SOAP- UP : Improving Hand Hygiene as a Comprehensive Infection Prevention Strategy

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Objectives

• Discuss current barriers in achieving an effective and sustainable hand hygiene program
• Explain how hand hygiene can be part of a comprehensive infection prevention strategy
• Identify practices for monitoring and improving compliance to hand hygiene
• Review literature to support hand hygiene
Why is this initiative different?

- Refreshes the thinking - new twist
- "Connects the dots" to harm
- Decreases complexity
- Cross Cutting
- Engages the front line
SOAP UP Must Do’s

- Prompt Peer Performance
- Track Quietly and Trend Loudly
- Drive Drift Down

Top 10 Checklist

1. Review policies and procedures for hand hygiene to assure that they are current and evidence-based practices
2. Educate all staff in appropriate hand hygiene. Provide training at orientation and at regular intervals for all staff.
3. Assure adequate supplies are available for hand hygiene and that they are in the appropriate locations to support consistent hand hygiene
4. Conduct observation & surveillance of hand hygiene as the optimal way to ensure appropriate compliance
5. Schedule regular unscheduled observation of hand hygiene by trained observers
6. Track and trend compliance to hand hygiene and share results with all levels of the organization
7. Use an interdisciplinary team to develop an implementation plan to improve hand hygiene throughout the organization
8. Intervene immediately if a breach in hand hygiene is observed and provide scripts for reminding peers to perform hand hygiene
9. Promote culture of safety through leadership support and engagement with reinforcing appropriate hand hygiene practices
10. Engage patients, families and visitors to perform hand hygiene, and to speak up if they witness a breach in hand hygiene
Where it all began

Ignaz P. Semmelweis
Vienna, 1847

Background

1822 French pharmacist
1846 Ignaz Semmelweis
1975-1985 CDC
1995-96 HICPAC
2007 WHO
1881 US Public Health Service
1983 Oliver Wendell Holmes
1988-1995 APTC
The How and the When

<table>
<thead>
<tr>
<th>When</th>
<th>and</th>
<th>How</th>
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</table>

**Your 5 Moments for Hand Hygiene**

1. Before patient contact
2. Before clean/invasive procedure
3. After body fluid exposure potential
4. After patient contact
5. After removing PPE

**How to Handrub?**

1. Wet hands with alcohol-based handrub
2. Apply handrub to all surfaces of hands
3. Rub hands together for at least 10 seconds

Key Points

*Handwashing ... an action of the past (except when hands are visibly soiled)*

- System change
- Alcohol-based hand rub is standard of care
The WHO Multimodal Hand Hygiene Improvement Strategy

**ONE** System change
Alcohol-based handrub at point of care and access to safe continuous water supply, soap and towels

**TWO** Training and education
Providing regular training to all health-care workers

**THREE** Evaluation and feedback
Monitoring hand hygiene practices, infrastructure, perceptions, & knowledge, while providing results feedback to health-care workers

**FOUR** Reminders in the workplace
Prompting and reminding health-care workers

**FIVE** Institutional safety climate
Individual active participation, institutional support, patient participation

4 Components of Good Hand Hygiene

- **Volume**
- **Time**
- **Technique**
- **Sequence**
Chasing Zero Infections
Connecting the Dots to Reduce Patient Harm:
Hot Topics in Infection Prevention

Literature

Reduction of Healthcare-Associated Infections by Exceeding High Compliance with Hand Hygiene Practices

Emily E. Sickbert-Bennett, Lauren M. DiBlase, Tina M. Schade Willis, Eric S. Wolak, David J. Weber, William A. Rutala

Improving hand hygiene from high to very high compliance has not been documented to decrease healthcare-associated infections. We conducted longitudinal analyses during 2013–2015 in an 853-bed hospital and observed a significant increase in hand hygiene compliance rate (p<0.001) and a significantly decreased healthcare-associated infection rate (p = 0.0008).

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Findings

Healthcare-Associated Infections and Hand Hygiene

Figure. Overall healthcare-associated infection (HAI) rate and hand hygiene compliance by month, October 2013–February 2015. Numbers above data bar indicate monthly compliance percentages. Error bars indicate 95% CIs.
Hand Hygiene, Cohorting, or Antibiotic Restriction to Control Outbreaks of Multidrug-Resistant Enterobacteriaceae

Camille Patel, PhD1,2 Julia Kanef-Sloan, PhD1,2 Gabriel Segal, PhD1,2 Jennifer Rappaport, PhD1,2 Michael Schwaninger, PhD1,2 Antonio Andriamirado, Prof3 Jean-Christophe Lucot, Prof3,4 Yanlu Zoulanrashid, Prof3,4

BACKGROUND. The best strategy for controlling extended-spectrum β-lactamase-producing Enterobacteriaceae (ESBL-PE) transmission in intensive care units (ICUs) remains elusive.

OBJECTIVE. We developed a stochastic transmission model to quantify the effectiveness of interventions aimed at reducing the spread of ESBL-PE in an ICU.

METHODS. We modeled the evolution of an outbreak caused by the admission of a single carrier in a 10-bed ICU free of ESBL-PE. Using data obtained from recent multicenter studies, we studied 26 strategies combining different levels of the following 3 interventions: (1) increasing healthcare worker compliance with hand hygiene before and after contact with a patient; (2) cohorting; (3) reducing antibiotic prevalence at admission with or without reducing antimicrobial duration.

RESULTS. Improving hand hygiene compliance from 55% before patient contact and 60% after patient contact to 80% before and 80% after patient contact reduced the nosocomial incidence rate of ESBL-PE colonization by 91% at 96 days. Adding cohorting to hand hygiene improvement intervention decreased the proportion of ESBL-PE acquisition by an additional 7%. Antibiotic restriction had the lowest impact on the epidemic. When combined with other interventions, it only marginally improved effectiveness, despite strong hypotheses regarding antibiotic impact on transmission.

CONCLUSION. Our results suggest that hand hygiene is the most effective intervention to control ESBL-PE transmission in an ICU.


Evidence of hand hygiene to reduce transmission and infections by multidrug resistant organisms in health-care settings

<table>
<thead>
<tr>
<th>Year</th>
<th>Country</th>
<th>Setting</th>
<th>Effect on hand hygiene compliance and use of alcohol-based hand sanitizers (ABHS)</th>
<th>Impact on MDROs</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>worldwide</td>
<td>Hospital-wide</td>
<td>Significant increase in HI compliance from 40% to 60%. Increased consumption of ABHS from 5.5 to 12.4 gal/1000 patient-days</td>
<td>Significant reduction in the median overall prevalence of HAI (41%) and MRSA HAI transmission rates (37%). Common increase in ABHS use, mobile HAI rates and cost savings, in a follow-up study.</td>
<td>Patel D et al</td>
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<tr>
<td>2008</td>
<td>Australia</td>
<td>6 public hospitals in all public hospitals in Victoria (Australia)</td>
<td>Increase of HI compliance 22% to 40% increased consumption of ABHS from 5.5 to 26.4 gal/1000 patient-days</td>
<td>1) Significant reduction of MRSA bacteria (from 0.05/1000 to 0.02/1000 cied discharges per month) and of clinical MRSA isolates. 2) Significant reduction of MRSA bacteria (from 0.02/1000 to 0.01/1000 cied discharges per month) and of clinical MRSA isolates.</td>
<td>Gregory ML et al</td>
</tr>
<tr>
<td>2008</td>
<td>USA</td>
<td>5 acute care facilities</td>
<td>Significant increase of HI compliance from 40% to 60% with increased use greater than 60%</td>
<td>Significant reduction of MRSA rate from 0.52 to 0.24 episodes/1000 patient days.</td>
<td>Lofaso FW et al</td>
</tr>
<tr>
<td>2010</td>
<td>USA</td>
<td>2 acute-care hospitals</td>
<td>Significant increase of HI compliance from 65% to 82%</td>
<td>Significant reduction of MRSA rates during the 12-month period.</td>
<td>Swenson C et al</td>
</tr>
</tbody>
</table>
Face to Face interviews with 13 senior managers at a large university hospital

Seven distinct themes:

- Culture change starts with leaders
- Refresh and Renew the message
- Connect the 5 moments to the whole patient journey
- Actionable audit results
- Empower patients
- Reconceptualize non compliance
- Start the hammer
Participants
All affiliated nurses of the nursing wards. Wards were randomly assigned to either the team and leaders-directed strategy (30 wards) or the state-of-the-art strategy (37 wards).

Methods
The control arm received a state-of-the-art strategy including education, reminders, feedback and targeting adequate products and facilities.
The experimental group received all elements of the state-of-the-art strategy supplemented with interventions based on social influence and leadership, comprising specific team and leaders-directed activities.
Strategies were delivered during a period of six months.

Results
10,785 opportunities for appropriate hand hygiene in 2733 nurses.
The compliance in the state-of-the-art group increased from 23% to 42% in the short term and to 46% in the long run.
The hand hygiene compliance in the team and leaders-directed group improved from 20% to 53% in the short term and remained 53% in the long run.
The difference between both strategies showed an Odds Ratio of 1.64 (95% CI 1.33–2.02) in favour of the team and leaders-directed strategy.

Conclusions
Our results support the added value of social influence and enhanced leadership in hand hygiene improvement strategies.
The methodology of the latter also seems promising for improving team performance with other patient safety issues.
A successful multifaceted strategy to improve hand hygiene compliance rates

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Key Words:
Health care-acquired infections
Hand hygiene
Compliance rates

Health care-acquired infections are a major contributor of mortality; therefore, prevention of these infections is a priority. Hand hygiene compliance among health care workers is low. We report the process at our institution to increase the hand hygiene compliance rate (HHCR). We implemented interventions over 6 months. The periods were divided into preintervention, intervention, and postintervention, and the monthly HHCRs was calculated. The primary objective was to measure the HHCR after the intervention period and ensure sustainability. There were 23,272 observations, with 22,501 compliant events, for an overall HHCR of 88.7%. The HHCR improved over time (preintervention, 72.7%; intervention, 79.7%; postintervention, 93.2%), with significance between pre- and postintervention periods (P < .002). The HHCR stabilized after all interventions and was sustained over 22 months. Our study highlights a multifaceted intervention, including administrative leadership, that led to an increase in the HHCR. Institutions should individualize their multimodal approach to include administrative leadership to achieve a high, sustained HHCR.

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Other Strategies

- **Hand Hygiene**
- **Central line insertion and maintenance**
- **Prevention of diarrheal outbreaks**
- **Prevention of *c. difficile***
- **Surgical scrub**
- **Prevention of MDRO**

**Capabilities of Automated Monitoring Systems**

- Provide visual and/or auditory real-time reminders to HCWs
  - Vibratory reminders may be more common in future
- Alerts (texts, emails) regarding empty/malfunctioning dispensers
- Room- or patient-specific software rules
- Integration into electronic medical record systems
- Near real-time analysis and feedback of estimated compliance rates for Moments 1, 4 and 5
  - 1-2 systems provide estimates of all 5 Moments
Connecting the Dots

C difficile Monitoring

<table>
<thead>
<tr>
<th>Unit</th>
<th>Room #</th>
<th>Compliance with Hand Hygiene Practices</th>
<th>Person Observed (HCW or Visitor)</th>
<th>100% Compliant with Isolation?</th>
<th>YES or NO Identify variance by PPE or Signage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABHR</td>
<td>Soup + H.0</td>
<td>1 2 3 4 5 6 7 8 9 10 11 12</td>
<td>KEY 1 = Physician 2 = RN 3 = Transporter 4 = PA 5 = Respiratory RX 6 = Nursing assistant</td>
<td>7 = Rehab 8 = Lab 9 = Dietary 10 = Housekeeping 11 = Other HCW 12 = Visitor</td>
<td></td>
</tr>
</tbody>
</table>

Date and Time of Observation: 
Observer: 
Prevention/Isolation Type: 

Check Observed Variance

- YES
- NO

Gloves  Gown  Mask  Signs
Preventing CAUTI

Milisa Manojlovich, PhD, RN, CCRN
Associate Professor University of Michigan School of Nursing

Study purpose:

- Determine if changes (in the hospital and nationwide) have contributed to improved catheter insertion practices
- Explore barriers and facilitators to adherence of urinary catheter insertion guidelines

Manojlovich et al. Infect Control Hosp Epidemiol. 2015

Methods

- 2 teams of nursing students
- 0630 – 2100, in 4 or 8 hour blocks of time
- January 29 – June 30, 2014
- Observation, checklists, field notes
Results

- No hand hygiene prior to 74% of insertions
- **No hand hygiene in 91% post insertion**
- 59% of insertion attempts were associated with a major break in sterile technique
Engaging Patients

Don't be afraid to ask!

Hand Hygiene – those we care about deserve no less!
Conclusions

- Hand Hygiene must be part of an overall strategy
- We must “connect the dots” to other HAI events
- Front line staff must be engaged
- Healthcare worker must trust our data
- When possible immediate feedback is important