American Journal of Infection Control 44 (2016) 631-5

Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major article

Toward improving the World Health Organization fifth moment for hand hygiene in the prevention of cross-infection

Lesley Price PhD [a,*], Karen Roome DProf [a], Ritchie Lisa MPhil [b], Jacqui Reilly PhD [a], Jackie McIntyre MPH [b], Jon Godwin PhD [a], Donald Bunyan BSc (Hons) [b]

[a] Glasgow Caledonian University, Glasgow, United Kingdom
[b] Health Protection Scotland, Glasgow, United Kingdom

Key Words:
Perceptions
Health care staff
Observation
Questionnaire

Background: The World Health Organization describes that there are 5 moments during a health care encounter when hand hygiene should be performed. This research explores a number of explanatory hypotheses to inform future intervention development with regard to improving compliance with the fifth moment.

Methods: A sequential, mixed-methods study was conducted using nonparticipant observation and a survey with focus groups informing the development of the questionnaire. A total of 484 participants were observed and 410 returned a postobservation questionnaire; a response rate of 85%. Analysis explored the role of organizational culture, professional culture/practice, and individual-level variables in explaining compliance with the fifth moment.

Results: Ninety-three percent of participants performed hand hygiene following the fifth moment. Compliance varied between regions, but not by professional group. More than 65% indicated that the fifth moment was clearly defined, achievable, valuable, encouraged, and widely known. However, 60% suggested that it was repetitive. There was a positive relationship between the performance of hand hygiene following the fifth moment and the perception that it was widely known.

Conclusions: Interventions to improve compliance with the fifth moment should focus on promoting awareness of the fifth moment and how it should be implemented in practice. Mechanisms for raising awareness should include education and role modeling.

Hand hygiene is considered to be among the most effective measures in reducing and preventing the incidence of avoidable illness, in particular health care-associated infections.[1,2] Staff within health care settings should be aware of this and perform hand hygiene effectively and in a timely fashion.[3,4] The World Health Organization's (WHO) 5 moments for hand hygiene concept is supported by an evidence-based hand transmission model and aims to provide reference points for care staff regarding when hand hygiene should be performed to interrupt the transmission of microorganisms during the delivery of care.[4,5] This model has been adopted worldwide[3] to provide direction and consistency across guidelines and as a method of auditing hand hygiene practices.

There is consensus in the literature that hand hygiene should be performed:

- Before patient contact (moment 1)[3,6,7]: Observational studies have demonstrated the risk of contamination of patients following contact with contaminated hands of health care staff.[8-11] Systematic and nonsystematic reviews describe the importance of performing hand hygiene before touching a patient mainly to prevent cross-colonization of the patient.[5,12-16]
- Before carrying out a clean/aseptic procedure (moment 2) such as handling an invasive device.[5-7,13,15-18] These procedures are considered high-risk and a maximum reduction in microbial counts on the hands is necessary.[3]
- Immediately after contact with body fluids, mucous membranes, or wound dressings (moment 3).[5-7,13,15,16,18] Performing hand hygiene at this moment is necessary to reduce the risk of infection to health care staff because microorganisms can be isolated from infected wounds, but also to reduce the risk of transfer of microorganisms from a colonized to a clean site during different care activities on the same patient.[5,6,15]

* Address correspondence to Lesley Price, School of Health and Life Sciences, Glasgow Caledonian University, Cowcaddens Rd, Glasgow G4 0BA, United Kingdom.
E-mail address: L.Price@gcu.ac.uk (L. Price).

Supported by the Scottish Infection Research Network.
Conflicts of Interest: None to report.

http://dx.doi.org/10.1016/j.ajic.2015.12.017

- Following contact with patients (moment 4)[8-11,19,20] similar to reasons stated above for moment 1.
- The fifth and final moment of the WHO hand hygiene guidelines is defined as "after touching patient surroundings on leaving the patient zone." In terms of the hospital environment a patient zone encompasses ". . . all inanimate surfaces that are touched by or in direct physical contact with the patient such as the bed rails, bedside table, bed linen, infusion tubing or other medical equipment" and ". . . surfaces frequently touched by healthcare workers while caring for the patient . . ."[4]

Whilst this theoretical rationale is supported by a number of studies that demonstrate that hands can become contaminated after contact with contaminated surfaces such as a patient's bed, bedside table, or equipment within a patient's surroundings[8,9,11,21-23] there is still some confusion regarding the limits of the patient's immediate environment (ie, the patient zone) and the level of contact required, leading to a lack of clarity about how this key moment is defined and subsequently implemented in practice. Compliance data for all hand hygiene opportunities indicate variation in compliance among the 5 moments, with moment 5 being the lowest.[24]

There is a need for evidence-based interventions that enhance hand hygiene overall and equally for those that focus on compliance with the fifth moment alone. The present study used sequential mixed methods to explore the perceptions and behaviors of health care staff regarding compliance with the fifth moment. Three broad hypotheses relating to variance within compliance are examined. Firstly, that compliance relates to the local and organizational culture of hand hygiene (ie, 1 region rather than another); secondly, that compliance relates to professional culture of particular health professionals (eg, doctors vs nurses); and finally, that compliance relates to individual differences between participants (based on their beliefs).

METHODOLOGY

The research aim was to evaluate health care staff members' perceptions of the WHO hand hygiene moment 5 relative to compliance with this moment.

The research questions were:

1. Do health care staff members comply with moment 5 in practice?,
2. Does compliance vary between regions (as a reflection of local organizational culture)?,
3. Does compliance vary across professional groups (as a reflection of professional culture, role, training, and practice)?, and
4. Does compliance vary in relation to individual beliefs?

A mixed-methods study was adopted, in cooperation with local members of the infection prevention and control teams, who conducted the observation and distributed the survey. Initially focus groups were held by the researchers with health care staff members to explore their perceptions of the value of moment 5 to develop hypotheses for a self-report questionnaire to test with a larger sample of health care staff. Nonparticipant observation of health care staff members' compliance with the fifth moment was conducted concurrently with the local hand hygiene audits. Following each observation the member of staff was asked to complete the questionnaire. Hence, data were collected of health care staff members' actual behaviour in relation to, and their perceptions of, the fifth moment.

Population and sample

The population was health care staff members observed during local hand hygiene audits during 2013. The purposive sample were any member of staff observed in hospitals in 3 different geographic areas of Scotland who had an opportunity to perform hand hygiene in accordance with the WHO fifth moment.

Recruitment

Observation

The local infection prevention and control team e-mailed all staff before the hand hygiene audit informing them that in addition to collecting data for the local and national audit, data would be collected for a research study on hand hygiene compliance at the same time.

Survey

During the audit if a member of staff was observed who had an opportunity to perform hand hygiene following moment 5 that member of staff was asked to complete a self-report questionnaire exploring his or her perception of the fifth moment. Staff members were given an information sheet about the study and a questionnaire and were provided with an anonymous way of returning the completed questionnaire.

Ethical considerations

Approval to conduct the study was attained from Glasgow Caledonian University Ethics Committee and permission to access staff was provided by the hospitals involved. Participants' consent was implied by cooperation in the audit and return of the questionnaire. No personal identifying information was collected about the participants because they were identified solely by allocation of a unique participant number that also identified the participant's hospital.

Data collection

Observation

Nonparticipant structured observation of 484 health care staff members was conducted to assess staff compliance with moment 5 using an observational tool designed for the study. In addition to compliance with moment 5, data were collected on the context in which moment 5 was observed and the professional group of the participant. Piloting and refining of the tool was undertaken with the infection prevention and control teams involved in the study. In addition, the tool was reviewed for content and face validity with infection control experts and the lay person on the Project Management Group team.

Survey

Focus groups where conducted with a number of health care staff members to ascertain their perceptions of the fifth moment. Findings were then used to develop the questionnaire. The questionnaire contained 8 semantic differential rating scales that were created from the most frequently cited adjectives used in the focus groups to describe the fifth moment along with their polar adjectives. The use of constructs from the focus groups and the development of the questionnaire with the Project Management Group and piloting with health care staff ensured face and content validity.

Scoring of the survey

To quantify health care staff members' perceptions of moment 5 forced responses, using a 5-point scale, were used in the