



Major article

Reducing health care–associated infections by implementing a novel all hands on deck approach for hand hygiene compliance



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intervention

Hand hygiene is a key intervention for preventing health care–associated infections; however, maintaining high compliance is a challenge, and accurate measurement of compliance can be difficult. A novel program that engaged all health care personnel to measure compliance and provide real-time interventions overcame many barriers for compliance measurement and proved effective for sustaining high compliance and reducing health care–associated infections.

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Each year in the United States, an estimated 1.7 million cases of health care–associated infection occur, with 98,000 resulting in deaths and cost estimates of >\$10 billion. Although the fraction of health care–associated infections that are preventable with improvements in hand hygiene compliance is not known, 38% of infections are estimated to occur because of cross-transmission. Hand hygiene is a key intervention in interrupting transmission between patients, health care personnel, and contaminated fomites in the environment. In fact, the association between improved hand hygiene compliance from low to higher rates and reductions in health care–associated infection rates has been well described.^{1,2} However, in 2002 when the Centers for Disease Control and Prevention Hand Hygiene guidelines were published, the overall hand hygiene compliance among the 34 published studies varied from 5%–81%, with an average compliance of only 40%.¹

Achieving high hand hygiene compliance remains a challenge, particularly in a health care setting where as many as 15.2 hand hygiene opportunities have been estimated to occur each hour.³ In addition, measuring hand hygiene compliance presents additional

challenges, including several potential sources of bias. Three types of bias are possible with hand hygiene compliance: interobserver variation, sampling bias, and the Hawthorne effect. With interobserver variation, hand hygiene observers may disagree on opportunities when hand hygiene should occur. Our hospital epidemiology department developed 6 real-life patient care scenarios and then conducted a survey among all department staff to assess appropriateness of hand hygiene. Among 12 hospital epidemiology personnel with a combined 150.5 years of experience, only 3 of the scenarios had >75% agreement that hand hygiene was indicated. When the same scenarios were presented to a widely recognized expert on hand hygiene, for only 1 of those 3 scenarios did he share agreement that there was a clear indication for hand hygiene. Sampling bias may occur when the locations or time (time of day or day of week) for hand hygiene observations are not selected at random or the units sampled do not represent compliance for the entire facility.⁴ Finally, the Hawthorne effect is believed to heavily influence hand hygiene compliance measurements because individuals behave differently when they know they are being observed. Chen et al have proposed some solutions to combat the Hawthorne effect's potential for overestimates of hand hygiene compliance by, for example, only conducting 10 observations or for a 10-minute time period in an area before changing locations.⁵ In addition, there are new technologies for hand hygiene measurements that electronically track health care personnel movement and interactions with soap or sanitizer dispensers which purport to alleviate these biases in providing objective and more complete hand hygiene observations.^{4,6}

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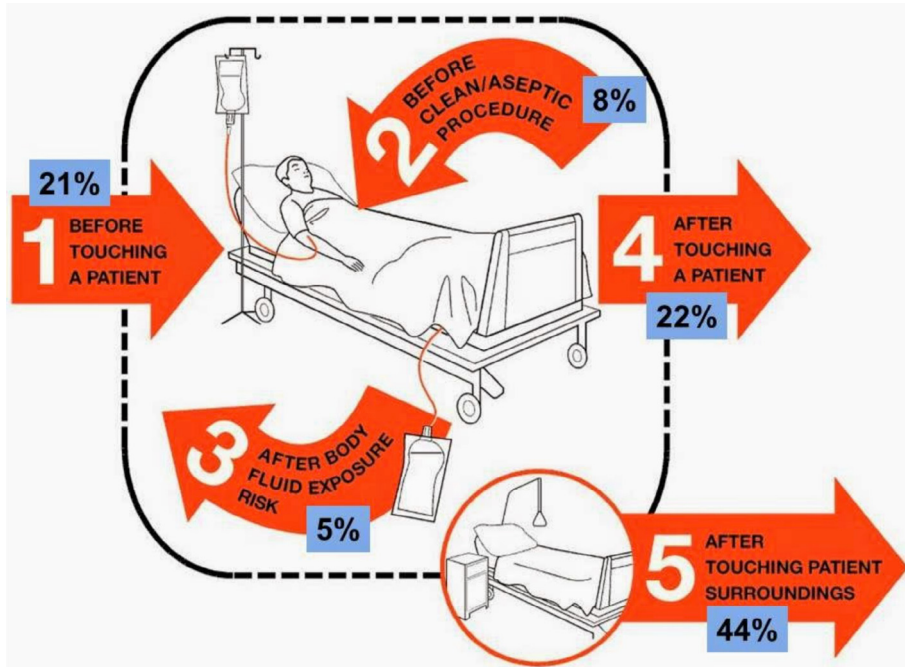


Fig 1. Frequency of hand hygiene opportunities. Reprinted with permission from Mike Edmond (<http://haicontroversies.blogspot.com/2014/05/hand-hygiene-its-ginormous.html>). Data from Diller et al AJIC 2014 June.

Hand hygiene compliance at an >800-bed academic hospital was historically measured between 80% and 90% by infection prevention staff and designated infection control liaisons throughout the hospital. These measurements were subjected to the biases previously stated. Despite a requirement by the Joint Commission to show improvement, compliance remained relatively stable over several years. For these reasons, we developed a new program for hand hygiene compliance that engaged all frontline personnel in the effort. The program was adapted from a successful pilot program conducted in a pediatric intensive care unit where frontline health care personnel were involved in conducting hand hygiene compliance measurements among themselves. The engagement of health care personnel in monitoring and improving hand hygiene compliance and in other key infection prevention efforts led to demonstrated effectiveness in reducing health care–associated infections, patient length of stay, hospitalization costs, and mortality rates.⁷

METHODS

To develop our all hands on deck approach for hand hygiene compliance, we first simplified the message for when to perform hand hygiene to “clean in, clean out.” This message reminded all health care personnel (clinical and nonclinical) that each time they enter and exit a patient’s room or space they need to perform hand hygiene with either an alcohol-based handrub, or antimicrobial soap and water. This expectation for hand hygiene was without exception, even housekeepers moving from room to room to pick up trash were required to perform hand hygiene in between each room. Although these 2 opportunities (ie, patient room entry, patient room exit) do not capture all of the World Health Organization’s (WHO’s) My 5 Moments for Hand Hygiene, they do represent most (87%) of the situations (before touching a patient, after touching a patient, after touching patient surroundings) when hand hygiene is indicated based on video monitoring studies of the frequency of occurrence of each of the WHO’s My 5 Moments for Hand Hygiene (Fig 1).⁸ Further, these 2 moments represent the most critical moments for interrupting patient-to-patient transmission of pathogens via the contaminated hands of health care personnel.

1. What date were the observations done?*

mm/dd/yyyy

2. Name of person doing the observations*

3. What is job classification of person doing the observations?*

- Nursing Staff
- Physician/Advanced Practice Provider
- Radiology Technologist
- Occupational/Physical Therapist
- Respiratory Therapist
- Environmental Services/Housekeeping
- Nutrition and Food Services/Dietary
- Patient Transporters
- Phlebotomy
- Other

4. What location are these observations for?*

--Please Select--

5. Please complete the below table about the person being observed:

	Job Classification of Person Observing	Hand Hygiene
Observation 1	--Please Select--	--Please Select--
Observation 2	--Please Select--	--Please Select--
Observation 3	--Please Select--	--Please Select--
Observation 4	--Please Select--	--Please Select--
Observation 5	--Please Select--	--Please Select--
Observation 6	--Please Select--	--Please Select--
Observation 7	--Please Select--	--Please Select--
Observation 8	--Please Select--	--Please Select--
Observation 9	--Please Select--	--Please Select--
Observation 10	--Please Select--	--Please Select--

Fig 2. Survey tool for hand hygiene compliance observations.

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