American Journal of Infection Control 44 (2016) e211-e214

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

Continued direct observation and feedback of hand hygiene adherence can result in long-term improvement

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Key Words:
Direct observation
Hand hygiene
Infection control
Standard precaution

Background: Hospital-wide multifaceted approaches can improve hand hygiene compliance in health care workers. However, the true effects of monitoring and feedback interventions are not clear.
Methods: Hand hygiene compliance was evaluated by applying direct observation techniques over 5 years (2005-2009) in a tertiary care general hospital in Japan. The observed results were periodically reported as feedback to the health care workers.
Results: The overall hand hygiene compliance rate increased from 50.8% in 2005 to 61.0% in 2006 ($P = .004$) and was sustained at approximately 60% through the completion of the study. The compliance rate for the indication before entering the room increased from 2005 to 2009 ($P = .005$). The compliance rates for 4 before patient contact indications increased from 2005 to 2009 ($P = .002$). The combined compliance rate for the 6 indications with the lowest compliance rates in 2005 increased from 2005 to 2009 ($P = .001$).
Conclusions: Direct observation and feedback methods are effective strategies that resulted in a long-lasting improvement in hand hygiene compliance that was sustained over 5 years through the completion of the study. Focusing on the procedures with high baseline noncompliance rates can be an effective way to improve the overall compliance.

Nosocomial infections are important causes of morbidity, mortality, and increased costs for hospitalized patients. A substantial proportion of nosocomial infections results from the transmission of bacteria from the hands of health care workers (HCWs)[1]. Hand hygiene is an effective measure for preventing and controlling health care–associated infections.[2,3] However, hand hygiene compliance rates remain low, sometimes <50%[4]. Several studies have shown a relationship between improved hand hygiene practices and reduced hospital infection rates.[5] A recent study showed that an increased compliance rate for hand hygiene reduced costs related to hospital-acquired infections.[6]

HCW hand hygiene can be monitored by measuring the use of alcohol-based handrubs; however, this would not clearly establish whether hand hygiene had been achieved during the appropriate indications. Some studies have measured self-reported compliance with hand hygiene, but it was not confirmed that the reported compliance rates were genuine.[7] Several studies have shown that feedback and intervention can improve hand hygiene compliance.[3,5,8-11] However, in some of these studies, the researchers used a point prevalence survey to assess hand hygiene, and the surveillance data obtained reflected hand hygiene compliance only at single moments; therefore, the long-term effects of these activities were not clear.[8-10,12] Other studies used multifaceted approaches; therefore, the specific effects of the direct observation method, consisting only of monitoring and feedback, were not evaluated.[3,5] The objective of the present study was to evaluate the compliance rate for hand hygiene over 5 years using direct observation that focused on surveillance and feedback.

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E-mail address: takeuti@kochi-u.ac.jp (S. Takeuchi).
Funding/support: Supported in part by Japan Society for the Promotion of Science (JSPS) KAKENHI (grant no. 15K08846).
Conflicts of interest: None to report.

0196-6553/
http://dx.doi.org/10.1016/j.ajic.2016.07.011

METHODS

Study setting

We conducted this observation trial at Kochi Medical School Hospital, Japan, which is a 605-bed tertiary care general hospital with 13 wards. The study was conducted from January 2005-December 2009.

Study variables

Five observers were present on the ward between 10 AM and 10:30 AM once a week, where they monitored the hand hygiene practice of the HCWs using the direct observation technique. The observers consisted of an infection control practitioner, a pharmacist, a medical doctor, a medical student, and a laboratory technician. All were members of the infection prevention and control team, and all were trained and validated for the observations. In our hospital, most nurses on duty had patient contact in the morning, especially between 10 AM and 10:30 AM, which was determined in our previous study to be a high activity period. To maximize the opportunities for observing hand hygiene, the observation was conducted during that period. The observation was conducted on all days of the week equally. The observers watched for hand hygiene opportunities according to a check sheet and recorded the actual number of episodes of handrub use. All wards were observed, with each ward assessed 4 times a year. The HCWs were not told that the observers were recording compliance. However, the observers were in plain sight; therefore, the HCWs could have been aware that they were being observed. The hand hygiene compliance rate for each indication was calculated as the number of hand hygiene actions divided by the number of hand hygiene opportunities. The check sheet was prepared in accordance with the Guideline for Hand Hygiene in Health-Care Settings. The indications for hand hygiene consisted of 12 procedures, including those to be carried out before patient contact (before) and after blood or body fluid contact (after). Interobserver variability was not recorded during the monitoring sessions. To increase concordance between the observers, they participated in a conference and discussed the results after each session.

Intervention

The performance results were assessed and reported to the ward staff as feedback every month through the infection control team members. The reports consisted of the time course of the compliance, comparison with the other wards, and the details of the noncompliance indications. The results were disseminated using posters and flyers and were announced during the seminars for all HCWs in the hospital. The data were presented at several committees and meetings each month, including the infection control committee, medical staff meetings, nursing staff meetings, comedical staff meetings, hospital management committees, and governing board. The HCWs were educated on the importance of hand hygiene through in-service workshops based on the compliance results.

Ethical considerations

HCWs were not identified during the observation sessions for reasons of confidentiality; therefore, this study was formally exempt from institutional review board approval. The results obtained in this research will not be used in other studies.

RESULTS

Number of recorded hand hygiene opportunities

The observations were performed between 10 AM and 10:30 AM, during which period most types of daily patient care activities were performed; most of the observed HCWs were female nurses aged between 20 and 40 years. Over the 5-year study period, we observed 12 different types of indications for hand hygiene (4 before procedures and 8 after procedures) and recorded a total of 5,644 separate hand hygiene opportunities (Table 1). The most frequently observed indication was before entering the room, for which 3,057 opportunities were observed, accounting for 54.2% of the total number of opportunities. The second most frequently observed indication was before patient contact, which was observed on 868 opportunities, accounting for 15.4% of the total opportunities. The total number of observed indications was 1,390 in 2005, gradually decreasing to 839 in 2009.

Overall hand hygiene compliance

Hand hygiene compliance for the 12 indications measured by direct observation over 5 years is summarized in Tables 1 and 2. In 2005, the average compliance rate for all 12 indications was 50.8%. In 2006, the average compliance rate increased to 61.0%, and it remained around 60% throughout the remainder of the observation period. The average compliance rates in 2006, 2008, and 2009 were statistically significantly higher than the rate in 2005 ($P = .004$, $P = .004$, and $P = .03$, respectively).

Compliance rates analyzed by indication

Changes in the compliance rates for the 12 different indications are summarized in Tables 1 and 2. The compliance rate for

Table 1
Rates of hand hygiene compliance by indications in each year

Indications	2005	2007	2009
Before entering the room	308/704 (43.8)	352/644 (54.7)	257/440 (55.0)
Before patient contact	25/62 (40.3)	23/39 (59.0)	31/58 (53.4)
Before wearing gloves	6/28 (21.4)	18/48 (37.5)	17/36 (47.2)
Before aseptic procedures	8/16 (50.0)	4/7 (57.1)	11/16 (68.8)
After patient contact	123/229 (53.7)	121/206 (58.7)	60/100 (60.0)
After blood or body fluid contact	20/39 (69.2)	12/12 (100.0)	13/14 (92.9)
After touching mucosa-wound-dressing	12/24 (50.0)	23/26 (88.5)	24/26 (92.3)
After environment contact	103/150 (68.7)	31/60 (51.7)	40/85 (47.1)
After contact with contaminated linens	39/59 (66.1)	22/32 (68.8)	14/21 (66.7)
After contact with contaminated devices	11/18 (61.1)	7/10 (70.0)	8/12 (66.7)
After wearing gloves	32/41 (78.0)	26/40 (65.0)	20/27 (74.1)
After leaving the isolated room	19/20 (95.0)	21/21 (100.0)	4/4 (100.0)
Total	706/1,390 (50.8)	660/1,145 (57.6)	499/839 (59.5)

NOTE. Values are actions/opportunities compliance (%).