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Major Article

Merging video coaching and an anthropologic approach to understand health care provider behavior toward hand hygiene protocols

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Background: We used videorecordings of routine care to analyze health care providers' deviance from protocols and organized follow-up interviews that were conducted by an anthropologist and a nurse.

Methods: After consent, health care workers were recorded during routine care by an automatic video remote control. Each participant was invited to watch her or his recorded behaviors on 2 different videos showing routine practices and her or his deviance from protocols, and to comment on them. After this step an in-depth interview based on preestablished guidelines was organized and explanations regarding the observed deviance was discussed. This design was intended to reveal the HCWs' subjectivity; that is, how they perceive hand hygiene issues in their daily routine, what concrete difficulties they face, and how they try to resolve them.

Results: We selected 43 of 250 videorecordings created during the study, which allowed us to study 15 out of 20 health care professionals. Twenty out of 43 videos showed 1 or more breaches in the hand hygiene protocol. The breaches were frequently linked to glove abuse. Deviance from protocols was explained by the health care workers as the result of an adaptive behavior; that is, facing work constraints that were disconnected from infection control protocols. Professional practices and protocols should be revisited to create simple messages that are adapted to the mandatory needs in a real life clinic environment.

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Nosocomial infections; that is, infections acquired in health care settings, are the most frequent adverse event occurring in hospitals and other health care facilities: They influence hundreds of millions of patients worldwide each year.¹ In France, such infections influence 800,000 patients each year, costing about €3 billion with an annual attributable mortality of 4,000 deaths.² Hand hygiene among health care workers (HCWs) is an effective, simple, and inexpensive

way to prevent nosocomial infections, and improving it is therefore a high priority of the World Health Organization.^{1,3} Nevertheless, many studies find that HCWs' compliance with hand hygiene remains quite low in various sociocultural and health care contexts,⁴⁻⁶ even if compliance rates tend to increase in several countries.⁷

This study aimed to achieve a better understanding of hand hygiene practices in health care settings. It was conducted in a medical ward where hand hygiene guidelines remained poorly followed despite many interventions and training sessions.⁸ We combined 2 data collection methods. First, HCWs' hand hygiene practices were videorecorded. Second, in-depth interviews were conducted with each HCW, and each was asked to comment on and explain his or her videorecorded practices. Such a design was supposed to reveal the HCWs' subjectivity⁹; that is, how they perceive hand hygiene issues in their daily routine, which kind of concrete difficulties they face, and how they try to resolve them.

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SB, CT, and PP-W participated equally in this study.

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Conflicts of interest: None to report.

MATERIALS AND METHODS

Data collection

The study was conducted during September and November 2015, in a medical ward specializing in tropical and contagious diseases of a hospital located in southeastern France. It routinely takes care of highly contagious patients (including those with *Clostridium difficile* infection). At the time of the study, this ward staff was composed of 20 HCWs (including housekeepers, nurses, assistant-nurses, and physicians). All were asked to participate in our study. For 6 months, 1 room was equipped with a video camera mounted above the patient's bed, in front of the entry door. The recording automatically began each time someone opened the door, and stopped when someone left the room. For each HCW, 2 videos were selected based on several criteria. First, the video should show different scenes according to the HCW occupational specificity (eg, during a medical round for physicians, of a blood catheter insertion and nursing care for nurses, showing meal tray delivery and nursing care for assistant nurses, and showing meal tray delivery and bedroom cleaning for housekeeping personnel). Videos were selected for their quality and the fact that the care was observable from personnel entry to exit. Videos were selected preferably when they showed a breach in the protocols to introduce the discussion. Finally, the most recent videos were selected to avoid memory bias. Then, each participant was invited to watch her or his recorded behaviors and was asked to comment on observance of protocols toward hand hygiene and gloves-wearing, especially if she or he did not comply with them. If several HCWs were simultaneously present in the room shown on the video, the interviewed HCW was asked to comment on her or his own practices only. Next, we conducted in-depth interviews with participants, dealing with various aspects of their daily professional routine, including hand hygiene and the risk of nosocomial infection. The interview was based on an interview guideline with questions written previous to the study and practiced by the anthropologist (CT) in presence of the research nurse (SB) (Table 1).

Ethical aspects

Participating health care professionals signed an informed consent that guaranteed anonymity. We also asked for the patients' consent:

Table 1
Guidelines used to interview health care workers after viewing video records

Can you talk to me about the situation you just watched on the video in general?
What type of care or professional act is it?
For you, is it a care situation that you feel apprehensive about? Is this a situation where you're suspicious about the risk of nosocomial infections? Why?
What are the elements that strike you the most while watching this video?
Can you describe the process of this situation, focusing a little bit more on hygiene practices and protocols?
Have you observed breaches in hygiene protocols and other practices? Is what you see in the video in accordance with guidelines?
Do you think the protocols:
Are clear? Why?
Are easy to follow? Why?
Are contradictory or absurd? Why?
Are useful or suited to the reality of the risk? Why?
Are there elements in the organization of service or work affecting the implementation of certain hygiene practices? Which ones?
In this situation, did you notice practices or techniques of hygiene that are not in line with protocols but that you do to protect yourself from contamination?
What do you want to add to this topic, regarding the video or more generally to risks of contamination, hygiene practices, and the organization of the work?

those who refused were put in another room and excluded from the study. The recorded content was strictly confidential; only 2 investigators (CT and SB) were allowed to watch it, and they were also the ones who conducted the in-depth interviews with participants. These interviews were taperecorded, and any information that could identify a participant was removed to preserve anonymity and confidentiality. This research was approved by our Ethics Review Board (No. 2016-018).

RESULTS

Of the 250 videos recorded, we selected 43 based on criteria reported above. These allowed us to study 15 health care professionals out of 20 (3 housekeepers, 5 assistant nurses, 3 nurses, and 4 physicians, all women except the 4 physicians). One refused to participate, 3 never appeared on the recordings, and 1 was on sick leave during the entire study. Authors CT and SB carefully watched the videorecordings to identify and classify typical situations in which breaches in compliance with hand hygiene procedures may occur, and to prepare for the in-depth interviews (see above).

Finally, for all HCWs, the World Health Organization 5 Moments for Hand Hygiene:¹ before touching a patient, before clean or aseptic procedures, after body fluid exposure or risk, after touching a patient, and after touching patient surroundings were monitored. We also monitored other standard precautions, including glove use.

In-depth interviews lasted between 20 and 30 minutes. They were recorded and transcribed verbatim. We performed a standard thematic analysis. Authors SB and CT coded the transcripts independently and met with authors PPW and PB to compare, discuss, and adjust their codes. In the next section we detail some of the main themes that emerged from this analysis: HCWs' attitudes toward hand disinfection protocols, how they use gloves, and finally their risk perceptions.

Attitudes toward hand disinfection protocols

Among the 43 videos recorded, 20 showed 1 or more breaches in the hand hygiene protocol. All categories of health care workers were observed, but such breaches were more frequent among nurses and assistant nurses. Putting gloves on before entering a patient's room (instead of disinfecting one's hands in the room and only then putting on gloves) was among the most typical breaches.

All participants displayed a good knowledge of hand hygiene protocols, and the interviews showed that they broke protocols on purpose. Liz, an assistant nurse, talking with an interviewer:

"Liz: See! I always wears gloves before entering the room! Interviewer: "Must they be put on before or after entering the room? Liz: "After entering the room! Well I guess!" Interviewer: "Why?" Liz: "Don't know! Normally I must do an AHR before entering, then enter the room, then do another AHR and put my gloves on! I am just doing everything wrong!"

When the video demonstrated that an HCW was wearing gloves inappropriately, the HCW recognized the errors and described in great detail what should have been done. More generally, all HCWs who were shown not respecting the protocols admitted their errors, which lead them to a spontaneous explanation. In fact, they claimed that written guidelines were sometimes inadequate and confusing, at least in some situations, and more generally too constraining and time-consuming. Nina, a nurse, said: "Why do I persist in my behavior? Because, honestly, it's . . . as I said, just a question of quickness and practice." One of the assistant nurses stated that protocols are for an ideal hospital: "This is not true life." A physician pointed out that the official hand disinfection pathway is unrealistic because it is not possible to disinfect one's hands after each contact with

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