

# Exploring Hand Hygiene Guidelines

Dr. John Boyce

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Slide 1

HICPAC/SHEA/APIC/IDSA Guideline for Hand Hygiene  
in Healthcare Settings:  
Rationale, Recommendations, and Implementation

**John M. Boyce, MD**  
Section of Infectious Diseases, Hospital of Saint Raphael  
Clinical Professor of Medicine, Yale University School of Medicine

Hosted by  
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Slide 2

Importance of Hand Contamination  
in Transmission of Healthcare-Associated Pathogens

- Semmelweis and Oliver Wendel Holmes documented the important role of contaminated hands in disease transmission more than 150 years ago
- More recent studies have confirmed that healthcare-associated pathogens are often transmitted via the hands of healthcare workers
- As a result, handwashing has been considered one of the most important measures for preventing the spread of pathogens in hospitals

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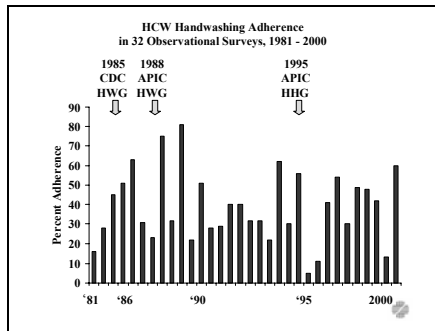
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Slide 3



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**Factors Influencing Handwashing Adherence**

- Prospective study involving > 2800 observations
- Data analyzed by multivariate analysis
- Factors associated with poor compliance:
  - ◆ When intensity of care was high (high work loads)  
Not enough time to wash hands frequently
  - ◆ Job category:
    - Nurses (52%)
    - Doctors (30%)
    - Other HCVs (38% - 47%)
  - ◆ Weekdays
  - ◆ Intensive care units
  - ◆ During procedures with high risk of contamination

Pittet D et al. Ann Intern Med 1999;130:126

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Slide 5

**Time Required for Handwashing vs Hand Disinfection**

- Time required for soap & water handwashing:
  - 62 seconds to get to sink, wash, dry and return
  - 10-second scrub - ICU with 12 nurses
  - 40% compliance: 2 to 6.4 hrs/shift
  - 100% compliance: 16 hrs/shift
- Time required for alcoholic hand disinfection:
  - 15-second contact time - bedside dispenser
  - 40% compliance: 1 to 1.6 hrs/shift
  - 100% compliance: 4 hrs/shift

Voss A & Widmer AF Infect Control Hosp Epidemiol 1997;18:205-8

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Slide 6

**OTHER FACTORS ADVERSELY AFFECTING HANDWASHING COMPLIANCE**



Poor access to sinks and handwashing facilities

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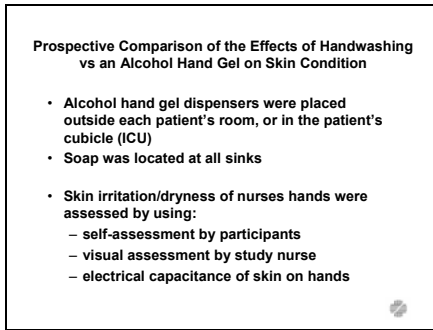
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Slide 8



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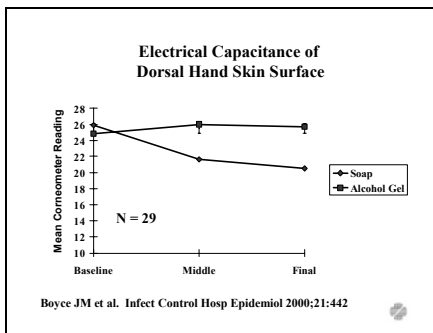
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Slide 9



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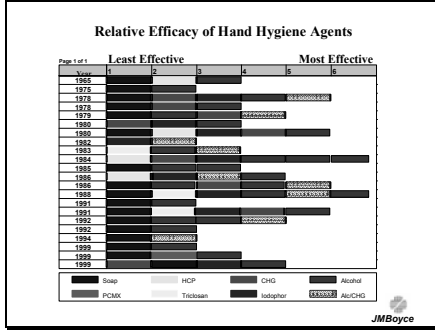
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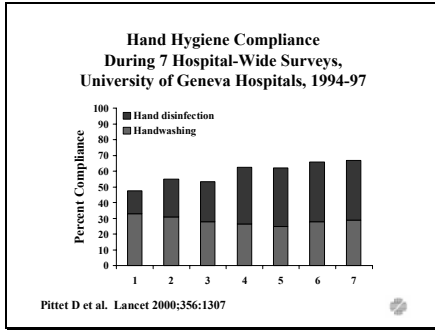
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Slide 11




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Slide 12

**Advantages of alcohol-based hand rubs**

When compared to traditional soap and water handwashing, alcohol-based hand rubs have the following advantages:

- take less time to use
- can be made more accessible than sinks
- cause less skin irritation and dryness
- are more effective in reducing bacteria on hands
- making alcohol-based hand rubs readily available to personnel has led to improved hand hygiene practices

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**A New Hand Hygiene Guideline**

- In 1999, HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force was formed
- A review of 800 references dealing with hand hygiene in healthcare settings was conducted by the two co-authors of the guideline
- November 2001, draft of an evidence-based guideline published for public comment
- Guideline was revised based on public comments and input from FDA, CDC, and Task Force members

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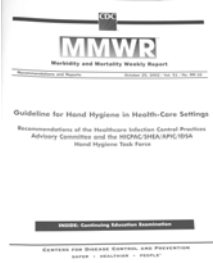
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Slide 14

- Guideline was published in MMWR in October 2002
- Director of CDC held a press conference to announce publication of the guideline
- Guideline was made available for downloading from several websites:  
CDC  
Hospital of Saint Raphael  
SHEA, APIC, and IDSA



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Slide 15

**HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline**

- Wash hands with a non-antimicrobial soap and water or with an antimicrobial soap and water:
  - When hands are visibly dirty or contaminated with proteinaceous material, or are visibly soiled with blood or other body fluids (IA)
  - Before eating (IB)
  - After using a restroom (IB)
  - If exposure to *Bacillus anthracis* is suspected or proven (II)

Boyce JM, Pittet D et al. MMWR 2002;51(RR-16):1-45

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HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands
  - Before having direct contact with patients (IB)
  - Before donning sterile gloves when inserting a central intravascular catheter (IB)
  - Before inserting indwelling urinary catheters, peripheral vascular catheters, or other invasive devices that do not require a surgical procedure (IB)

MMWR 2002;51(RR-16):1-45

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Slide 17

HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands
  - After contact with a patient's intact skin (IB)
  - After contact with body fluids or excretions, mucous membranes, non-intact skin and wound dressings (IA)
  - If moving from a contaminated body site to a clean body site during patient care (II)

MMWR 2002;51(RR-16):1-45

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Slide 18

HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- If hands are not visibly soiled, use an alcohol-based hand rub for routinely decontaminating hands
  - After contact with inanimate objects (including medical equipment) in the immediate vicinity of the patient (II)
  - After removing gloves (IB)
- Antimicrobial-impregnated wipes (towelettes) may be considered an alternative to washing hands with non-antimicrobial soap and water. They are not a substitute for using an alcohol-based hand rub or antimicrobial soap/water (IB)

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HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- When using an alcohol-based hand rub, apply product to palm of one hand and rub hands together, covering all surfaces of hands and fingers, until hands are dry (IB)
- When washing hands with soap and water, first apply water, then amount of soap recommended by the manufacturer, and rub hands together vigorously for at least 15 seconds, covering all surfaces of hands and fingers. Rinse hands and use towel to turn off the faucet (IB)
- Avoid using hot water, because repeated use of hot water may increase the risk of dermatitis (IB)



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Slide 20

HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- Do not wear artificial fingernails or extenders when having direct contact with patients at high risk (e.g., those in ICUs or in operating rooms) (IA)
- Keep natural nail tips less than 1/4 inch long (II)
- Wear gloves when contact with blood or other potentially infectious materials, mucous membranes and non-intact skin could occur (IC)
- Remove gloves after caring for a patient (IB)



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Slide 21

HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- Surgical hand antisepsis
  - using either an antimicrobial soap or an alcohol-based hand rub with persistent activity
  - is recommended before donning sterile gloves when performing surgical procedures (IB)
  - Follow the manufacturer's recommendations for use.



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**Surgical Hand Antisepsis**

- Some surgeons may question the effect of using an alcohol hand rub for surgical hand antisepsis on surgical site infection (SSI) rates
- A prospective randomized trial found that SSI rates were the same in patients whose surgeons performed surgical hand antisepsis with either traditional antimicrobial scrub or an alcohol-based hand rub
- In the United States, the FDA requires products intended for surgical hand antisepsis maintain bacterial counts on hands below baseline levels for 6 hrs after application

Parienti JJ et al. JAMA 2002;288:722

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Slide 23

**HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline**

- Provide personnel with efficacious hand hygiene products that have low irritancy potential, particularly when these products are used multiple times per shift (IB)
- To maximize acceptance of hand hygiene products, solicit input from employees regarding the feel, fragrance, and skin tolerance of products under consideration (IB)

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Slide 24

**Selecting an Alcohol-Based Hand Rub**

- Factors to consider when selecting a product:
  - Consistency (rinse, gel, or foam)
  - smell (fragrance)
    - a strong or disagreeable smell can discourage use
  - drying time
    - (too long may discourage use or promote inappropriate technique)
  - tendency to cause skin irritation with repeated use
  - tendency to cause sticky sensation during/after application
  - color
- In United States, gels are most popular, while in Europe, most facilities use rinses

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HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- Do not add soap to a partially empty soap dispenser. This practice of “topping off” can lead to bacterial contamination of soap (IA)
- Provide HCWs with hand lotions or creams to minimize the occurrence of irritant contact dermatitis associated with handwashing or hand antiseptics (IA)
- Before making purchasing decisions, evaluate the dispenser systems of products to ensure that dispensers function adequately (II)

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Slide 26

Importance of Selecting a Product with Reliable Dispensers

- After a brief trial using table-top pump bottles, wall-mounted dispensers for a viscous alcohol-based hand rinse was installed in our facility
- Within several months , many wall-mounted dispensers became partially or totally plugged
- An audit revealed that 50% of dispensers did not function appropriately
- Dispensers squirted product between fingers, or entirely missed HCW’s hand, or onto the wall
- Poor dispenser function contributed to lack of use of alcohol hand rinse by HCWs

Kohan C et al. Am J Infect Control 2002;30:373

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Slide 27

HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- As part of an overall program to improve hand hygiene among HCWs, educate personnel about
  - types of patient-care activities that can result in hand contamination
  - advantages and disadvantages of various methods used to clean their hands (II)
- Monitor HCW adherence to recommended hand hygiene practices, and provide personnel with feedback regarding their performance (IA)
- Encourage patients/families to remind HCWs to decontaminate their hands (II)

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HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- Make improved hand hygiene adherence an institutional priority, and provide appropriate administrative support and financial resources (IB)
- Implement a multidisciplinary program to improve hand hygiene adherence (IB)
- Provide HCWs with a readily accessible alcohol-based hand rub product (IA)



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Slide 29

HICPAC/SHEA/APIC/IDSA Hand Hygiene Guideline

- Make alcohol-based hand rub available (IA)
  - at the entrance to the patient's room, or
  - at the patient's bedside
  - in other convenient locations
  - and in individual pocket-sized containers

MMWR 2002;51(RR-16):1-45



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Slide 30

Placement of Alcohol-Based Hand Rub Dispensers

- Shortly after publication of the Guideline, some facilities reported that local fire marshals considered placing dispensers in hallways outside patient rooms a potential fire hazard
- Fire codes are not the same in all localities, and interpretation and enforcement of codes may vary from one area to the next



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Slide 31

**SHEA/APIC/EIN Survey of Fire Hazard Associated with Use of Alcohol-Based Hand Rub Dispensers**

- **Goal**
  - to obtain data on the incidence of fires attributed to (or involving) alcohol-based hand rub dispensers in healthcare facilities in the USA
- **Methods**
  - a brief questionnaire was designed
  - Society for Healthcare Epidemiology of America (SHEA) personnel posted questionnaire on a Internet web site from March 25 - 31, 2003
  - broadcast emails announcing the survey were sent to members of
    - SHEA, APIC, and
    - Emerging Infections Network members of IDSA

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Slide 32

**SHEA/APIC/EIN On-line Survey of Potential Fire Hazards of Alcohol-Based Hand Rub Dispensers, March 25 - 31, 2003**

Response	Number (%)
Using alcohol hand rub	
Yes	798/840 (95%)
No	42/840 ( 5%)
Dispensers location	
In patient rooms	565/705 (80%)
In hallways outside pt rooms	414/676 (61%)
In treatment rooms	642/718 (89%)

Based on 840 Responding Healthcare Facilities in USA

Boyce JM & Pearson ML. Infect Control Hosp Epidemiol 2003;24:618

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Slide 33

**SHEA/APIC/EIN On-line Survey of Potential Fire Hazards of Alcohol-Based Hand Rub Dispensers, March 25 - 31, 2003**

Experience	Number (%)
• Asked by local fire marshal to remove alcohol hand rub dispensers from hallways	42/369 (11.4%)
• Instructed by fire marshal to change location or size of dispensers	60/777 (7.7%)
• Instructed by fire marshal to change storage conditions of large stocks of alcohol hand rub	78/781 (10%)

Based on 840 Responding Healthcare Facilities in USA

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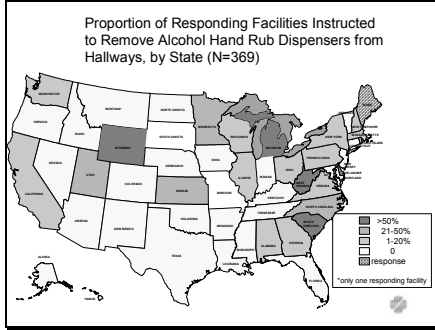
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Slide 35

**SHEA/APIC/EIN Survey of Fire Hazard Associated with Use of Alcohol-Based Hand Rub Dispensers**

- **None** of the 798 responding facilities using hand rubs reported a fire involving a hand rub dispenser
- 766/798 facilities using alcohol-based hand rubs reported when they started using alcohol routinely
- Facilities that listed the year alcohol use was started, but did not give the month, were credited with starting use in July of the respective year; duration of use was calculated
- The 766 facilities accrued an estimated combined total of **1,430 years** of use of alcohol-based hand rub without a fire attributable to alcohol-based hand rub dispenser

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Slide 36

**Placement of Alcohol-Based Hand Rub Dispensers**

- CDC/AHA meeting was held July 22, 2003 to address issue of potential fire hazard
- Meeting attended by representatives from SHEA, APIC, JCAHO & several fire safety organizations
- Fire modeling study presented by a fire safety consulting firm
- AHA and CDC issued advisory notices on this issue recently
  - advised against placing dispensers in hallways

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**Placement of Alcohol-Based Hand Rub Dispensers-  
The Unofficial View**

- Avoid placing new dispensers in egress hallways until fire code revisions have been adopted
- If alcohol-based hand rub dispensers are:
  - in hallways, and no intervention by fire marshals, leave dispensers where they are!
  - in hallways, and fire marshals demand removal,
    - request delay in moving dispensers
    - if no delay granted, remove dispensers from hallways
  - in other locations, should not create problems with fire marshals

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Slide 38

**Hand Hygiene Initiative,  
Hospital of Saint Raphael**

- Oct 2000 Multidisciplinary HH committee formed
- Nov-Dec 2000 HH slogan campaign
- Jan-Feb 2001 Baseline HH survey done
- Feb 2001 New alcohol-based hand gel installed hospital-wide



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Slide 39

**Hand Hygiene Initiative,  
Hospital of Saint Raphael**

- Periodic hand hygiene educational sessions, which included feedback of HH observational survey results, given in clinical depts and on nursing units
- Repeat HH observational surveys in Dec 2001 and Dec 2002
- Promoting improved Hand Hygiene adopted as a hospital-wide quality improvement initiative by hospital administration & QI committee

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Hand Hygiene Initiative,  
Hospital of Saint Raphael

- Computer-based interactive hand hygiene training modules developed
- Accessible on all hospital computers "24/7"
- Synquest system provides test and immediate feedback to employee taking the test



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Slide 41

Hand Hygiene Initiative,  
Hospital of Saint Raphael

- Cartoons obtained by special arrangement from Dr. D. Pittet in Geneva
- Nurses on each unit asked to develop a caption for a cartoon
- Cartoons are posted throughout hospital and changed q 2-3 weeks



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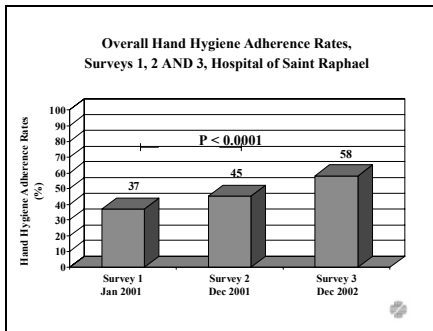
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Slide 42



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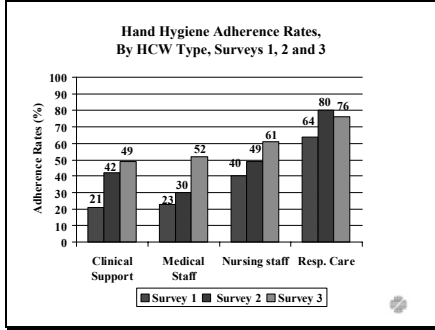
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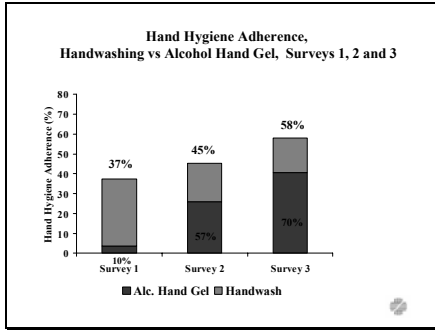
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Slide 44




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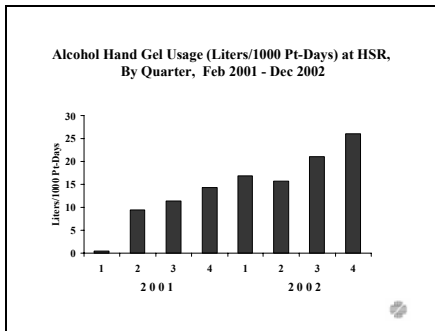
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Slide 45




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The image shows a spreadsheet titled "Hand Hygiene Monitoring Tool". It contains a header section with fields for Patient Case, Staff Dept, Day of Week, Date, and Staff ID. Below this is a table with columns for days of the week (S, M, Tu, W, Th, F, Sa, Su) and rows for various hand hygiene activities such as "Hand Hygiene at Patient Care", "Hand Hygiene at Bedside", "Hand Hygiene at Point of Care", etc. The table is mostly empty, indicating it is a template for data entry.

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Slide 47

### Hand Hygiene Monitoring Tool

- Variables entered into PenDragon database
- Downloaded to Palm devices of Infection Control Practitioners
- Used for entering data during HH observational surveys
- Expedites data collection and analysis

The image shows a Palm P505 handheld device, which is a PDA used for data collection. It has a screen displaying a list of items and several buttons at the bottom.

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### Web Resources

- [www.cdc.gov/handhygiene/](http://www.cdc.gov/handhygiene/)
  - Official CDC hand hygiene website
- [www.handhygiene.org](http://www.handhygiene.org)
  - Hand Hygiene Resource Center at Hospital of Saint Raphael
- [www.hopisafe.ch](http://www.hopisafe.ch)
  - University of Geneva Hospitals
- [www.med.upenn.edu/mcguckin/handwashing/](http://www.med.upenn.edu/mcguckin/handwashing/)
  - University of Pennsylvania

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