EDITORIAL COMMENTARY

Big Brother is Washing… Video Surveillance for Hand Hygiene Adherence, Through the Lenses of Efficacy and Privacy

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(See the article by Armellino et al, on pages 1–7.)

The mundane act of performing hand hygiene is critically important for the prevention of healthcare-associated infections. Historically, healthcare personnel have low rates of compliance despite widespread and longstanding recognition, both that hand hygiene adherence is the crux of strategies that reduce hospital infection rates [1–4], as well as the fact that adherence to hand hygiene recommendations is a clear expectation of healthcare institutions, accrediting agencies, and patients [5].

A number of studies have attempted to identify the reasons for poor hand hygiene adherence rates and several additional studies have attempted to pinpoint barriers to universal performance of hand hygiene. Among other obstacles, healthcare personnel may underestimate the consequences of inadequate hand hygiene [6] or may misunderstand the purpose of hand hygiene [7]. In any event, healthcare workers routinely miss opportunities to prevent healthcare-associated infections by failing to perform hand hygiene at critical times.

Healthcare-associated infections do not carry fingerprints or time stamps to identify the offending healers who failed the patient. Absent that, as Didier Pittet [7] has written, "Hand hygiene performance remains the only measure to judge the degree of system safety—and the only possibility for those concerned to know how they are performing." Facilities and entrepreneurs have turned to creative strategies for monitoring and improving compliance [8–10].

In this issue of *Clinical Infectious Diseases*, Armellino et al describe a novel strategy of video surveillance of hand hygiene coupled with real-time, aggregate compliance feedback [11]. Motion-activated video cameras were strategically located throughout a medical intensive care unit. Monitoring and measuring compliance was outsourced to observers in India, and was done for a baseline pre-feedback period followed by a 21-month period of observation and feedback. Clinical staff were categorized broadly by the presence or absence of white coats (attending physicians) and scrubs or uniforms ("other healthcare professionals"). If staff members spent more than 60 seconds in a patient room, they were rated on performance of hand hygiene within 10 seconds of entering or leaving. As observers abroad scored staff by category, real-time adherence scores were updated on electronic boards in the unit hallway.

The study team collected more than 60 000 observations—a stunning volume that dwarfs the data collected by other hand hygiene monitoring programs in the literature. In the 4-month prefeedback period, the hand hygiene adherence rate was 6.5%. Strikingly, this extremely low adherence rate represents the baseline-measured hand hygiene compliance rate in a hospital in which hand hygiene is a "condition of employment" [11]. The initially observed rate is so low that improvement to the mediocre US national average of 40% would have represented substantial improvement. The video observation–immediate feedback strategy, however, was associated with an overall compliance rate of 81.6% in the first 4 months, and 87.9% in the subsequent 17 months of the study. These data are consonant with Pittet's observation about the critical role of feedback in convincing healthcare personnel to improve their hand hygiene adherence [4].

A casual glance at the striking success of this program would suggest that this

Received 12 September 2011; accepted 23 September 2011; electronically published 21 November 2011.

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Clinical Infectious Diseases 2012;54(1):8–9
Published by Oxford University Press on behalf of the Infectious Diseases Society of America 2011.
DOI: 10.1093/cid/cir781

new strategy may be the ultimate answer to the age-old hand hygiene predicament. Unfortunately, the study as it is currently presented, has several significant limitations and weaknesses. For example, some experts in study design might question the quasi-experimental design of the study.

The limitations acknowledged by the authors are important: nonclinical personnel were not rated, there are no benchmarks for these data in the published literature, entries by multiple personnel were not rated, and the quality of hand hygiene was not assessed. The "nonclinical" versus "clinical" distinction is somewhat arbitrary and the authors do not provide information on what fraction of people entering the room were excluded from the compliance scoring. The large discrepancy between the 6.5% baseline compliance rate and the 60% rate that was measured by on-site observers on the same unit before the video intervention may have been attributable at least in part to the omission of personnel. These limitations diminish the generalizability of the high compliance results. The authors also do not note whether other infection prevention interventions were implemented during the study period.

Although healthcare personnel were informed of the monitoring, the elephant in the room is patient privacy. Even in an intensive care unit, cameras aimed at sinks and hand gel dispensers may have captured patients entering and exiting their rooms. That the observers could differentiate physicians from nurses but did not have patients enter the field of view is difficult to believe. The fact that the observers were across the globe and could not identify patients does not lessen the privacy concern. Furthermore, the authors provide no evidence that patients were informed that their unit would be monitored. An inherent tension exists between the effective implementation of video monitoring of hand hygiene and preservation of patient privacy.

In our view, the major weakness of the report is the absence of outcome data to convince the reader that video adherence monitoring achieves results beyond high levels of compliance. The authors were almost certainly measuring rates of hospital-acquired infections in the intensive care unit before and during the intervention period. We find the fact that healthcare-associated infection data are not discussed in the paper to be both surprising and a glaring oversight. Skeptics might conclude that the investigators failed to identify any patient-centered benefit from increased hand hygiene compliance. In our view, in order to be considered for wider use, any infection prevention technique that potentially jeopardizes patient privacy must have clear evidence of efficacy.

Despite these limitations, the novel approach proffered by Armellino et al merits some approbation for its aggressive approach to improving the performance of hand hygiene. Creative methods are clearly warranted when mainstream strategies fail. However, published reports of successful infection-prevention interventions have achieved culture change as part of broader programs [2–4, 11]. An optimal hand hygiene strategy will both safeguard the rights of patients and reduce the occurrence of healthcare-associated infections.

Note

Potential conflicts of interest. All authors: No reported conflicts.

All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest. Conflicts that the editors consider relevant to the content of the manuscript have been disclosed.

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