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## Major article

## Comparison of hand hygiene monitoring using the 5 Moments for Hand Hygiene method versus a wash in–wash out method



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## Key Words:

My 5 Moments for Hand Hygiene

Hand hygiene

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**Background:** One strategy to promote improved hand hygiene is to monitor health care workers' adherence to recommended practices and give feedback. For feasibility of monitoring, many health care facilities assess hand hygiene practices on room entry and exit (wash in–wash out). It is not known if the wash in–wash out method is comparable with a more comprehensive approach, such as the World Health Organization's My 5 Moments for Hand Hygiene method.

**Methods:** During a 1-month period, a surreptitious observer monitored hand hygiene compliance simultaneously using the wash in–wash out and My 5 Moments for Hand Hygiene methods.

**Results:** For 283 health care worker room entries, the methods resulted in similar rates of hand hygiene compliance (70% vs 72%, respectively). The wash in–wash out method required 148 hand hygiene events not required by the My 5 Moments for Hand Hygiene method (ie, before and after room entry with no patient or environmental contact) while not providing monitoring for 89 hand hygiene opportunities in patient rooms.

**Conclusion:** The monitoring methods resulted in similar overall rates of hand hygiene compliance. Use of the wash in–wash out method should include ongoing education and intermittent assessment of hand hygiene before clean procedures and after body fluid exposure in patient rooms.

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The hands of health care workers provide a major source for transmission of health care–associated pathogens.<sup>1,2</sup> Hand hygiene with alcohol-based hand rub is a simple and effective procedure that is widely recognized as the single most effective means to prevent pathogen transmission.<sup>3</sup> Unfortunately, adherence to hand hygiene recommendations is often suboptimal.<sup>4–6</sup> One strategy to promote

improved hand hygiene behavior is to monitor health care workers' compliance with recommended practices and to provide feedback.<sup>7,8</sup> A variety of methods are used by infection control programs to monitor hand hygiene compliance. However, relatively few studies have compared different methods of monitoring. Such comparisons are needed to identify the advantages and disadvantages of different methods and to provide insight into whether optimal strategies might include the use of >1 monitoring method.<sup>8,9</sup>

The World Health Organization's My 5 Moments for Hand Hygiene provides a conceptual model for hand hygiene that educates providers about moments when hand hygiene is indicated and can also be used for monitoring and reporting.<sup>9</sup> One potential limitation of the My 5 Moments for Hand Hygiene concept for monitoring is that moments 2 and 3 typically occur inside patient rooms and require that an observer be present during the patient encounter.<sup>10</sup> This may be problematic, particularly if nonclinical

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staff monitor hand hygiene compliance. Therefore, for feasibility of monitoring, many infection control programs primarily assess hand hygiene practices on room entry and exit. This method is used at the Cleveland VA Medical Center and has been termed wash in–wash out monitoring of hand hygiene. To our knowledge, no previous publications have included an assessment of whether the wash in–wash out method provides results that are comparable with monitoring using a more comprehensive approach, such as monitoring based on My 5 Moments for Hand Hygiene.<sup>9</sup> Here, we directly compared the 2 methods of monitoring and surveyed Cleveland-area hospitals and Department of Veterans Affairs (VA) hospitals to determine the frequency with which these methods are used for monitoring.

## METHODS

### Setting

The Cleveland VA Medical Center is a 215-bed hospital with an affiliated long-term care facility. Alcohol gel is mounted in a dispenser outside each patient room, and health care workers are required to perform hand hygiene on entry and exit (wash in–wash out), even when no contact with the patient or environment is anticipated. Hand hygiene monitoring is routinely conducted by 2 nonclinical employees using the wash in–wash out method and by coworkers from other units. The monitors are positioned in the hallway or at the nursing station and do not routinely observe hand hygiene that is conducted inside a patient room. Monitors are allowed to exclude room entry observations only if it is obvious that no contact has been made with the patient or environment (eg, standing just inside the door). All staff members are made aware that they should expect surreptitious and nonsurreptitious observers monitoring their hand hygiene behavior. Compliance rates for hand hygiene are reported each month, with each nursing unit receiving unit-specific data, stratified by provider type (ie, physicians, nurses, and other clinical staff, including physical therapists, social workers, dietitians, and pharmacists).

### Comparison of wash in–wash out versus My 5 Moments for Hand Hygiene monitoring

The study was conducted as a quality improvement initiative by the facility's infection control department. During a 4-week period, we directly compared the results of hand hygiene monitoring using the wash in–wash out and My 5 Moments for Hand Hygiene methods. All monitoring was performed by a medical student who served as a surreptitious observer and simultaneously collected data using both monitoring methods. The student was trained by an infection preventionist. To collect observations, the student rounded with medical or surgical teams during morning rounds and with nursing staff during patient care activities during the morning or afternoon. Medical students frequently round with medical and surgical teams in our facility; the teams were informed that the student was an observer and were not told that hand hygiene was being monitored. Similarly, nursing staff were told that the student was observing nursing procedures. Multiple different teams and nurses were monitored. No identifiable information was collected on the health care workers participating in the study. Our facility's hand hygiene monitors continued to monitor as usual during the study period.

For the wash in–wash out method, each room entry or exit was considered an opportunity for hand hygiene. For the My 5 Moments for Hand Hygiene method, opportunities were monitored as described by Sax et al.<sup>9</sup> Entry into the room without entering the patient zone or without contact with the patient or the patient's

environment was considered a moment for hand hygiene with the wash in–wash out method, but not with the My 5 Moments for Hand Hygiene method. For the purposes of the study, we defined contact as any direct contact between the patient or room environmental surfaces and the health care worker's hands, other skin surfaces, or clothing (excluding shoes). The type of health care worker (physician, nurse, other) was recorded; medical students were classified as physicians, and nursing students were classified as nurses. The other category included physical therapists, social workers, dietitians, and pharmacists. The type of contact was recorded as contact with the patient only, the environment only, or both the patient and environment.

### Survey of hand hygiene monitoring methods

To determine the relative frequency with which the 2 hand hygiene monitoring methods were used, we surveyed infection control practitioners at 20 Northeast Ohio hospitals and 120 VA hospitals. The survey was sent via e-mail. Practitioners were asked about the methods used to monitor compliance (ie, observation of hand hygiene, volume of product used, electronic monitoring, other methods); >1 method could be chosen. If observation of hand hygiene was used, the practitioners were asked whether monitoring included the 5 moments included in the My 5 Moments for Hand Hygiene approach or only the 2 moments included in the wash in–wash out method. In addition, they were asked to identify the personnel involved in monitoring.

### Data analysis

Fisher exact test was used to compare the proportions of hand hygiene opportunities that were assessed as adherent based on the 2 monitoring methods and for different moments assessed using each method. Data were analyzed with the use of SPSS statistical software version 10.0 (SPSS Inc, Chicago, IL).

## RESULTS

Of 283 total health care workers observed entering patient rooms, 175 (62%) were physicians, 91 (32%) were nurses, and 17 (6%) were other providers. Other providers included pharmacists, social workers, physical therapists, and dietitians. Figure 1 shows the total number of hand hygiene opportunities recorded for each monitoring method, stratified by the moment type and the percent compliance overall and for each moment. Of the 283 room entries, 184 (65%) involved contact with the patient with or without concurrent environmental contact, 25 (9%) involved contact only with the environment, and 74 (26%) involved no contact with the patient or environment. Because of the large number of room entries with no patient or environmental contact, there were 84 more total opportunities recorded for the wash in–wash out method ( $n = 566$ ) than for the My 5 Moments for Hand Hygiene method ( $n = 482$ ).

Overall compliance was similar for the wash in–wash out and My 5 Moments for Hand Hygiene methods (405/566 [72%] vs 337/482 [70%];  $P = .58$ ). For the wash in–wash out method, compliance was higher on room exit versus room entry (214/283 [76%] vs 191/283 [67%];  $P = .04$ ). For the My 5 Moments for Hand Hygiene method, there were no significant differences in compliance between any of the individual moments ( $P = .40$ ); compliance for moments 2 and 3 combined (65/89, 73%) was similar to overall compliance. During the period of the study, overall compliance to hand hygiene measured by the hand hygiene monitors using the wash in–wash out method was 94%.

For the survey on the methods of hand hygiene monitoring, 18 of 40 (45%) Northeast Ohio hospitals responded, and 55 of 153 (36%)

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