

# Engaging patients as observers in monitoring hand hygiene compliance in ambulatory care

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## ABSTRACT

**Background:** Hand hygiene in ambulatory care is important in minimizing the risk of transmission of disease; however, it is not well studied. Ambulatory care presents a unique challenge in auditing all four moments of hand hygiene due to many reasons, one of them being respecting patient confidentiality.

**Methods:** A quality improvement (QI) lens was used to assess the feasibility of engaging patients as observers to investigate hand hygiene compliance rates in an ambulatory care setting, and whether all four moments of hand hygiene were being met. This QI study was conducted over a three-year time frame and consisted of 1691 hand hygiene opportunities observed.

**Results:** The QI study demonstrated an overall hand hygiene compliance rate of 94-97% for all four moments of hand hygiene, maintaining the target of an overall compliance at 95%.

**Conclusions:** The results of this study suggest that involving the patient as the observer is a feasible and beneficial way to monitor hand hygiene compliance in an ambulatory care setting.

## KEY WORDS

Hand hygiene, ambulatory care, outpatients, patient as observer, patient as auditor

## INTRODUCTION

Hand hygiene (HH) in ambulatory care is important in minimizing the risk of transmission of disease; however, it is not well studied. The rate with which healthcare workers (HCWs) comply with best practice recommendations for HH compliance has been reported as approximately 40% and 5-10% of patients admitted into hospitals acquire at least one healthcare associated infection (HAI) (1). Effective HH has been shown to decrease rates of nosocomial infection and decrease the transient flora located on the skin (2). To maintain effective HH, research has shown that monitoring HH compliance and providing HCWs with feedback is considered an integral part of a successful HH program (3). The Ministry of Health and Long-Term Care (MOHLTC) in 2008 launched a multi-faceted evidence-based initiative, *Just Clean Your Hands* (JCYH), for the four moments for HH in hospitals across the

province of Ontario. This initiative uses an audit tool and trained auditors to observe the four moments of HH: Moment 1 (before initial patient/patient environment contact); Moment 2 (before aseptic procedures); Moment 3 (after body fluid exposure risk); and Moment 4 (after patient/patient environment contact) (4). This program was developed to help reduce HAIs through limiting the spread of infection by providing education and tools for promotion, evaluation and auditing for health care providers.

There is no shortage of widespread initiatives to address low HCWs' compliance including best practice guidelines, education campaigns and guidance on auditing compliance (5). Survey results conducted by the National Patient Safety Agency (NPSA) concluded that HAIs could be reduced if patients asked their health care providers if they had cleaned their hands before touching them (6). Inviting patients to remind HCWs

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**Conflicts of Interest:** None to declare.

**FIGURE 1: Patient survey tool used by patient observers to audit hand hygiene compliance**

## Clean Hands *Matter*

Your health care provider should clean their hands at the following times with either:

- soap and water, or
  - alcohol hand rub.
1. Before any contact with you
  2. Before doing a procedure for you  
e.g., giving a needle; drawing blood
  3. After doing a procedure (after removing gloves worn for the procedure)  
e.g., removing a baby diaper; doing a rectal exam or vaginal exam
  4. When leaving the room after contact with you

Please help us to help you.

How did your health care provider do?

After your visit, please complete this form and leave it in the box in the waiting room. [Although you may interact with more than one health care provider today, could you please choose only one for the purposes of this survey.](#) Thanks.

[fold here so provider does not see response]

My health care provider cleaned their hands:

- |                                 |                              |                             |  |
|---------------------------------|------------------------------|-----------------------------|--|
| 1. Just before contact with me: | <input type="checkbox"/> yes | <input type="checkbox"/> no |  |
| 2. Before a procedure:          | <input type="checkbox"/> yes | <input type="checkbox"/> no | <input type="checkbox"/> n/a - no procedure this visit |
| 3. After a procedure:           | <input type="checkbox"/> yes | <input type="checkbox"/> no | <input type="checkbox"/> n/a - no procedure this visit |
| 4. After contact with me:       | <input type="checkbox"/> yes | <input type="checkbox"/> no | <input type="checkbox"/> unable to observe             |

My health care provider was (**select one only please**):

- Staff physician
- Resident physician
- Nurse
- Other health professional

about HH through the provision of individual alcohol-based hand-rub containers and actively supporting an “It’s OK to ask” attitude were perceived as the most useful interventions by both patients and HCWs (6). Improving HH among HCWs is a simple and effective measure to reduce the burden of HAIs, but commitment and action at a national level is essential to ensure sustained improvement at the point of care (7). More efforts are also required to widen the scope to all facilities, including those primarily providing primary and ambulatory care (7).

To that end, there are overt and covert methods of auditing. Three main overt methods have been studied: 1. direct observation; 2. measuring product use; and 3. use of self-report or peer evaluation. The gold standard for HH compliance is direct observation, but there are associated costs, including training dedicated staff, time to perform observations and few audits performed at night or on weekends (8). A major drawback of direct observation is that it captures a tiny fraction of overall HH opportunities (0.1-0.2%). Also, this method is most human-resource-intensive of collecting HH data. Another drawback includes the Hawthorne effect – a change in a

person’s behaviour when they are being observed. However, routine auditing by direct observation has been shown to have the lowest cost compared to covert technological auditing and is the most feasible to perform (8).

Effective monitoring of HH compliance is challenging in an ambulatory care setting as direct observation is difficult due to availability of trained auditors, physical layout restrictions, and respecting patient confidentiality. Thus, several studies have started to explore the use of patients as observers in these types of settings (9, 10, 11). Le-Abuyen et al. (2014) found that the patient-as-observer approach appeared to be a viable alternative for hand hygiene auditing in an ambulatory care setting because it educated, engaged, and empowered patients to play a more active role in their own health care. Bittle and LaMarche (2009) found that it was feasible to use patients as observers in an ambulatory care setting and patients were willing to give healthcare providers feedback. Their study concluded that making patients active participants in their care process increased healthcare provider accountability (10). This also strengthens the patient-healthcare provider bond and improves

**TABLE 1: Patients as observer data in the Family Practice Unit from 2013-16**

	2013 (June) N=200 n (%)	2014 (April) N=215 n (%)	2015 (August) N=242 n (%)	2016 (August) N=137 n (%)
Surveys completed	198 (99)	215 (100)	242 (100)	137 (100)
Surveys completed correctly	188 (94.9)	206 (95.8)	237 (97.9)	109 (79.6)
Overall HH compliance	97%	95%	95%	94%

communication, which through joint efforts, will ultimately lead to minimizing the spread of potentially harmful organisms (2).

The purpose of this QI study at Sunnybrook Health Sciences Centre (Sunnybrook) Family Practice was twofold: 1. To investigate whether it was feasible to use patients as observers who could observe all four moments of HH as observation of moments 2 and 3 by auditors can be challenging and 2. To determine if target HH compliance rates of 95% were being achieved in the Family Practice Unit using said patients as observers.

## METHODS

According to the policy activities that constitute research at Sunnybrook, this work met criteria for operational improvement activities exempt from ethics review. The work reported here meets this criterion because hand hygiene is a universally recommended practice. Compliance with HH was evaluated using auditing and feedback to hospital staff. Patients were also informed that participation in this initiative was voluntary and that their care would not be compromised regardless of their response.

The Academic Family Health Team is located at Sunnybrook Health Sciences Centre in Toronto, Ontario. This unit provides comprehensive primary care services to patients and families including primary prevention, low-risk maternity care, chronic disease management and complex care of the elderly. The Family Health Team includes family physicians, resident physicians, medical students, nurses, pharmacists, social workers, a dietitian, an occupational therapist, diabetes educators, administrative staff and volunteers.

This QI study was conducted from 2013 to 2016 and involved four implementation cycles. Each implementation cycle occurred for a two and half week period. A convenience sampling strategy was used in order to obtain representative data by engaging a sample of participants presenting for regularly scheduled appointments. During the implementation cycles, all capable patients presenting to the Family Practice reception on arrival, were asked if they would be willing to participate in observing and recording their health care providers' HH compliance. The clinic office coordinators were responsible for recruiting patients and training patients agreeing to participate. Patients agreeing to participate were given a short one-page survey audit tool (see Figure 1) on which to record their observations. Verbal instructions and instructions found on the survey audit tool included asking patients to: 1) Observe the hand hygiene process for all four moments (before any contact with the patient,

before a procedure, after a procedure, and after any contact with the patient) and examples of procedures relevant to the family practice unit were provided; 2) Fill out the survey anonymously; and 3) Drop it off in a box located in the waiting room.

The contents of the drop boxes were collected at the end of each implementation period. The responses were entered into a spreadsheet for analysis and reporting. Reports were generated to illustrate overall moment-specific HH compliance and profession-specific HH compliance. The rate of compliance was calculated as the number of HH events (hand hygiene protocol was performed) during the implementation period divided by HH opportunities (the total observations during that same timeframe). A chi-square analysis was also completed to test if the proportions differed across years.

## RESULTS

Table 1 shows the total number of surveys distributed and completed by patient observers and the HH compliance for each implementation cycle (2013-2016). Almost all surveys were completed by patient observers in each implementation cycle (range 99-100%). The range for surveys being completed correctly by the patient observers were 79.6% (2016) to 97.9% (2015). Hand hygiene compliance rates for the Family Health Team since the start of the patients as observer program ranged from 94% in 2016 to 97% in 2013, exceeding the overall hospital target of 87%. When HH compliance was observed by profession, allied health professionals (outside of medicine and nursing) had the highest compliance. The chi-square analysis to test if the proportions differed across years was not statistically significant ( $p = 0.34$ ).

## DISCUSSION

The results of this QI study in the Family Health Team suggest that involving the patient as observer is a feasible way to monitor HH compliance in an ambulatory care setting. The patient observers in this study were able to successfully audit all four moments of HH in the clinic with most of the audit forms being correctly filled out. Hand hygiene compliance rates observed by the patient observers in the clinic are comparable to those observed by trained auditors in the same clinic for moments 1 and 4 (data not shown). This suggests that using patients as observers for HH compliance is feasible and may help to reduce costs, increase providers' accountability, engage patients in their healthcare and may

potentially improve communication between patient and provider. However, the rates are likely to be equally affected by observation bias and Hawthorne effect, inflating the compliance rates. Relatively small number of hand hygiene opportunities (HHOs) observed should also be recognized as a limitation of this study, as capturing ~1,600 HHOs over the course of three years just confirms that direct observation is capable of delivering only a very small fraction of the overall data. It should be noted the study team did not sustain recruitment and training of patients as observers post study. It is possible that during each data collection phase, patients previously could have been selected again however, we cannot confirm this. This QI study focused on feasibility of engaging patients as observers.

The results of this QI study are comparable to those of similar nature performed in the ambulatory care settings. For example, Le-Abuyen et al. (2014) found that the overall HH compliance before direct contact with the patient was 96.8% as reported by patient observers in an academic ambulatory care hospital in Ontario, Canada. Bittle and LaMarche (2009) found that the overall HH compliance as measured by the patient-as-observer process averaged 88% (range, 74%–100%) in an ambulatory care facility located in Baltimore, United States. The results of the study also provide insights to profession-specific HH compliance rates, something that has not been extensively reported on in the literature.

The results of this study must be considered in light of study limitations. Convenience sampling was selected due to feasibility, budgetary constraints and the availability and the quickness with which data could be gathered by the participants; although effort was taken to ensure a representative sample of patient observers was obtained. Other limitations to our approach include the reliance on volunteer resources, particularly the clinic coordinator to consent patients and provide instructions to those who agree to participate. This may prove to be a limitation when workload for this role increases substantially or during times when the clinic may be understaffed. Lastly, the study team is aware of the bias the Hawthorne effect creates and recognize this bias might have affected the compliance rates; however, the end goal was patient and provider safety and thus the team is willing to use implicit bias to improve the quality of care delivered.

The Family Health Team unit continues to collect data using patients as observers with consistently high HH compliance rates. This initiative emphasized the importance of patient communication as a novel way to evaluate programs that have direct patient care implications. Education sessions were conducted by the executive director with clinic coordinators and coordinated delivery of results to Infection, Prevention and Control (I, P&C). Limited financial resources were used to maintain this project and thus speak to its sustainability. The success of this initiative has encouraged expansion to other ambulatory areas of the hospital, including the cancer centre, and diagnostic imaging area. Expansion into other

programs is under consideration. Future directions for this study include a validation study of both trained observers and patient observers as well as a qualitative analysis of the impact of this initiative on patient engagement.

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