World Health Organization (WHO)
Five Moments Hand Hygiene
Objectives

• Explain the role of hand hygiene as the most important intervention in the prevention of Healthcare-Associated Infections (HAI)
• Describe the impact HAIs have on the patient’s length of stay (LOS), the financial burden and the personal costs to patients and families
• Explain the main route of transmission of potentially infectious organisms between patients in the hospital
• Explain when soap and water must be used to wash hands instead of an alcohol-based sanitizer
• Describe the purpose of performing hand hygiene
Background

• “Hand hygiene is the most important intervention for preventing HAIs.” – TJC, 2016

• “HAIs are among the most common preventable medical complications.” – Healthy People 2020, 2016

• “Hand hygiene is widely accepted as a foundational component of infection prevention and control programs.” – SHEA/IDSA, 2014
HAI’s Impact and Burden

• Impact of HAIs
  - Length of stay (LOS)
  - Morbidity and mortality
  - Financial burden
  - Personal costs to patient/family

• HAI Burden in the United States (2007)
  - 36% mortality = 99,000 deaths
  - Incidence: 5-6%, 1.7 million people affected
  - Estimated annual cost = $4.5 billion
Major Sites of Healthcare Associated Infections in Hospitalized Patients

<table>
<thead>
<tr>
<th>Major Site of Infection</th>
<th>Estimated No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td>157,500</td>
</tr>
<tr>
<td>Gastrointestinal Illness</td>
<td>123,100</td>
</tr>
<tr>
<td>Urinary Tract Infections</td>
<td>93,300</td>
</tr>
<tr>
<td>Primary Bloodstream Infections</td>
<td>71,900</td>
</tr>
<tr>
<td>Surgical site infections from any inpatient surgery</td>
<td>157,500</td>
</tr>
<tr>
<td>Other types of infections</td>
<td>118,500</td>
</tr>
<tr>
<td><strong>Estimated total number of infections in hospitals</strong></td>
<td><strong>721,800</strong></td>
</tr>
</tbody>
</table>

To read the full report, please visit: CDC HAI Prevalence Survey
Patterns of Transmission

- Contact (direct and indirect)
- Droplet
- Airborne
- Common Vehicle (i.e. contaminated food, contaminated water, hands)
Purpose of the Hand Hygiene

- Promote a culture of safety
- Reduce HAIs such as
  - Catheter-associated urinary tract infections (CAUTI)
  - Central line-associated blood stream infections (CLABSI)
- Reduce transmission/acquisition of Multi Drug Resistant Organisms (MDRO)
  - MRSA bacteremia
  - C. difficile colitis
- Reduce risk of outbreaks
Keys to Success/Challenges

• System change

• Dedicated adherence improvement program
  – Optimize product use
  – Monitor and report back
  – Promote behavior change

• Administrative leadership buy-in and support

• Multidisciplinary team
## Compliance with Hand Hygiene Worldwide

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Sector</th>
<th>Compliance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preston</td>
<td>1981</td>
<td>General Wards</td>
<td>16%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ICU</td>
<td>30%</td>
</tr>
<tr>
<td>Albert</td>
<td>1981</td>
<td>ICU</td>
<td>41%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ICU</td>
<td>28%</td>
</tr>
<tr>
<td>Larson</td>
<td>1983</td>
<td>Hospital-wide</td>
<td>45%</td>
</tr>
<tr>
<td>Donowitz</td>
<td>1987</td>
<td>Neonatal ICU</td>
<td>30%</td>
</tr>
<tr>
<td>Graham</td>
<td>1990</td>
<td>ICU</td>
<td>32%</td>
</tr>
<tr>
<td>Dubbert</td>
<td>1990</td>
<td>ICU</td>
<td>81%</td>
</tr>
<tr>
<td>Pettinger</td>
<td>1991</td>
<td>Surgical ICU</td>
<td>51%</td>
</tr>
<tr>
<td>Larson</td>
<td>1992</td>
<td>Neonatal Unit</td>
<td>29%</td>
</tr>
<tr>
<td>Doebbeling</td>
<td>1992</td>
<td>ICU</td>
<td>40%</td>
</tr>
<tr>
<td>Zimakoff</td>
<td>1993</td>
<td>ICU</td>
<td>40%</td>
</tr>
<tr>
<td>Meengs</td>
<td>1994</td>
<td>Emergency Room</td>
<td>32%</td>
</tr>
<tr>
<td>Pittet</td>
<td>1999</td>
<td>Hospital-wide</td>
<td>48%</td>
</tr>
</tbody>
</table>

<40%<br>

Pittet and Boyce. *Lancet Infectious Diseases* 2001
# Hand Hygiene Compliance

## Risk factors for poor compliance
- Morning and weekday shift
- High risk of contamination
- Being a physician
- Working in critical care

## Main reasons for non-compliance reported by health-care workers
- Too busy
- Skin irritation
- Glove use
- Don’t think about it

Time Constraint = Major Obstacle For Hand Hygiene

- Adequate hand hygiene with water and soap requires 40-60 seconds
- Average time usually adopted by health-care workers: <10 seconds
Time Constraint = Major Obstacle For Hand Hygiene

- Hand hygiene: 40-60 seconds
- Alcohol-based hand rubbing: 20-30 seconds
Why should you clean your hands?

• Any health-care worker, caregiver or person involved in patient care needs to be concerned about hand hygiene.
• Therefore hand hygiene does concern you!
• You must perform hand hygiene to:
  – Protect the patient against harmful germs carried on your hands or present on his/her own skin
  – Protect yourself and the health-care environment from harmful germs
The Golden Rules for Hand Hygiene

Hand hygiene must be performed exactly where you are delivering health care to patients (at the point-of-care).

During health care delivery, there are 5 moments (indications) when it is essential that you perform hand hygiene ("My 5 Moments for Hand Hygiene" approach).

To clean your hands, you should prefer hand rubbing with an alcohol-based formulation, if available. Why? Because it makes hand hygiene possible right at the point-of-care, it is faster, more effective, and better tolerated.

You should wash your hands with soap and water when visibly soiled and after contact with a patient/patient environment with C. difficile.

You must perform hand hygiene using the appropriate technique and time duration.
The Geographical Conceptualization of the Transmission Risk

Critical site with infectious risk for the patient

Critical site with body fluid exposure risk
Definitions of Patient Zone

• Focusing on a single patient, the health-care setting is divided into two virtual geographical areas, the patient zone and the health-care area.

• **Patient zone**: includes the patient and some surfaces and items that are temporarily and exclusively dedicated to him or her such as:
  – all inanimate surfaces that are touched by or in direct physical contact with the patient
    • bed rails, bedside table, bed linen, chairs, infusion tubing, monitors, knobs and buttons, and other medical equipment
Definitions Health-Care Area

• Health-care area:
  – It contains all surfaces in the health-care setting outside the patient zone of patient X
  – It includes other patients and their patient zones and the wider health-care facility environment
  – The health-care area is characterized by the presence of various and numerous microbial species, including multi-resistant germs
Another way of visualizing the patient zone and the contacts occurring within it.
OPTIMAL HAND HYGIENE SHOULD BE PERFORMED AT THE POINT-OF-CARE
Definition of Point-of-Care (1)

- Point-of-care – refers to the place where three elements occur together: the patient, the health-care worker, and care or treatment involving patient contact (within the patient zone)
  - The concept embraces the need to perform hand hygiene at recommended moments exactly where care delivery takes place
  - This requires that a hand hygiene product (e.g. alcohol-based hand rub, if available) be easily accessible and as close as possible (e.g. within arm’s reach), where patient care or treatment is taking place. Point-of-care products should be accessible without having to leave the patient zone
Definition of Point-of-Care (2)

- This enables health-care workers to quickly and easily fulfil the 5 indications (moments) for hand hygiene (explained below)
- Availability of alcohol-based hand-rubs in point-of-care is usually achieved through health-care worker-carried hand-rubs (pocket bottles), wall-mounted dispensers, containers fixed to the patient’s bed or bedside table or hand-rubs affixed to the patient’s bed or bedside table or to dressing or medicine trolleys that are taken into the point-of-care
The 5 Moments apply to any setting where health care involving direct contact with patients takes place.
Can you identify some examples of this indication during your everyday practice of health care?

Situations illustrating direct contact:
- shaking hands, stroking a child’s forehead
- helping a patient to move around, get washed
- applying oxygen mask, giving physiotherapy
- taking pulse, blood pressure, chest auscultation, abdominal palpation, recording ECG

Clean your hands before touching a patient when approaching him/her!
To protect the patient against harmful germs carried on your hands!
Can you identify some examples of this indication during your everyday practice of health care?

Situations illustrating clean/aseptic procedures:
- brushing the patient's teeth, instilling eye drops
- skin lesion care, wound dressing, subcutaneous injection
- catheter insertion, opening a vascular access system or a draining system, secretion aspiration
- preparation of food, medication, pharmaceutical products, sterile material.

Clean your hands immediately before accessing a critical site with infectious risk for the patient!

To protect the patient against harmful germs, including the patient’s own, entering his/her body!
Can you identify some examples of this indication during your everyday practice of health care?

Clean your hands as soon as a task involving exposure risk to body fluids has ended (and after glove removal)!

To protect yourself and the health-care environment from harmful germs!

Situations illustrating body fluid exposure risk:

- brushing the patient's teeth, instilling eye drops, secretion aspiration
- skin lesion care, wound dressing, subcutaneous injection
- drawing and manipulating any fluid sample, opening a draining system, endotracheal tube insertion and removal
- clearing up urines, faeces, vomit, handling waste (bandages, napkin, incontinence pads), cleaning of contaminated and visibly soiled material or areas (soiled bed linen lavatories, urinal, bedpan, medical instruments)
Situations illustrating direct contact:

- shaking hands, stroking a child forehead
- helping a patient to move around, get washed
- applying oxygen mask, giving physiotherapy
- taking pulse, blood pressure, chest auscultation,
- abdominal palpation, recording ECG

Can you identify some examples of this indication during your everyday practice of health care?

Clean your hands when leaving the patient’s side, after touching a patient and his/her immediate surroundings, To protect yourself and the health-care environment from harmful germs!
Can you identify some examples of this indication during your everyday practice of health care?

Situation illustrating contacts with patient surroundings:

- changing bed linen, with the patient out of the bed
- perfusion speed adjustment
- monitoring alarm
- holding a bed rail, leaning against a bed, a night table
- clearing the bedside table

Clean your hands after touching any object or furniture in the patient’s immediate surroundings, when leaving without having touched the patient!

To protect yourself and the health-care environment against germ spread!
WHO Recommendations are Concentrated on 5 moments (indications)

<table>
<thead>
<tr>
<th>The 5 Moments</th>
<th>Consensus recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Before touching a patient</td>
<td>D.a) before and after touching the patient (IB)</td>
</tr>
<tr>
<td>2. Before clean / aseptic procedure</td>
<td>D.b) before handling an invasive device for patient care, regardless of whether or not gloves are used (IB)</td>
</tr>
<tr>
<td></td>
<td>D.d) if moving from a contaminated body site to another body site during care of the same patient (IB)</td>
</tr>
<tr>
<td>3. After body fluid exposure risk</td>
<td>D.c) after contact with body fluids or excretions, mucous membrane, non-intact skin or wound dressing (IA)</td>
</tr>
<tr>
<td></td>
<td>D.d) if moving from a contaminated body site to another body site during care of the same patient (IB)</td>
</tr>
<tr>
<td></td>
<td>D.f) after removing sterile (II) or non-sterile gloves (IB)</td>
</tr>
<tr>
<td>4. After touching a patient</td>
<td>D.a) before and after touching the patient (IB)</td>
</tr>
<tr>
<td></td>
<td>D.f) after removing sterile (II) or non-sterile gloves (IB)</td>
</tr>
<tr>
<td>5. After touching patient surroundings</td>
<td>D.e) after contact with inanimate surfaces and objects (including medical equipment) in the immediate vicinity of the patient (IB)</td>
</tr>
<tr>
<td></td>
<td>D.f) after removing sterile gloves (II) or non-sterile gloves (IB)</td>
</tr>
</tbody>
</table>

Table of correspondence between the indications and the WHO recommendations
Hand Hygiene and Glove Use

• The use of gloves does not replace the need for cleaning your hands!
• You should remove gloves to perform hand hygiene, when an indication occurs while wearing gloves
  – You should wear gloves only when indicated (see the Pyramid below) – otherwise they become a major risk for germ transmission
Key Points on Hand Hygiene and Glove Use

• When indications for gloves use and hand hygiene apply concomitantly
  – Regarding the "before" indications, hand hygiene should immediately precede glove donning, when glove use is indicated
Key Points on Hand Hygiene and Glove Use

- When indications for gloves use and hand hygiene apply concomitantly
  - Regarding the indications "after", hand hygiene should immediately follow glove removal, when the indication follows a contact that has required gloves
Key Points on Hand Hygiene and Glove Use

- When an indication for hand hygiene applies while gloves are on, then gloves must be removed to perform hand hygiene as required, and changed if needed.
Why observe hand hygiene practices?

- The purpose of observing hand hygiene is to **determine the degree of compliance** with hand hygiene practices by health-care workers.
- The results of the observation should help to **identify the most appropriate interventions** for hand hygiene promotion, education and training.
- The results of observation (compliance rates) can be reported to health-care workers, either to explain the current practices of hand hygiene in their health-care setting and to highlight the aspects that need improvement, or to compare baseline with follow-up data to show possible improvements resulting from the promotion efforts.
How to observe hand hygiene?

- **Direct observation** is the most accurate methodology.
- The observer must familiarize him/herself with the methods and tools used in a promotion campaign and must be trained (and validated) to identify and distinguish the indications for hand hygiene occurring during health care practices at the point-of-care.

- The observer must conduct observations openly, without interfering with the ongoing work, and keep the identity of the health-care workers confidential.

- Compliance should be detected according to the "My 5 Moments for Hand Hygiene" approach recommended by WHO.
Hawthorne Effect

- Henry A. Landsberger
- Hawthorne Works (a Western Electric factory outside Chicago)
- We want to avoid the Hawthorne Effect when making hand hygiene observations
Complete this training by viewing the New England Journal of Medicine Video

- Click on the link to access the video

- View the video and after completion complete the quiz