Low rate of compliance with hand hygiene before glove use

To the Editor:

The major cause of hospital-acquired infections is the transmission of microorganisms from the hands of health care workers (HCWs).1 Even though this has been known for many years, compliance with hand hygiene procedures remains unacceptably low. Compliance rates differ among institutions and are as low as 20% in some.2

In 2009, we conducted an observational study at Anadolu Medical Center in Kocaeli, Turkey, a not-for-profit, private 209-bed hospital with 870 staff members. Observations of hand hygiene opportunities were made over a 3-month period by 10 trained nurses working in clinical wards, intensive care units, and laboratory departments. The HCWs were not informed about the observation. In this study, hand hygiene opportunities were defined as before and after invasive procedures, after contact with blood and body fluids, before and after glove use, before drug preparation, between two patients, after physical examination, and before and after wound care. Hand hygiene was required regardless of whether or not gloves were used or changed. A form was designed that included all of these situations. Compliance with the hand hygiene protocol was defined as either handwashing with water and soap or hand rubbing with alcohol-based antiseptic gel.

Over 175 hours of observation, 826 opportunities for hand hygiene were documented. Among these observations, 245 involved physicians (29.6%), 407 involved nurses (49.2%), 81 involved technicians (9.8%), and 93 involved other HCWs (11.2%). In terms of an infection control method, 61.4% of the HCWs preferred handwashing with soap, 13.1% preferred hand rubbing with alcohol-based antiseptic gel, 21.2% preferred wearing gloves, and 4.3% used more than one method. The mean rate of compliance was 59.1% for all categories. Our analysis demonstrated little variation among nurses, technicians, and other HCWs; thus, these groups were combined, and the analysis was done between physicians and nonphysicians. The compliance rate was 40.8% in physicians and 66.8% in nonphysicians. Physicians had significantly lower compliance with the hand hygiene protocol (P < .0001). Compliance after patient examination was 58.3% in physicians and 93.0% in nonphysicians (P < .0001). Compliance before glove use was 3% in physicians and 14% in nonphysicians, with no statistically significant difference between the two groups. Similar results were observed for hand hygiene compliance before invasive procedures for which HCWs wore gloves. Even with a high percentage of glove use (>75%), hand hygiene before donning gloves was <5% in both groups, with no statistically significant difference between the groups (P = .23).

Gloves are an important barrier to hand hygiene compliance.3 In 198 of episodes involving glove use, adherence to hand hygiene before gloving was 16.1% (14.1% with handwashing and 2.0% with alcohol hand rub). Although the belief that using gloves is sufficient for infection control seems to be widespread, it is important to recognize that hand hygiene is required whether or not gloves are used or changed. HCWs wash their hands when they feel that they are dirty; thus, the compliance rate was high after contact with blood and body fluids (96.3%). Laustsen et al4 reported a more frequent use of alcohol hand rub after performance of clinical procedures than before such procedures (69.3% vs 65.2%). Thompson et al5 found that 27% of HCWs washed their hands before donning gloves. Hannigan and Shields6 noted that gloves in boxes are contaminated by unwashed hands. To minimize this, they advised washing hands before gloving and keeping gloves sterile in critical areas. They reported a high rate of glove use before invasive procedures and wound care both in physicians and nonphysicians (82.4% and 78.9%, respectively). Wearing gloves encourages behavior which is touching everywhere with these contaminated gloves. Girou et al7 reported a 51.5% compliance with hand hygiene after glove removal. They noted that the misuse of gloves during patient care activities increases the potential for cross-transmission of bacteria and the risk of health care–associated infections in patients. Our comparable compliance rate after glove removal was 80.0%. This higher rate might be linked to our HCWs’ feelings of being dirty and their desire to eliminate talcum powder.

In conclusion, in our study we not only determined the present level of hand hygiene compliance, but also defined the sites where we could make improvements. The very low overall compliance rate before glove use also encouraged us to focus our future education programs on hand hygiene on this area.

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Preventive behaviors for the H1N1 influenza epidemic

To the Editor:

I read the article on H1N1 influenza by Lau et al1 with great interest. The authors noted that the "perceived fatality, efficacy of wearing face masks, and mental distress because of influenza A/H1N1 were associated with face mask use in public areas," and concluded that "prevention efforts should take public perceptions into account, and emerging infectious diseases provide good chances for promoting hygiene."1

I would like to share some ideas on this report. There is no doubt that people responded to the epidemic based on their perception of risk. Sometimes panic can be seen, and the overuse of control devices can be expected.2 Indeed, correct information from the local public health agency is required in the early phase of epidemic of any disease. This is an important issue that needs to be addressed.

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References


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Catheter-related colonization or infection in critically ill patients: Is the number of simultaneous catheters a risk factor?

To the Editor:

Catheter-related bloodstream infections occurring in the intensive care unit (ICU) constitute a common and important problem and are potentially associated with a poor outcome.1 Whereas risk factors for catheter-related colonization or infection (CRI) have been well studied,2,3 the simultaneous presence of several catheters (arterial, central, and/or dialysis) has not been evaluated as a potential risk factor for CRI.

In a 1-year observational single-center study, we prospectively evaluated the hypothesis that the more simultaneous catheters there are, the more CRI there is. For each patient, data collection was performed on a standardized form and included demographics and microbiologic studies from all removed catheters. The average number of catheters by exposure day during their ICU stay was calculated by dividing the sum of the total duration of catheter exposure (days) by the length of ICU stay with at least 1 catheter exposure (days) (Fig 1). All patients requiring central venous and/or arterial access were managed with a standardized protocol based on current international guidelines.6 Removed catheter tips were cultured using the simplified quantitative culture technique described by Brun-Buisson et al.7 Culture was defined as positive when the tip yielded $10^5$ colony forming units/mL. Catheter colonization was defined as a positive culture tip without any sign of local infection. Associations between patient characteristics and CRI were assessed using a logistic regression model. A risk adjustment was performed according to length of ICU stay with at least 1 catheter exposure. P values less than .05 were considered statistically significant. Analyses were performed using SAS 9.1 (SAS Institute, Cary, NC).

Of the 575 patients admitted to our ICU during the study period, 402 (262 men and 140 women) fulfilled the inclusion criteria. One or more intravascular catheters were inserted in the ICU in 228 (57%) patients. The average number of catheters by exposure day was 1.7 (IQR, 1.2-2.0) per ICU-day. There were 29 CRCIs in 20 (9%) patients, giving an incidence density of 3.8 ± 23.1 CRCIs/1,000 catheter-days. By univariate analysis, variables significantly associated with CRI were simultaneous presence of 3 catheters (7 [3.4%] vs 4 [20%]; odds ratio [OR], 30.28; 95% confidence interval [CI]: 2.95-310.9; P = .004), average number of catheters by exposure day during ICU stay (1.7 [IQR, 1.0-2.0] vs 1.9 [IQR, 1.6-2.0]; OR, 5.10/day; 95% CI: 1.74-14.90; P < .0001), length of ICU stay with at least 1 catheter

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