

**No Outcomes Data on Effectiveness of Any Kind of Hand Hygiene on *C. diff* infections**



- ❑ While data supports role of hand hygiene in reducing incidence of pathogens like MRSA and VRE, no data to support HH for CDI
- ❑ Glove use is only CDI prevention recommendation supported by outcomes studies
- ❑ Recommendation for preferential use of S&W is based on clinical opinion, not on outcomes

**Soap and Water Superior to ABHR  
 for Efficacy against *C. difficile***

Interventions compared		Mean log reduction (95% CI), log <sub>10</sub> CFU/mL
Intervention 1	Intervention 2	
Warm water and plain soap	No hand hygiene	2.14 (1.74–2.54)
Warm water and plain soap	Alcohol-based handrub	2.08 (1.69–2.47)
Cold water and plain soap	No hand hygiene	1.88 (1.48–2.28)
Cold water and plain soap	Alcohol-based handrub	1.83 (1.43–2.23)
Warm water and plain soap	Antiseptic hand wipe	1.57 (1.18–1.96)
Warm water and antibacterial soap	No hand hygiene	1.51 (1.12–1.91)
Warm water and antibacterial soap	Alcohol-based handrub	1.46 (1.06–1.85)
Cold water and plain soap	Antiseptic hand wipe	1.31 (0.92–1.71)
Warm water and antibacterial soap	Antiseptic hand wipe	0.94 (0.55–1.34)
Warm water and plain soap	Warm water and antibacterial soap	0.63 (0.23–1.02)
Antiseptic hand wipe	No hand hygiene	0.57 (0.17–0.96)
Antiseptic hand wipe	Alcohol-based handrub	0.51 (0.12–0.91)
Cold water and plain soap	Warm water and antibacterial soap	0.37 (–0.03 to 0.76)
Warm water and plain soap	Cold water and plain soap	0.26 (–0.14 to 0.66)
Alcohol-based handrub	No hand hygiene	0.06 (–0.34 to 0.45)

- ❑ *C. difficile* spores readily transferred through hand-to-hand contact subsequent to hand hygiene with ABHR
- Oughton et al. Infect Control Hosp Epidemiol, 2009  
 Jabbar et al. Infect Control Hosp Epidemiol, 2010

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#### Increases in ABHR Use not Associated with *C. diff* Increases

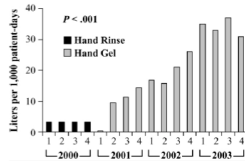


FIGURE 1. Use of alcohol hand rub by healthcare workers, in liters per 1,000 patient-days, per quarter, 2000-2003.

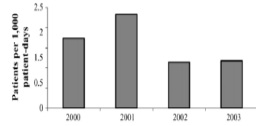


FIGURE 2. Number of patients with 1 or more tests positive for *Clostridium difficile* toxin per 1,000 patient-days, 2000-2003.

Boyce et al. Infect Control Hosp Epidemiol, 2006

#### CDC Position: CDI FAQs on Website

How can *Clostridium difficile* infection be prevented in hospitals and other healthcare settings?

- Use antibiotics judiciously
- Use **Contact Precautions** for patients with known or suspected *Clostridium difficile* infection:
  - Place these patients in private rooms. If private rooms are not available, these patients can be placed in rooms (cohorted) with other patients with *Clostridium difficile* infection.
  - Use **gloves** when entering patients' rooms and during patient care.
  - Perform **Hand Hygiene after removing gloves**.
- Because alcohol does not kill *Clostridium difficile* spores, use of soap and water is more efficacious than alcohol-based hand rubs. However, early experimental data suggest that, even using soap and water, the removal of *C. difficile* spores is more challenging than the removal or inactivation of other common pathogens.
- Preventing contamination of the hands via glove use remains the cornerstone for preventing *Clostridium difficile* transmission via the hands of healthcare workers; any theoretical benefits from instituting soap and water must be balanced against the potential for decreased compliance resulting from a more complex hand hygiene message.
- If your institution experiences an outbreak, consider using only soap and water for hand hygiene when caring for patients with *Clostridium difficile* infection.

□ CDC in line with SHEA/IDSA/APIC update  
[http://www.cdc.gov/HAI/organisms/cdiff/Cdiff\\_faqs\\_HCP.html#a10](http://www.cdc.gov/HAI/organisms/cdiff/Cdiff_faqs_HCP.html#a10)

#### Balancing ABHR and CDI Messaging

- Impact of increased ABHR use on other epidemiologically important organisms
  - Available more often at patient bedside
  - Requires less time w/no hand drying
  - Well tolerated on hands of healthcare personnel
  - Associated w/decreases in HAIs (e.g., MRSA)
- Uncertainties about role of HH in CDI prevention


Reexamining Methods and Messaging for Hand Hygiene in the Era of Increasing *Clostridium difficile* Colonization and Infection

Katherine Ellingson, PhD; Clifford McDonald, MD

Ellingson and McDonald. Infect Control Hosp Epidemiol, 2010

#### Recommendations Regarding Gel Nails/Manicures for Healthcare Workers

#### Gel Nails/Manicures in Healthcare

- Gel manicures ("Shellac"™) increasingly popular as a substitute to acrylic nails 
- Facilities vary in their policies on gel nails
- No recommendation on gel nails in 2002 CDC guidelines
- For artificial nails:
  6. Other Aspects of Hand Hygiene
    - A. Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (e.g., those in intensive-care units or operating rooms) (IA) (350-353).

#### Key Question: Are gel nails considered "artificial" or "polish"?

Current Guidelines About Wearing Artificial Nails and Nail Polish in the Healthcare Setting

Jane C. Rothrock, DNSc, MSN, BSN, CNOR, FAAN

- Association for periOperative Registered Nurses (AORN) describes artificial as: "extensions, tips, gels and acrylic overlay, resin wraps or acrylic fingernails"
- If considered a polish, AORN recommends no more than 4d wear-time before removal (gels require acetone for removal)
- Bottom line: there are no CDC recommendations specific to gel nails; deferring to the AORN guidelines would support banning them in high-risk settings (e.g., ICUs, ORs)

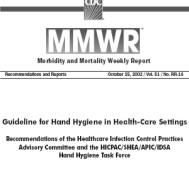
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**Hand Hygiene before Donning  
 Non-Sterile Gloves: CDC's Position**

**CDC Position on Hand Hygiene  
 Before Donning Non-Sterile Gloves**

- ❑ CDC HH guidelines do not include a recommendation for HH prior to non-sterile glove use
- ❑ Indications for hand hygiene include: before and after patient care, after removing gloves, before inserting invasive devices, etc.



Guideline for Hand Hygiene in Health-Care Settings  
 Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/AMA/APIC/IDSA  
 Hand Hygiene Task Force

**Recommendations**


1. Indications for handwashing and hand antisepsis

A. When hands are visibly dirty or contaminated with proteinaceous material or are visibly soiled with blood or other body fluids, wash hands with either a non-antimicrobial soap and water or an antimicrobial soap and water (1A) (660).

B. If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands in all other clinical situations described in items 1C-1 (1A) (74,93,166,169,283,294,312,398). Alternatively, wash hands with an antimicrobial soap and water in all clinical situations described in items 1C-1 (B) (69-77,79).

**CDC Position on Hand Hygiene  
 Before Donning Non-sterile Gloves**


- ❑ Concern that glove use is used as a substitute for HH
  - Recent publication: hand hygiene adherence is lower when gloves are worn (Fuller et al., ICHE. 2011; 32(12): 1194)
- ❑ Some facilities have created policies for HH before glove use; this is not a direct application of CDC guidelines
  - Solution: educate HCWs about appropriate indications for HH and glove use
- ❑ If following CDC recommendations, HCWs will perform HH prior to non-sterile glove use
  - There are exceptions (e.g., non-patient-related tasks)



**Hand Hygiene  
 Adherence Measurement**

**Measuring Hand Hygiene Adherence**

1. Direct Observation
2. Measuring Product Use
3. Surveys (self-report)
4. Automated Oversight Technology

 **MEASURING HAND HYGIENE ADHERENCE: OVERCOMING THE CHALLENGES**

[http://www.jointcommission.org/patientsafety/infectioncontrol/hh\\_monograph.htm](http://www.jointcommission.org/patientsafety/infectioncontrol/hh_monograph.htm)

**Little Standardization of Hand Hygiene Measurement in the US**

- ❑ Without standardization, cannot properly
  - Benchmark
  - Assess adherence nationally
  - Interpret and compare published studies
- ❑ Sources of variability
  - In-Out versus 5 Moments monitoring
  - Observer schedules and frequency of monitoring
  - Monitoring of indications versus technique
  - Use of emerging technologies

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### WHO Observation Tool: 5 Moments for Hand Hygiene

Observation Form

Facility: \_\_\_\_\_ Period Number: \_\_\_\_\_ Session Number: \_\_\_\_\_  
 Service: \_\_\_\_\_ Date: (mm/dd/yyyy) / / Observer: (initials)  
 Ward: \_\_\_\_\_ Start/End time: (hr:min) / (hr:min) Page N: \_\_\_\_\_  
 Department: \_\_\_\_\_ Session duration (min): \_\_\_\_\_  
 Country: \_\_\_\_\_

Prof. c.c. \_\_\_\_\_ Prof. c.c. \_\_\_\_\_  
 Code: \_\_\_\_\_ Code: \_\_\_\_\_  
 N°: \_\_\_\_\_ N°: \_\_\_\_\_

Opp.	Indication	HH Action	Opp.	Indication	HH Act
1	<input type="checkbox"/> before patient contact <input type="checkbox"/> before aseptic procedure <input type="checkbox"/> after patient contact <input type="checkbox"/> after aseptic procedure	HH <input type="checkbox"/> correct <input type="checkbox"/> missed <input type="checkbox"/> other	1	<input type="checkbox"/> before patient contact <input type="checkbox"/> before aseptic procedure <input type="checkbox"/> after patient contact <input type="checkbox"/> after aseptic procedure	HH <input type="checkbox"/> correct <input type="checkbox"/> missed <input type="checkbox"/> other
2	<input type="checkbox"/> before patient contact <input type="checkbox"/> before aseptic procedure <input type="checkbox"/> after patient contact <input type="checkbox"/> after aseptic procedure	HH <input type="checkbox"/> correct <input type="checkbox"/> missed <input type="checkbox"/> other	2	<input type="checkbox"/> before patient contact <input type="checkbox"/> before aseptic procedure <input type="checkbox"/> after patient contact <input type="checkbox"/> after aseptic procedure	HH <input type="checkbox"/> correct <input type="checkbox"/> missed <input type="checkbox"/> other
3	<input type="checkbox"/> before patient contact <input type="checkbox"/> before aseptic procedure <input type="checkbox"/> after patient contact <input type="checkbox"/> after aseptic procedure	HH <input type="checkbox"/> correct <input type="checkbox"/> missed <input type="checkbox"/> other	3	<input type="checkbox"/> before patient contact <input type="checkbox"/> before aseptic procedure <input type="checkbox"/> after patient contact <input type="checkbox"/> after aseptic procedure	HH <input type="checkbox"/> correct <input type="checkbox"/> missed <input type="checkbox"/> other

### WHO 5 Moments Observation Protocol Not Universally Used in US

- 5 Moments observation protocol is validated and used broadly worldwide
- In the US, alternative monitoring protocols often used, mainly focused on “in-out” HH
- Reasons cited for alternatives (anecdotal):
  - Primary concern is about patient-to-patient transmission
  - Measurement difficulties for hand hygiene indications occurring inside of patient rooms
  - Need for practical, broadly applicable protocols for external inspectors (e.g., survey and certification officials)
  - Expansion of automated technologies, which primarily identify in-out hand hygiene opportunities

### iScrub

An iPhone / iPod touch application for collecting hand-hygiene adherence data

University of Iowa  
compEpi  
computational epidemiology research

### The Old Way

- Grab a clipboard
- Pull up a chair
- Record opportunities
- Transcribe observations
- Generate reports
- Post a bar chart

University of Iowa  
compEpi  
computational epidemiology research

### Introducing the iScrub Way

- Replaces pen and paper
- Intuitive touch interface
- Minimizes data entry errors
- Easily customized
- No phone contract required with an iPod touch

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### Entering Observations

- Tap to select an opportunity
- Attach notes to observations, e.g., “patient coding”
- Slide to confirm observation

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## Isolation Precautions

iScrub knows required PPE

Tap required isolation precautions and indicate adherence



## Key Features

Record opportunities for the World Health Organization's 5 Moments of Hand Hygiene

Observations are time and location stamped



## Additional Features

The device name (e.g., "Pat's iPod") is included in exported data

Observations entered for training purposes can be cleared prior to exporting

Conduct observations discretely; pretend you're just listening to music



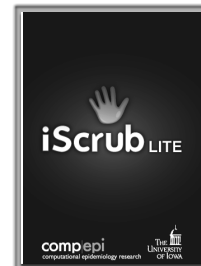
## iScrub Lite 1.5

Exports to Excel for analysis

Re-export last few data sets

Easily customized on the iPhone or iPod touch

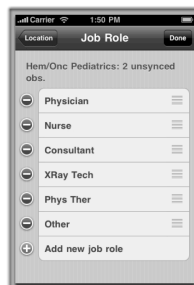
Free!



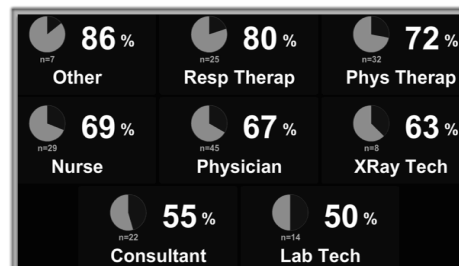
## iScrub Lite is Customizable

Easily edit the default lists for locations, job roles, and observation notes

Easily modify and delete existing items and add new ones



## Example of data feedback



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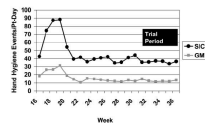
## Maximizing Efficiency and Quality of Hand Hygiene Auditing

- HH audits by direct observation are to be a reflection of overall performance
  - Rates can be affected by sporadic or inconsistent sampling
  - New technologies emerging, but direct observation is still the dominant method for assessing HH adherence
- Direct observation requires “sampling” of HH opportunities to observe
  - Maximize number of opportunities and number of individuals observed
  - Positioning of observers and observer scheduling matters (Fries et al., ICHE, In Press)



## Measuring Product Usage

- Volume measurement is a common, low-cost way to measure compliance
  - Provides a crude measure of adherence
  - No characterization of opportunities and
- Counting technologies
  - Hand hygiene events time- and date-stamped
  - Data downloaded wirelessly using data logger



Boyce JM et al. ICHE 2011

## Technological Innovation in Hand Hygiene Measurement

- Increase in hand hygiene “oversight” technology
- Generates a lot of data with real-time feedback
- Ongoing research to evaluate sustainability, cost-effectiveness, and optimal use of data

Alcohol “Sniffers”      RFID Monitoring      Hospital Video Auditing



## Early Study on Video Auditing

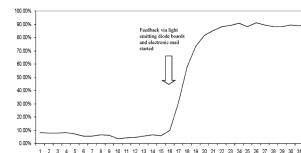


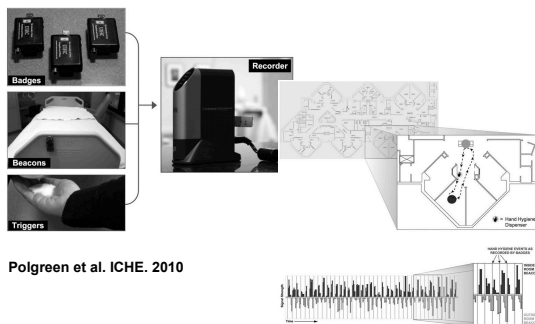
Figure 2. Hand hygiene compliance by week during impact period following feedback.



- Video Auditing w/Real-time Feedback
  - 10% pre-intervention adherence
  - 87.9% post-intervention adherence
- More research on broad dissemination, cost and feasibility needed

Armellino et al. CID. 2011

## Low-Cost Wireless Devices to Study Implementation Optimization: U. Iowa



Polgreen et al. ICHE. 2010

## Healthcare Personnel Perceptions of Automated HH Monitoring

- 89 HCP participated in 10 focus groups
  - 1 university hospital, 1 VA hospital, 1 community hospital
  - Focus groups homogenous by HCP type
- Level of familiarity and comfort varied
  - Leadership most familiar and comfortable with technology, front-line staff least
- Common concerns
  - Accuracy of technology
  - Intended use of data – for punitive purposes?
  - Participants recommended transparency about intended use of data

Ellingson et al. ICHE. 2011

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#### Review of HH Monitoring Technologies

TABLE 3. Advantages and Disadvantages of Wireless Systems Used for Real-Time Locating Systems

Technology	Advantages	Disadvantages
WiFi	Hospitals may have existing WiFi infrastructure, reducing initial costs; long communication range; can be used in conjunction with other technologies	Some systems may not provide bed-level location accuracy unless additional beacons are used; badges may be large and relatively expensive; may have higher power consumption
RFID	Better location accuracy than WiFi alone	Requires parallel wireless infrastructure; goes through walls, so location accuracy may not be ideal
ZigBee	Low power consumption; can be portable; less expensive than some other wireless systems	Accurate location may require multiple beacons in an area, or combination with other technology; some systems may credit two HCWs with hand hygiene event if HCWs are very close together
ANT	Very low power consumption; faster transmission speeds than ZigBee; low system cost; long battery life	Not designed for complex high-frequency events
Infrared (IR)	Does not penetrate walls, so location accuracy good to subroom level; IR room ID devices can be battery-operated, so wiring not needed	Requires IR detectors and other technology such as RFID for communication
Ultrasound	Does not penetrate walls, so high-level room and subroom accuracy; no electromagnetic interference with other equipment; does not require line of sight between tag and detector	Requires ultrasound sensor on RFID or other tag; requires integration with WiFi, RFID, or local area network to transmit signals to central server
IR/RFID combination	Provides good location accuracy	Required both IR and RFID infrastructure
Ultrawide band	Low power, resistant to interference; good location accuracy	Shorter range than narrowband frequency; variable standards

Boyce. *Infect Control and Hosp Epidemiol* 2011; 32(10): 1016-28

#### Review of HH Monitoring Technologies

TABLE 4. Variables to Consider When Evaluating Electronic Hand Hygiene Monitoring Systems

Variable	Comments/questions
Required infrastructure	Systems using fixed hardwiring: Will additional hardwiring or sensor placement be required? Wireless systems: Will sensors require electrical connection or use batteries? How will sensors communicate with existing hospital network? Will wireless protocol interfere with medical equipment or overload existing wireless network? Will placement of location sensors for hard-wired or wireless system require removal of ceiling tiles?
HCW badges (tags)	Consider size of badge, badge's ability to provide HCW and/or patients a reminder or signal (auditory, vibratory, or red/green light) indicating that hand hygiene was performed or not, battery life of badge, battery type (rechargeable or not), cost per badge, and badge management (between shifts). Does badge have other functionality, such as help button, LED message?
Dispenser and integrated or attached sensors	Do sensors detect presence of alcohol (alcohol-containing soap) on HCW hands or delivery of product to HCW hand or simply proximity of HCW to dispenser? What is battery life of dispenser and sensors?
Location sensitivity (granularity)	Can system accurately identify location of HCW within a few feet? Can system determine which bed HCW has approached in multibed room? Are additional location beacons required by WiFi-based system to achieve sufficient location accuracy?
Sensitivity to detect interactions between HCW and patient	How will system handle episodes when HCWs enter room briefly without contact with patient or environment? Will system accurately identify use of dispensers in patient rooms, in hallways, or other treatment areas?
Software report format	Type and amount of information technology services required? How will compliance be analyzed and displayed? Who will have access to data? Will HCWs wearing badges have access to their own compliance data? Will real-time compliance data be available on unit-based computer terminals?

Boyce. *Infect Control and Hosp Epidemiol* 2011; 32(10): 1016-28

## Hand Hygiene Resources and Campaigns

### CDC Hand Hygiene Website

#### Updated hand hygiene website Guidelines

- Training and education
- Implementation tools
- Measurement tools
- Patient empowerment

#### Example Resources:

- Videos
- Training modules
- State campaigns
- Hand hygiene promotional materials relevant to US settings



### Patient Empowerment Video

#### □ Patient admission video

- Plays on NBC patient channel
- Available at [www.cdc.gov/handhygiene](http://www.cdc.gov/handhygiene)



### WHO Website

<http://www.who.int/gpsc/5may/en/>

#### Global Campaign Enrollment Information



#### Tools and resources




A Webber Training Teleclass  
 Hosted by Paul Webber [paul@webbertraining.com](mailto:paul@webbertraining.com)  
[www.webbertraining.com](http://www.webbertraining.com)

**Hand Hygiene – New Frontiers in Messaging and Measurement**  
**Dr. Kate Ellingson, Centers for Disease Control, Atlanta**  
**Teleclass Sponsored by Diversey Inc (www.diversey.com)**


### WHO Tools: Examples

**PART A: GUIDE TO LOCAL PRODUCTION**  
Part A is intended to guide a local producer in the actual preparation of the formulation.

REAGENTS FOR FORMULATION 1:	REAGENTS FOR FORMULATION 2:
• Ethanol 96%	• Isopropyl alcohol 99.9%
• Hydrogen peroxide 3%	• Hydrogen peroxide 3%
• Glycerol 96%	• Glycerol 96%
• Distile distilled or boiled cold water	• Distile distilled or boiled cold water



#### How to handrub?



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**Sustaining Improvement – Additional Activities for Consideration by Health-Care Facilities**


If your health-care facility already has a well-established hand hygiene improvement strategy, it is critical to maintain the momentum and sustain the improvements.

Such health-care facilities are likely to already have long-term strategic visions and action plans related to ensuring hand hygiene improvement remains a patient safety priority. Long-term planning will contribute to ongoing awareness raising, aimed at ensuring handrubbing and help with performance improvement.

Your health-care facilities will already have addressed the 5 components of the WHO Multimodal Hand Hygiene Improvement Strategy and thus have established the necessary infrastructure. Offer a comprehensive training programme for health-care workers, have plans for regular monitoring and evaluation of hand hygiene and health-care associated infection (HCAI) have clear messages in the workplace, and have strong and demonstrable leadership and

### Summary

- Hand hygiene is important in preventing the transmission of pathogens in healthcare settings
  - In aggregate adherence is low worldwide
- Hand hygiene is one element of robust IP programs needed in complex care environment
- Thoughtful messaging needed for HH and *C. difficile*
  - Emphasis on glove use for prevention of transmission
  - HH after glove use – S&W during outbreaks
  - ABHR preferred in non-CDI outbreak settings
- New technologies emerging for HH monitoring – follow early impact and feasibility studies
- CDC and WHO tools/resources available; opportunities for participation in global campaign



**We welcome your feedback and comments!**

**Kate Ellingson: fev@cdc.gov**

**For more information please contact Centers for Disease Control and Prevention**  
 1600 Clifton Road NE, Atlanta, GA 30333  
 Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348  
 E-mail: cdcinfo@cdc.gov    Web: www.cdc.gov

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

**National Center for Emerging and Zoonotic Infectious Diseases**  
 Division of Healthcare Quality Promotion

## Coming Soon

- 29 March **Water Bug Management for Infection Prevention**  
 Speaker: Andrew Streifel, University of Minnesota
- 5 April **Standardized Training for Environmental Cleaning in Healthcare**  
 Speaker: Grace Volkening, Brenda Smith, Nora Boyd, Public Health Ontario  
 Sponsor: Virox Technologies Inc
- 12 April **(FREE A.D. Russell Memorial Teleclass) Innate Resistance to Sporocides and Potential Failure to Decontaminate**  
 Speaker: Prof. Jean-Yves Maillard, Cardiff University, Wales
- 17 April **(FREE WHO Teleclass – North America) Implementing Change: The Technical & Socio-Adaptive Aspects of Preventing Catheter-Associated Urinary Tract Infection**  
 Speaker: Prof. Sanjay Saint, University of Michigan  
 Sponsor: World Health Organization First Global Patient Safety Challenge

**www.webbertraining.com/schedule1.php**