The golden rules for hand hygiene best practices

Benedetta Allegranzi
Internal Lead
Clean Care is Safer Care
WHO Patient Safety
The golden rules for hand hygiene best practices

- Please do it!
- because of hand transmission
Hand transmission

- Hands are the most common vehicle

- Skin microbial flora
  - Resident flora – long term, *S epidermidis* and others
  - Transient flora
    - *Short term – minutes-hrs-days-wks*
    - *Bacteria* - *S aureus* (10-78%), VRE, GNB, *C difficile*
    - *Fungi* - yeasts
    - *Viruses* - rotavirus, rhinovirus, HCV

- Transmission requires 5 sequential steps
Step 1:
Germs are present on patient skin and surfaces surrounding the patient

- Germs present on intact skin
- Skin squamas containing viable germs are shed continuously from normal skin - immediate surroundings (bed linen, furniture, objects) become contaminated
- Pathogen and count can vary – patient, microorganism and environmental characteristics

Pittet D et al. The Lancet Infect Dis 2006
Step 2: Patient germs contaminate HCW hands by direct and indirect contact

- Risk varies – type and duration of patient care, location etc
- Glove contamination similar to hand contamination
- Gloving does not fully protect hands from contamination
- In a general health-care facility, 29% nurses carried S. aureus and 17–30% GNB on their hands
- Hands contaminated even during “Clean” activities (lifting patients, taking the patient's pulse etc), e.g. 100–1,000 CFU of Klebsiella spp.

Pittet D et al. The Lancet Infect Dis 2006
Step 3: Germs survive and multiply on health-care workers' hands

- Germs can survive on hands for differing lengths of time
- The duration depends on several factors including the pathogen, humidity, skin area etc

## Length of survival of organism

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Length of survival of organism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Influenza virus</td>
<td>24-48 hours on nonporous surfaces</td>
</tr>
<tr>
<td>Parainfluenza virus</td>
<td>10 hours on nonporous surfaces; 6 h on clothing</td>
</tr>
<tr>
<td>SARS-associated coronavirus</td>
<td>24-72 hours on fomites and in stool samples</td>
</tr>
<tr>
<td>Noroviruses</td>
<td>≤14 days in stool samples; ≤12 days on carpets</td>
</tr>
<tr>
<td>Hepatitis B virus</td>
<td>7 days</td>
</tr>
<tr>
<td><em>Clostridium difficile</em></td>
<td>5 months on hospital floors</td>
</tr>
<tr>
<td><em>Pseudomonas aeruginosa</em></td>
<td>7 hours on glass slide</td>
</tr>
<tr>
<td><em>Acinetobacter baumannii</em></td>
<td>33 days on plastic laminate surfaces</td>
</tr>
<tr>
<td>MRSA</td>
<td>≤9 weeks after drying; 2 days on plastic laminate surfaces</td>
</tr>
<tr>
<td>VRE</td>
<td>≤58 days on countertops</td>
</tr>
</tbody>
</table>
Step 4: Defective hand cleansing results in hands remaining contaminated

- Insufficient amount of product and/or insufficient duration of hand hygiene action lead to poor hand decontamination
- Transient flora are still recovered on hands following handwashing with soap and water, whereas handrubbing with an alcohol-based solution has been proven significantly more effective

Step 5: Germ cross-transmission between patient A and patient B, devices and environment via hands

Transmissibility depends on type of surface, inoculum load, moisture level of surface, microorganism etc

If health care associated bugs looked like this - compliance with hand hygiene would be 100%!!!
The golden rules for hand hygiene best practices

■ Please do it!

➢ because of hand transmission
➢ because you think you do it but you don't!
Hand hygiene compliance is a problem!
## Compliance with hand hygiene in different health-care facilities - 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>

**Average: 38.7%**

*WHO Guidelines on Hand Hygiene in Health Care 2009, Chapter 16*
Hand hygiene compliance in low income countries

Compliance

%
Perceived hand hygiene compliance among health-care workers (2137 respondents)

Perceived percentage of opportunities with correct hand hygiene by oneself (median and 25-75th percentile)

Costa Rica  Italy  Mali  Pakistan  KAMC  KSMC

Pilot Site

Allegranzi B et al. ECCMID 2010
Impact on hand hygiene practices in Mali

Self-reported factors for poor adherence with hand hygiene

- Often too busy/insufficient time
- Hand hygiene interferes with HCW-patient relation
- Low risk of acquiring infection from patients
- Lack of role model from colleagues or superiors
- Not thinking about it/forgetfulness
- Scepticism about the value of hand hygiene
- Disagreement with the recommendations
- Lack of scientific information of definitive impact of improved hand hygiene on HAI
- Skin irritation, glove use

*WHO Guidelines on Hand Hygiene in Health Care 2009*
The golden rules for hand hygiene best practices

- Please do it!
  - because of hand transmission
  - because you think you do it but you don't!
  - because it's your duty!
Balancing “No Blame” with Accountability in Patient Safety

"Many health care organizations have recognized that a uni-dimensional focus on creating a blame-free culture carries its own safety risks… Therefore the need to create accountability for failure to follow gold-standard practices has been identified…

Robert M. Wachter and Peter J. Pronovost. NEJM 2009
2006 Annual Report of The Chief Medical Officer
On the State of Public Health

Dirty hands... the human cost

MAIN FEATURES
Healthcare-Associated Infection
Organ Transplants
Radiotherapy
Intrapartum-Related Deaths
Women in Medicine
Addressing some of the “barriers..”

The Joint Commission Journal on Quality and Patient Safety

Infection Prevention and Control

How Active Resisters and Organizational Constipators Affect Health Care–Acquired Infection Prevention Efforts


Health care–associated infection (HAI) is a common and costly patient safety problem. The Centers for Disease Control and Prevention (CDC) estimates that HAI leads to approximately 99,000 deaths per year in hospitals in the United States and an annual attributable cost of $6.7 billion. Given the potential for prevention, the Centers for Medicare & Medicaid Services (CMS) will no longer reimburse hospitals for the extra cost of caring for patients who develop certain infections during hospitalization, such as infection due to either urinary or vascular catheter use.

Catheter-associated urinary tract infection (CAUTI), central venous catheter–related bloodstream infection (CRBSI), and ventilator-associated pneumonia (VAP) are the most common device-associated infections. Given the clinical and economic consequences of HAI, various evidence-based guidelines and recommendations are available to hospitals and clinicians. Yet, the existence and subsequent dissemination of evidence-based recommendations are insufficient to ensure that current hospital practice reflect scientific evidence.

The study reported in this article was part of a national, multicenter, sequential study, in which the first phase was a quantitative survey to identify what hospitals are doing to prevent device-related infections in hospitalized patients. In May 2003 we sent a survey to the lead infection control professional (ICP) at more than 700 hospitals across the United States, including all Veterans Affairs (VA) medical centers and

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  - because it's your duty!
- Promote it through a multimodal strategy!
Impact of hand hygiene promotion on HAI

■ 1977- Feb 2011, 30 studies investigated the impact of hand hygiene (as a single intervention) to reduce HAI

■ 27 showed that behavioural change, illustrated by improved hand hygiene compliance, leads to the reduction of HAI, particularly BSI and SSI

■ Only 3/30 studies showed no significant impact on HAI but in 2 hand hygiene compliance did not increase significantly

■ An increasing number of studies have investigated the correlation between alcohol-based handrub consumption and HCAI rates
  
  • B. Allegranzi & D. Pittet. JHI 2009;73:305-15
<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Setting</th>
<th>Intervention</th>
<th>HH compliance</th>
<th>Impact on MRSA infection</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>Larson E et al</td>
<td>MICU/NICU</td>
<td>Multiple components intervention - organizational culture change</td>
<td>NA</td>
<td>No significant change in MRSA</td>
</tr>
<tr>
<td>2000</td>
<td>Pittet D et al</td>
<td>Hospital-wide</td>
<td>Alcohol-based HR, HH observation, training, performance feedback, posters</td>
<td>From 48% to 66%</td>
<td>Significant reduction annual prevalence of HAI (42%) and MRSA cross-transmission rates (87%).</td>
</tr>
<tr>
<td>2004</td>
<td>MacDonald A et al</td>
<td>Hospital-wide</td>
<td>Alcohol-based HR, HH observation, posters, performance feedback, informal discussions</td>
<td>NS increase of HH compliance</td>
<td>Significant reduction in MRSA cases (from 1.9% to 0.9%)</td>
</tr>
<tr>
<td>2005</td>
<td>Johnson et al</td>
<td>Hospital-wide</td>
<td>Alcohol-based HR, HH observation, posters, promotional gadgets</td>
<td>From 21% to 42%</td>
<td>Significant reduction (57%) in MRSA bacteremia</td>
</tr>
<tr>
<td>2008</td>
<td>Grayson ML et al</td>
<td>1) 6 pilot hospitals 2) all public hospitals in Victoria (Australia)</td>
<td>Alcohol-based HR introduction, HH observation, posters, promotional gadgets</td>
<td>1) From 21% to 48% 2) From 20% to 53%</td>
<td>Significant reduction of MRSA bacteremia and of clinical MRSA isolates</td>
</tr>
<tr>
<td>2008</td>
<td>Cromer AL et al</td>
<td>Hospital-wide</td>
<td>Direct HH observation, feedback</td>
<td>From 72.5% to 90.3%*</td>
<td>Significant reduction in MRSA from 0.85 to 0.52 per 1000 patient-days</td>
</tr>
<tr>
<td>2009</td>
<td>Lederer JW et al</td>
<td>Hospital-wide, seven acute care facilities</td>
<td>Education, observation and performance feedback, posters, memos and internal marketing campaign</td>
<td>From 49% to 98% with sustained rates &gt;90%</td>
<td>Significant reduction of MRSA rates from 0.52 episodes per 1000 pt-days to 0.24 per 1000 pt-days</td>
</tr>
<tr>
<td>2009</td>
<td>McLaws et al</td>
<td>Hospital-wide in 208 public hospitals (statewide)</td>
<td>Alcohol-based HR introduction, HH observation, training, performance feedback, posters</td>
<td>From 47% to 61%</td>
<td>Significant reduction of 6% of overall MRSA infections/10,000 patient-days. 16% reductions in MRSA infection in non-sterile sites in ICU and 25% in sterile sites in non-ICU wards</td>
</tr>
<tr>
<td>2010</td>
<td>Cheng VCC et al</td>
<td>Adult ICU</td>
<td>Alcohol-based HR introduction, briefing and discussion sessions, posters, HH observation</td>
<td>From 29% to 64%</td>
<td>Significant reduction of incidence density of ICU onset bacteraemic and non bacteraemic MRSA infection</td>
</tr>
</tbody>
</table>
Implementation strategy and toolkit for the WHO Guidelines on Hand Hygiene in Health Care

Knowledge & evidence → Action
## What is the WHO Multimodal Hand Hygiene Improvement Strategy?

Based on the evidence and recommendations from the WHO Guidelines on Hand Hygiene in Health Care (2009), made up of 5 core components, to improve hand hygiene in healthcare settings:

<table>
<thead>
<tr>
<th>One</th>
<th>System change</th>
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<tbody>
<tr>
<td></td>
<td>Alcohol-based handrubs at point of care and access to safe continuous water supply, soap and towels</td>
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<table>
<thead>
<tr>
<th>Two</th>
<th>Training and education</th>
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<tbody>
<tr>
<td></td>
<td>Providing regular training to all health-care workers</td>
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<table>
<thead>
<tr>
<th>Three</th>
<th>Evaluation and feedback</th>
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<tbody>
<tr>
<td></td>
<td>Monitoring hand hygiene practices, infrastructure, perceptions, &amp; knowledge, while providing results feedback to health-care workers</td>
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</table>

<table>
<thead>
<tr>
<th>Four</th>
<th>Reminders in the workplace</th>
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<tr>
<td></td>
<td>Prompting and reminding health-care workers</td>
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<tr>
<th>Five</th>
<th>Institutional safety climate</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Individual active participation, institutional support, patient participation</td>
</tr>
</tbody>
</table>
Guide to Implementation & tools to translate Guidelines into practice....

Available at [http://www.who.int/gpsc/5may/tools/en/index.html](http://www.who.int/gpsc/5may/tools/en/index.html)
**Implementation tools: For System change**

- Ward Infrastructure Survey
- Alcohol-based Handrub Planning and Costing Tool
- **1 System change:** actions aimed at ensuring that the necessary equipment and facilities for hand hygiene are in place.
  - Alcohol-based handrubs at point of care and access to safe continuous water supply, soap and towels
- Protocol for Evaluation and Comparison of Tolerability and Acceptability of Different Alcohol-based Handrubs: Method 2
Examples of hand hygiene products easily accessible at the point-of-care
Implementation tools for Training / Education

- Slides for the Hand Hygiene Co-ordinator
- Slides for Education Sessions for Trainers, Observers and Health-Care Workers
- Hand Hygiene Training Films
- Slides Accompanying the Training Films
- Frequently Asked Questions
- Key Scientific Publications
- Hand Hygiene Why, How and When Brochure
- Glove Use Information Leaflet

2

Training and education

Providing regular training to all health-care workers

Sustaining Improvement – Additional Activities for Consideration by Health-Care Facilities
The importance of education within hand hygiene promotion strategies (1975- June 2008)

- Staff education represents one of the cornerstones for improvement of hand hygiene practices
- 21/39 identified risk factors for poor hand hygiene or perceived obstacles could be addressed through better education
- 29/51 major studies to assess the effect of hand hygiene promotion included an education component
- Education was a core component of hand hygiene promotion in 17/18 national/sub-national campaigns in 2007
- However, educational programmes alone are inadequate for long-lasting improvement and they must be sustained (continuous training)

WHO Guidelines on Hand Hygiene in Health Care 2009
Suggested methods to achieve education goals *(WHO Guide to Implementation)*

- Regular presentations, including induction of new staff
- e-learning/self-learning modules
- Posters
- Focus groups
- Reflective discussion
- Videos/practical demonstrations
- Feedback from assessment
- Buddy systems
Hand Hygiene

Yves Longtin, M.D., Hugo Sax, M.D., Benedetta Allegranzi, M.D., Franck Schneider, and Didier Pittet, M.D.

Implementation tools for Evaluation and feedback

- Observation Form and Compliance Calculation

3 Evaluation and feedback
Monitoring hand hygiene practices, infrastructure, perceptions & knowledge
Providing results feedback to health-care workers

- Hand Hygiene Knowledge Questionnaire for Health-Care Workers
Implementation tools for Reminders in the workplace

- Your 5 Moments for Hand Hygiene Poster
- How to Handrub Poster
- How to Handwash Poster
- Hand Hygiene: When and How Leaflet

Reminders in the workplace
Prompting and reminding health-care workers
Adoption and adaptation of Clean Care is Safer Care worldwide
Major article

Effectiveness of an audible reminder on hand hygiene adherence

Morkos Fakhry MBBS, PhD a, George B. Hanna PhD, FRCS a,*, Oliver Anderson BSc, MRCS a, Alison Holmes MD, MPH, FRCP b, Dinesh Nathwani FRCS a
Implementation tools for Institutional safety climate

- Template Letter to Advocate Hand Hygiene to Managers
- Template Letter to Communicate Hand Hygiene Initiatives to Managers
- Guidance on Engaging Patients and Patient Organizations in Hand Hygiene Initiatives
- Sustaining Improvement – Additional Activities for Consideration by Health-Care Facilities
- **SAVE LIVES:** Clean Your Hands Promotional DVD
Commitment of ministerial and hospital authorities (Mali)
Sustaining Improvement – Additional Activities for Consideration by Health-Care Facilities

- E-learning tools
- Symposia, lectures, debates
- Presentation / publication of your facility’s data on documented improvements in HCAI
- Discussion papers on hand hygiene
- **Patient involvement and empowerment**
- Sharing experience: internal/external
- Personal accountability for health-care workers
- Rewards for compliance
Patient Involvement and Empowerment

Patient Participation: Current Knowledge and Applicability to Patient Safety

Yves Longtin, MD; Hugo Sax, MD; Lucian L. Leape, MD; Susan E. Sheridan, MBA; Liam Donaldson, MD; and Didier Pittet, MD, MS


Patient Empowerment and Multimodal Hand Hygiene Promotion: A Win-Win Strategy

Maryanne McGuckin, Dr ScED,1,2 Julie Storr, BN, MBA,3,4 Yves Longtin, MD,5 Benedetta Allegranzi, MD,4 and Didier Pittet, MD, MS4,5

American Journal of Medical Quality
XX(X) 1-8
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http://ajmq.sagepub.com

World Health Organization
Patient Safety
A World Alliance for Safer Health Care
SAVE LIVES
Clean Your Hands
Patients’ Beliefs and Perceptions of Their Participation to Increase Healthcare Worker Compliance With Hand Hygiene

Yves Longtin, MD; Hugo Sax, MD; Benedetta Allegranzi, MD; Stéphane Hugonnet, MD; Didier Pittet, MD, MS

BACKGROUND. Research suggests that patients could improve healthcare workers’ compliance with hand hygiene recommendations by reminding them to cleanse their hands.

OBJECTIVE. To assess patients’ perceptions of a patient-participation program to improve healthcare workers’ compliance with hand hygiene.

DESIGN. Cross-sectional survey of patient knowledge and perceptions of healthcare-associated infections, hand hygiene, and patient participation, defined as the active involvement of patients in various aspects of their health care.

SETTING. Large Swiss teaching hospital.

RESULTS. Of 194 patients who participated, most responded that they would not feel comfortable asking a nurse (148 respondents [76%]) or a physician (150 [77%]) to perform hand hygiene, and 57 (29%) believed that this would help prevent healthcare-associated infections.

In contrast, an explicit invitation from a healthcare worker to ask about hand hygiene doubled the intention to ask a nurse (from 34% to 83% of respondents; \( P < .001 \)) and to ask a physician (from 30% to 78%; \( P < .001 \)). In multivariate analysis, being nonreligious, having an expansive personality, being concerned about healthcare-associated infections, and believing that patient participation would prevent healthcare-associated infections were associated with the intention to ask a nurse or a physician to perform hand hygiene (\( P < .05 \)). Being of Jewish, Eastern Orthodox, or Buddhist faith was associated also with increased intention to ask a nurse (\( P < .05 \)), compared with being of Christian faith.

CONCLUSIONS. This study identifies several sociodemographic characteristics associated with the intention to ask nurses and physicians about hand hygiene and underscores the importance of a direct invitation from healthcare workers to increase patient participation and foster patient empowerment. These findings could guide the development of future hand hygiene–promotion strategies.

Infect Control Hosp Epidemiol 2009; 30:000-000
Guidance on Engaging Patients and Patient Organizations in Hand Hygiene Initiatives

The WHO Guidelines on Hand Hygiene in Health Care (2009) encourage partnerships between patients, their families, and health-care workers to promote hand hygiene in health-care settings. Positive engagement with patients and patient organizations in the pursuit of improving hand hygiene compliance by health-care workers has the potential to strengthen infection prevention and control globally and reduce the harm to patients caused by health care-associated infection. Performing correct hand hygiene in view of the patient can promote patient confidence.
The golden rules for hand hygiene best practices

- Please do it!
  - because of hand transmission
  - because you think you do it but you don't!
  - because it's your duty!
- Promote it through a multimodal strategy!
- Do it at the right time!
The “My 5 Moments for Hand Hygiene” approach

Proposes a unified vision:

- for trainers, observers and health-care workers
- to facilitate education
- to minimize inter-individual variation
- to increase adherence

Sax H et al. Journal Hospital Infection 2007
The patient zone and the contacts occurring within it.
The geographical conceptualization of the transmission risk

HEALTH-CARE AREA

PATIENT ZONE

Critical site with infectious risk for the patient

Critical site with body fluid exposure risk
Patient zone and health-care area

- 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**: it 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 (e.g. bed rails, bedside table, bed linen, chairs, infusion tubing, monitors, knobs and buttons, and other medical equipment).
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.
OPTIMAL HAND HYGIENE SHOULD BE PERFORMED

AT THE POINT-OF-CARE
Point-of-care

Point-of-care – place where **three elements** occur together: the patient, the health-care worker, and care or treatment involving patient contact (**within patient zone**)

Perform hand hygiene at recommended moments exactly where care delivery takes place

A **hand hygiene product** (e.g. alcohol-based handrub) **must be easily accessible** and as close as possible (e.g. within arm’s reach) to point of care. Point-of-care products should be accessible **without leaving patient zone**

This enables HCW to easily fulfill the 5 indications (moments) for hand hygiene
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
My 5 Moments for Hand Hygiene

1. **Before Touching a Patient**
   - To protect the patient against harmful germs carried on your hands.

2. **Immediately before accessing a critical site**
   - To protect the patient against harmful germs including the SDWLHQW¶VRZQHQWHULQJ his/her body.

3. **After Body Fluid Exposure Risk**
   - As soon as a task involving exposure risk to body fluids has ended (and after glove removal).

4. **After Touching a Patient**
   - To protect yourself and the health-care environment from harmful germs.

5. **After Touching Patient Surroundings**
   - To protect yourself and the health-care environment against germ spread.

Additional information:
- World Health Organization
- Patient Safety: A World Alliance for Safer Health Care
- Save Lives: Clean Your Hands
The 5 Moments apply to any setting where health care involving direct contact with patients takes place.
Practically speaking: Rethinking hand hygiene improvement programs in health care settings

A procedure-focused approach and the importance of understanding hand hygiene within the workflow

Son et al.
Am J Infect Control 2011;39:716-24
The golden rules for hand hygiene best practices

- Please do it!
  - because of hand transmission
  - because you think you do it but you don't!
  - because it's your duty!
- Promote it through a multimodal strategy!
- Do it at the right time!
- Do it with the right technique!
Application time of hand hygiene and reduction of bacterial contamination

Handrubbing is:
- more effective
- faster
- better tolerated

Pittet and Boyce. *Lancet Infectious Diseases* 2001
How to handrub

To effectively reduce the growth of germs on hands, **handrubbing** must be performed by following all of the illustrated steps. This takes only 20–30 seconds!
How to handwash

To effectively reduce the growth of germs on hands, **handwashing must last 40–60 secs** and should be performed by following all of the illustrated steps.

1. Apply enough soap to cover all hand surfaces;
2. Rub hands palm to palm;
3. Right palm over left dorsum with interlaced fingers and vice versa;
4. Palm to palm with fingers interlaced;
5. Backs of fingers to opposing palms with fingers interlocked;
6. Rotational rubbing of left thumb closed in right palm and vice versa;
7. Rotational rubbing, backwards and forwards with closed fingers of right hand in left palm and vice versa;
8. Rinse hands with water;
9. Dry hands thoroughly with a single use towel;
10. Use towel to turn off faucet;
11. Your hands are now safe.

World Health Organization
Patient Safety
SAVE LIVES
Clean Your Hands
Nurses’ perceptions of the benefits and adverse effects of hand disinfection: alcohol-based hand rubs vs. hygienic handwashing: a multicentre questionnaire study with additional patch testing by the German Contact Dermatitis Research Group

N. Stutz,* D. Becker,† U. Jappe,‡ S.M. John,§ A. Ladwig,¶ P. Spornrafft-Ragaller,** W. Uter†† and H. Löffler*‡‡

Protocol for Evaluation of Tolerability and Acceptability of Alcohol-based Handrub in Use or Planned to be Introduced: Method 1
The golden rules for hand hygiene best practices

- Please do it!
  - because of hand transmission
  - because you think you do it but you don't!
  - because it's your duty!
- Promote it through a multimodal strategy!
- Do it at the right time!
- Do it with the right technique!
- Use gloves appropriately!
Hand hygiene and glove use

GLOVES PLUS HAND HYGIENE = CLEAN HANDS

GLOVES WITHOUT HAND HYGIENE = GERM TRANSMISSION
Wearing gloves: the worst enemy of hand hygiene?

“While numerous studies have been undertaken to improve our understanding of the determinants of hand hygiene behavior, it seems urgent to improve our understanding of the determinants of glove usage behavior as well.”

Matthieu Eveillard

Future Microbiology 2011; 6(8), 835-837

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Brief report

Correlation between glove use practices and compliance with hand hygiene in a multicenter study with elderly patients

Matthieu Eveillard PharmD, PhD a,b,*, Marie-Laure Joly-Guillou MD, PhD a,b, P. Brunel MD c
“The Dirty Hand in the Latex Glove”: A Study of Hand Hygiene Compliance When Gloves Are Worn

Christopher Fuller, MSc; Joanne Savage, MSc; Sarah Besser, MSc; Andrew Hayward, MD; Barry Cookson, FRCP; Ben Cooper, PhD; Sheldon Stone, MD

<table>
<thead>
<tr>
<th>Factor</th>
<th>Adjusted OR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves worn</td>
<td>0.65 (0.54–0.79)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Intensive therapy unit location</td>
<td>1.25 (0.96–1.63)</td>
<td>.10</td>
</tr>
<tr>
<td>High-risk contact</td>
<td>1.34 (1.07–1.68)</td>
<td>.01</td>
</tr>
<tr>
<td>After contact</td>
<td>2.02 (1.69–2.41)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Nurse&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.21 (1.66–2.94)</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Other HCW&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.05 (0.76–1.44)</td>
<td>.78</td>
</tr>
</tbody>
</table>

NOTE. CI, confidence interval; HCW, healthcare worker.

<sup>a</sup> Compared with doctors and other HCWs.

<sup>b</sup> Compared with nurses and doctors.
STERILE GLOVES INDICATED
Any surgical procedure; vaginal delivery; invasive radiological procedures; performing vascular access and procedures (central lines); preparing total parental nutrition and chemotherapeutic agents.

EXAMINATION GLOVES INDICATED IN CLINICAL SITUATIONS
Potential for touching blood, body fluids, secretions, excretions and items visibly soiled by body fluids.

DIRECT PATIENT EXPOSURE: Contact with blood; contact with mucous membrane and with non-intact skin; potential presence of highly infectious and dangerous organisms; epidemic or emergency situations; IV insertion and removal; drawing blood; discontinuation of venous line; pelvic and vaginal examination; suctioning non-closed systems of endotracheal tubes.

INDIRECT PATIENT EXPOSURE: Emptying emesis basins; handling/cleaning instruments; handling waste; cleaning up spills of body fluids.

GLOVES NOT INDICATED (except for CONTACT precautions)
No potential for exposure to blood or body fluids, or contaminated environment

DIRECT PATIENT EXPOSURE: Taking blood pressure, temperature and pulse; performing SC and IM injections; bathing and dressing the patient; transporting patient; caring for eyes and ears (without secretions); any vascular line manipulation in absence of blood leakage.

INDIRECT PATIENT EXPOSURE: Using the telephone; writing in the patient chart; giving oral medications; distributing or collecting patient dietary trays; removing and replacing linen for patient bed; placing non-invasive ventilation equipment and oxygen cannula; moving patient furniture.
Key points on hand hygiene and glove use (1)

- Indications for glove use do not modify any indication for hand hygiene

- Glove use does not replace any hand hygiene action
Key points on hand hygiene and glove use (2)

When indications for gloves use and hand hygiene apply concomitantly

- The "Before" Indications - hand hygiene should immediately precede glove donning
Key points on hand hygiene and glove use (3)

When indications for gloves use and hand hygiene apply concomitantly

- The "After" Indications - hand hygiene should immediately follow glove removal
Key points on hand hygiene and glove use (4)

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.
Hand Hygiene: Why, How & When?

Glove Use Information Leaflet

I. HOW TO DON GLOVES:

1. Take out a glove from its original box
2. Touch only a restricted surface of the glove corresponding to the wear (at the top region of the cuff)
3. Don the first glove

II. HOW TO REMOVE GLOVES:

When the hand hygiene indication occurs before a contact requiring glove use, perform hand hygiene by rubbing with an alcohol-based handrub or by washing with soap and water.
The golden rules for hand hygiene best practices

■ Please do it!
  ➢ because of hand transmission
  ➢ because you think you do it but you don't!
  ➢ because it's your duty!
■ Promote it through a multimodal strategy!
■ Do it at the right time!
■ Do it with the right technique!
■ Use gloves appropriately!
■ Monitor and feedback!
Hand hygiene monitoring

- Monitoring hand hygiene compliance
  - Direct observation (gold standard)
  - Self reporting

- Indirect measurement through product usage – manual or automated
Significant reduction of Methicillin-resistant *S. aureus* burden in 38 French hospitals (1993-2007)

- Following the launch of the ABHR campaign the consumption of ABHR increased regularly from 2000 to 2007 (2 to 21 L per 1000 HD)
- In acute care hospitals, MRSA rate decrease was sharper after the launch of the ABHR campaign (-2% vs -4.7% per year)

*Jarlier V et al. Arch Intern Med. 2010;170:552-559*
The intervention in this study was ABHR location at the bed-side (previously available in the room corners) and education, but isolation and even cohorting impossible because of nurse shortage.

Sakamoto et al. Am J Infect Control 2010

Increased use of ABHR and successful eradication of MRSA from a NICU
Decrease in MRSA BSI and procurement of ABHRs in 148 acute NHS Trusts (July 2004-December 2007)

3-fold increase in combined use to 60 mls per pt-day

Analysis shows highly significant association between each ml of AHR used and 1% drop fall in MRSA BSI

Stone S et al. ECCMID 2009 (abstract O140)
REVIEW

Impact of alcohol hand-rub use on meticillin-resistant *Staphylococcus aureus*: an analysis of the literature

S. Sroka a,b,*, P. Gastmeier a,b, E. Meyer a,b

a Institute of Hygiene and Environmental Medicine, Charité University Medicine Berlin, Germany
b National Reference Centre for Surveillance of Nosocomial Infections, Berlin, Germany
Soap/Handrub Consumption Survey

Measuring the Consumption of Products in Association with the Implementation of WHO Multimodal Hand Hygiene Improvement Strategy

### Alcohol-based Handrub Formulation
(measured in litres)

- **Product:**
  - □ Gel
  - □ Liquid
  - □ Other (please specify)

- **Information recorded is related to:**
  - □ purchased/distributed product
  - □ used product

**Name/composition of product/s:**

<table>
<thead>
<tr>
<th></th>
<th>Amount purchased/used</th>
<th>Number of patients admitted to the facility or department or ward</th>
<th>Number of patient-days related to the facility or department or ward</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Units used</strong> (bottles)</td>
<td><strong>Units expressed as litres (l)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Month 1 Date (month):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total facility or selected wards / areas (delete as applicable)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Month 2 Date (month):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total facility or selected wards / areas (delete as applicable)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Month 3 Date (month):</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Automated Monitoring Systems

- Electronic monitoring of product usage
- Motion sensing systems to detect room entry/exit and use of hand hygiene dispensers, +/- reminders
  - Without identifying persons entering/exiting room
- Real-time Locating Systems (RTLS) to track HCW movements and use of hand hygiene products
- Video monitoring of HCW hand hygiene activity

Electronic Monitoring of Product Usage

- Electronic counting devices can be placed inside dispensers for alcohol handrub or soap
- Record each time the dispenser is accessed 24 hrs per day/7 days per week
- Measure hand hygiene frequency, not compliance rates

Boyce JM et al. ICHE 2009;30:1090
Marra AR et al. ICHE 2010;31:796

Courtesy of Dr John Boyce
Compliance with hand hygiene

**performed**
hand hygiene actions (x 100)

required hand hygiene actions
(opportunities)
Hand Hygiene

To be used by health-care workers, trainers and observers of hand hygiene practices
Observation Form

- Detailed instructions are available on the back of the form, to be consulted during observation.

Sax H, et al.
King Abdulaziz Medical City, Saudi Arabia – Hand hygiene compliance monitoring

Overall compliance

07-Oct
08-Oct
09-Mar
09-May
09-Jul
09-Sep
09-Dec
10-Feb

Courtesy: Dr Ziad Memish/Dr H Balkhy
Outcomes from the first 2 years of the Australian National Hand Hygiene Initiative

Grayson L et al. Med J Austr; 195; 5 Dec 2011

4 National monthly incidence rates of methicillin-resistant *Staphylococcus aureus* bacteremia (MRSAB), July 2007 – December 2010*

* Dashed line indicates National Hand Hygiene Initiative (NHHI) implementation. MRSAB rates were statistically stable before implementation ($P = 0.366$) but significantly declined after ($P = 0.008$).
Aims of the Framework

1. Provide systematic situation analysis of hand hygiene structures, resources, promotion and practices within a health-care facility

2. Facilitate development of an action plan for strengthening the facility’s hand hygiene improvement programme

3. Document progress over time through the repeated use
WHO Hand Hygiene Self-Assessment Framework Global Survey

Use the WHO Framework to identify your facility's progress in hand hygiene

AND

Submit your results online to WHO to help obtain a global picture of hand hygiene progress and identify areas for improvement!

To participate in the global survey go to http://www.who.int/gpsc/5may/hhsaf_submissions/en/index.html or send an email to WHOframework.survey@who.int
The golden rules for hand hygiene best practices

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  - because it's your duty!
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- Do it at the right time!
- Do it with the right technique!
- Use gloves appropriately!
- Monitor and feedback!
- Don't think that you're done!
Sustaining hand hygiene promotion

WHO Guide to Implementation

Year 1

WHO Guide to Implementation

Year 2

Repeat minimum 5 years

World Health Organization

Patient Safety

A World Alliance for Safer Health Care

SAVE LIVES

Clean Your Hands
We have a very long way to go yet...but the demand is high and our commitment and motivation too!
Thank you

WHO Clean Care is Safer Care

Find all information at www.who.int/gpsc/5may
Send enquiries to savelives@who.int