Hand hygiene updates

Hand Hygiene South Africa

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Cape Town, 29 March 2017

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NOTHING TO DECLARE
Outline

• Hand hygiene literature evolution
• Hand hygiene action quality:
  – technique
  – volume
  – duration of handrubbing
1. How to perform a literature search on hand hygiene using Pubmed®?
Growth rates of modern science

Figure 1. Segmented growth of the annual number of cited references from 1650 to 2012 (citing publications from 1980 to 2012)
“America's two greatest gifts to the world...”
Keywords

Used in the title and abstract of the article
Simple character matching
Language used in the field, synonyms
Alternative endings, spelling

Phrase searching: “hand hygiene”
Endings and phrase searching: hand wash*
**MeSH terms – hand hygiene**

**Definition:** Practices involved in preventing the transmission of diseases by hand

**Year introduced:** 2013

**Previous indexing:** Hand Disinfection (1981-2012)

**Available subheadings:** economics, history, methods (...)

**Entry terms:** Hygiene, hand

MeSH terms

- Hand hygiene (2013)
- Hand disinfection (1982)
- Hand sanitizers (2014)

Keywords

- Hand hygiene
- Hand disinfection
- Hand sanitizers
- Handrubbing
- Hand washing
- Alcohol-based handrubs
- Hand sanitizers
Search details

**hand wash**
("hand"[MeSH Terms] OR "hand"[All Fields]) AND wash[All Fields]

**hand wash***

**“hand wash”**
"hand wash"[All Fields]

**hand washing**
"hand disinfection"[MeSH Terms] OR ("hand"[All Fields] AND "disinfection"[All Fields]) OR "hand disinfection"[All Fields] OR ("hand"[All Fields] AND "washing"[All Fields]) OR "hand washing"[All Fields]
("Hand Hygiene"[Mesh] OR "hand hygiene" OR "hand disinfection"[Mesh] OR hand disinf* OR "hand sanitizers"[Mesh] OR hand sanit* OR “hand washing” OR “handwashing” OR “hand wash” OR hand rub* OR "handrubbing" OR hand cleans* OR hand deconta* OR "hand cleaning" OR alcohol-based hand rub* OR hand-antisept* OR surgical scrub*)
Other available resources

EBSCO

CINAHL
Available via EBSCOhost

Cochrane Library

Scopus

WEB OF SCIENCE

SciELO
2. Hand hygiene action quality update
it’s all about WHO guidelines on Hand Hygiene 2009

Your 5 Moments for Hand Hygiene

1. BEFORE TOUCHING A PATIENT
2. BEFORE CLEAN/ASEPTIC PROCEDURE
3. AFTER BODY FLUID EXPOSURE RISK
4. AFTER TOUCHING A PATIENT
5. AFTER TOUCHING PATIENT SURROUNDINGS

How to Handrub?

Duration of the entire procedure: 20-30 seconds

1a. Apply a palmful of the product in a cupped hand, covering all surfaces;
1b. Rub hands palm to palm;
2. Palm to palm with fingers interlaced;
3. Backs of fingers to opposing palms with fingers interlocked;
4. Rotational rubbing of left thumb clasped in right palm and vice versa;
5. Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;
6. Once dry, your hands are safe.
7. Rotational rubbing, forwards and backwards with clasped fingers of right hand in left palm and vice versa;
8. Palm to palm with fingers interlaced;

World Health Organization
 patient safety
SAVE LIVES
Clean Your Hands

WHO guidelines on Hand Hygiene 2009
But what about the quality of the hand hygiene action (How)?
... and what about the HOW?
evaluating the quality through its surrogate markers

Volume of ABHR
Duration of friction
Technique of friction

Courtesy F. Bellisimo-Rodrigues
HOW: technique of hand hygiene action

SureWash®
63 HCW: none performed the 6 steps
HOW: technique of hand hygiene action

A Pragmatic Randomized Controlled Trial of 6-Step vs 3-Step Hand Hygiene Technique in Acute Hospital Care in the United Kingdom

Jacqui S. Reilly, PhD;1 Lesley Price, PhD;2 Sue Lang, PhD;3 Chris Robertson, PhD;4 Francine Cheater, PhD;5 Kirsty Skinner, PhD;3 Angela Chow, MD6

TABLE 1. Comparison Between the 3- and 6-Step Hand Hygiene Techniques

<table>
<thead>
<tr>
<th>Variable</th>
<th>6-step (N = 60)</th>
<th>3-step (N = 60)</th>
<th>Pb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>Q1</td>
<td>Q3</td>
</tr>
<tr>
<td>Time taken, seconds</td>
<td>42.50</td>
<td>35.00</td>
<td>48.25</td>
</tr>
<tr>
<td>Percentage of hand area not covered</td>
<td>1.20</td>
<td>0.50</td>
<td>2.14</td>
</tr>
<tr>
<td>Total bacterial load</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before handrub, CFU/mL</td>
<td>1,900</td>
<td>595</td>
<td>3,100</td>
</tr>
<tr>
<td>After handrub, CFU/mL</td>
<td>380</td>
<td>60</td>
<td>1,500</td>
</tr>
<tr>
<td>Before handrub, ${\log}_{10}$ CFU/mL</td>
<td>3.28</td>
<td>2.77</td>
<td>3.49</td>
</tr>
<tr>
<td>After handrub, ${\log}_{10}$ CFU/mL</td>
<td>2.58</td>
<td>1.78</td>
<td>3.18</td>
</tr>
<tr>
<td>After: before ratio</td>
<td>0.31</td>
<td>0.07</td>
<td>0.69</td>
</tr>
</tbody>
</table>

NOTE: Blood agar was used for culture. CFU, colony-forming units; M, median; Q1, lower quartile; Q3, upper quartile.

a There was one missing time in the 3-step group for time taken.

b By the Mann Whitney test.

c Some sites where there was 0% not fully covered are excluded for the plot.
Simplifying the WHO protocol: Three steps versus six steps for performance of hand hygiene - a cluster randomized trial

S Tschudin-Sutter, D Sepulcri, GH Mamo, R Frei, AF Widmer
Revisiting the WHO “How to Handrub” Hand Hygiene Technique: Fingertips First?

Daniela Pires, MD;1,2,a Fernando Bellissimo-Rodrigues, MD, PhD;3,a Hervé Soule, Pharm,1 Angèle Gayet-Ageron, MD, PhD;1 Didier Pittet, MD, MS1

Table 1. Reduction of Bacterial Counts From Mean Baseline Values Depending on the Sequence of the Hand-Rubbing Techniquea

<table>
<thead>
<tr>
<th></th>
<th>Mean Baseline Count (n = 16)</th>
<th>Standard WHO Technique (n = 16)</th>
<th>WHO “Fingertips First” Technique (n = 16)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globally</td>
<td>6.18 (±0.86, 6.35)</td>
<td>2.68 (±1.48, 2.85)</td>
<td>3.44 (±1.33, 3.20)</td>
<td>&lt;.001b</td>
</tr>
<tr>
<td>By hand size</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small</td>
<td>5.30 (±0.85, 5.3)</td>
<td>3.40 (±1.83, 3.40)</td>
<td>3.95 (±1.84, 4.25)</td>
<td>&lt;.001c</td>
</tr>
<tr>
<td>Medium</td>
<td>6.22 (±0.80, 6.4)</td>
<td>2.57 (±1.62, 3.05)</td>
<td>3.10 (±1.59, 2.70)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Large</td>
<td>6.73 (±0.42, 6.7)</td>
<td>2.30 (±1.17, 2.05)</td>
<td>3.45 (±0.60, 3.35)</td>
<td>.001</td>
</tr>
</tbody>
</table>

aData are log10 values shown as mean (± SD, median).

bFrom a mixed linear model with a random effect on the intercept.

cFrom a mixed linear model with a random effect on the intercept and an interaction between the sequence and hand size category.
Bacterial reduction on HCWs hands according to the **volume of ABHR**.

Bacterial reduction on HCWs hands according to **hand size categories** and the **volume of ABHR**.

HOW: duration of hand hygiene action

Hand Hygiene With Alcohol-Based Hand Rub: How Long Is Long Enough?

Bacterial $\log_{10}$ reduction (mean and 95% CI) from baseline across the 6 durations of hand friction.

<table>
<thead>
<tr>
<th>Duration of friction (ref. 30 sec)</th>
<th>$\beta$ coef.</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 sec</td>
<td>-0.45</td>
<td>-1.09; +0.19</td>
<td>0.174</td>
</tr>
<tr>
<td>15 sec</td>
<td>-0.18</td>
<td>-0.53; +0.17</td>
<td>0.312</td>
</tr>
<tr>
<td>20 sec</td>
<td>+0.07</td>
<td>-0.33; +0.47</td>
<td>0.720</td>
</tr>
<tr>
<td>45 sec</td>
<td>-0.71</td>
<td>-1.19; -0.23</td>
<td>0.004</td>
</tr>
<tr>
<td>60 sec</td>
<td>-0.62</td>
<td>-1.10; -0.14</td>
<td>0.011</td>
</tr>
</tbody>
</table>

Multivariate analysis of bacterial $\log_{10}$ count reduction from baseline across the 6 durations of hand friction with 30 seconds as the reference.
IPC team of the University Hospitals of Geneva
Professor D. Pittet