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Formative evaluation of the video reflexive ethnography method, as applied to the physician–nurse dyad

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Abstract

Background—Despite decades of research and interventions, poor communication between physicians and nurses continues to be a primary contributor to adverse events in the hospital setting and a major challenge to improving patient safety. The lack of progress suggests that it is time to consider alternative approaches with greater potential to identify and improve communication than those used to date. We conducted a formative evaluation to assess the feasibility, acceptability and utility of using video reflexive ethnography (VRE) to examine, and potentially improve, communication between nurses and physicians.

Methods—We begin with a brief description of the institutional review boardapproval process and recruitment activities, then explain how we conducted the formative evaluation by describing (1) the VRE process itself; (2) our assessment of the exposure to the VRE process; and (3) challenges encountered and lessons learnt as a result of the process, along with suggestions for change.

Results—Our formative evaluation demonstrates that it is feasible and acceptable to video-record communication between physicians and nurses during patient care rounds across many units at a large, academic medical centre. The lessons that we learnt helped to identify procedural changes

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Contributors MM conceived the idea, secured funding and led the study. AH, EU, MM and SK collected the data. RMF, MH, TH, SK and EU participated in data analysis and interpretation. All authors provided critical input into the article and have read and approved of the final version.

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for future projects. We also discuss the broader application of this methodology as a possible strategy for improving other important guality and safety practices in healthcare settings.

Conclusions—The VRE process did generate increased reflection in both nurse and physician participants. Moreover, VRE has utility in assessing communication and, based on the comments of our participants, can serve as an intervention to possibly improve communication, with implications for patient safety.

INTRODUCTION

Despite decades of research and interventions, poor communication between physicians and nurses continues to be a primary contributor to adverse events in the hospital setting[1,2] and a major challenge to improving patient safety.[3] The lack of progress suggests that it is time to consider alternative approaches with greater potential to identify and improve communication than those used to date. Because video records actions in context that can be reviewed in great detail, this methodology may yield data about poor communication previously inaccessible to more traditional survey, interview and direct observation methods.[4-6] Video recordings have been used for the past 50 years to promote better communication between patients and physicians in primary care settings.[7-10] However, only a few studies[41112] have used video recording methodology to analyse communication between nurses and physicians in the inpatient setting. A unique feature of video recording methodology is that the participants can help interpret—and even learn from—the videos, thus making this methodology a potential intervention for improving communication. It is this potential for intervention that may be the strongest argument for the use of video in health professional communication research.

AN OVERVIEW OF VIDEO RECORDING METHODOLOGY

Video can be a particularly effective tool for describing and understanding practices and behaviours directly. Unlike other methods, video recording provides both primary data and playback capability for analysis of interactions, rather than relying purely on recall.[613] In addition, video can function as an external check of what participants remember having said or done while being recorded. Indeed, the act of reviewing videos can serve as a teaching tool—and collaborative viewing even more so—by reducing the tendency, even when watching a recorded event, to see ‘what one is conditioned to see or even wants to see’ (p44).[6] Videos provide better access to non-verbal communication and other behaviours that make up a large part of communication during a clinical encounter.[14] Video captures so much more than the conversation itself: images of other people who enter and exit the frame, and the brightness of the lights, sounds and noise level, to name only some of the most obvious elements. It is thus apparent why video recordings are sometimes considered the gold standard[6] for answering questions in communication research. The interplay of talk and visual and contextual cues is captured in a single modality,[14] and by capturing multiple communication channels at once, video allows for the assessment of each.

There are compelling advantages to the use of video recording for practices other than communication.[12] For example, videos are reviewable, which allowed researchers and participants in one study to address potential breaches in infection prevention practices that

could lead to cross-contamination or disease transmission.[15] They were able to review moments in time or sequences of behaviour multiple times as a check on trustworthiness. In general, videos provide an analytic resource that can add insight into observed behaviour, reduce bias and increase the rigour of findings.[14]

There are also several challenges and potential disadvantages to video recording.[16] Video recording is time-intensive and resource-intensive[9] and may inhibit participants' discussion of certain conflict-laden topics. Participants' behaviour may be changed by the video recording itself, although such a Hawthorne effect appears to be small[91718] because participants seem to habituate with time and ignore the camera.[4] Video is a more intrusive form of data collection than surveys or direct observation, and because of this, front-line staff, hospital administrators and researchers themselves often initially baulk at the idea. Participants may worry about privacy and reduced efficiency in busy hospital settings; fear the close scrutiny paid to what they consider to be routine, casual and fleeting interactions; or associate video with law enforcement and security surveillance. Specific strategies may be needed to allay both participant and institutional review board (IRB) concerns.[1920]

Researchers have adopted different video-based methods such as video elicitation interviews[921] and video ethnography.[22] Video reflexive ethnography (VRE) has elements of both.[41113] The richly contextualised data captured on video mirror events as they occurred; the 'ethnography' in VRE is attributed to the fieldwork that researchers undertake prior to and during the VRE process as a way of orienting themselves, building relationships of trust and contextualising what emerges from the video reflexive process. When participants review the video, they 'see' their communication practices as they happened in real time, practices that are often habitual and thus likely to occur without awareness.[23] By watching the video together, participants become aware of their own habits and develop an awareness of others'. It is in this joint awareness that participants develop the reflexivity needed for behaviour change.[423] Reflexivity is an interpersonal process that monitors and adjusts clinical practices to promote greater safety by drawing from the wisdom of the group.[23]

The purpose of our study was to conduct a formative evaluation of the feasibility, acceptability and utility of a video-based method to examine and potentially improve communication between nurses and physicians. We also discuss the broader application of this methodology as a possible strategy for improving other important quality and safety practices in healthcare settings. After a brief description of the IRB approval process and recruitment activities, we describe components of the formative evaluation process we used, adapted from Hulscher *et al*[24]: (1) a description of the VRE process itself; (2) an assessment of the exposure to the VRE process; and (3) challenges encountered as a result of the process, along with suggestions for change.

Ethics Approval, Recruitment And Logistical Activities

Ethics approval was granted by the hospital's IRB prior to beginning the study. While unlikely to cause physical harm, video-based ethnographic research can cause emotional distress or anxiety, so sensitivity to the perspective of participants is needed.[19] As various ethical issues related to video recording have been discussed in a prior publication, we do not repeat that information here.[20] Some literature suggests that, due to the unpredictable

nature of what is being video-recorded, informed consent may need to be an ongoing process.[25] Nevertheless, in our work we used a single informed consent document that covered all study phases. However, it was made clear to participants that they could choose to opt out of the study at any time.

We had to determine what communication events between physicians and nurses would provide the richest, most relevant data and whether these events could feasibly be captured easily and unobtrusively. We focused on morning patient care rounds, which are a daily, formal process when physicians assess and develop care plans for their patients. Given that communication tends to be episodic at other times of day, patient care rounds were the time when face-to-face communication between physicians and nurses was most likely to occur.

On general care units in the teaching hospital where this study took place, each team of physicians has a 'panel' of 12–15 patients, while nurses care for 3–5 patients at a time, some of whom—but not necessarily all—may be the responsibility of the same group of physicians. Our overall strategy was to recruit physicians and follow them during their rounding process on a given day, capturing any interactions they or other medical care team members such as physician assistants (PAs) and nurse practitioners (NPs) had with bedside nurses. Table 1 provides an overview of recruitment and logistical activities. We recruited physicians both in person as well as via email. Of the 26 physicians contacted, only *5* declined to participate (84% recruitment rate). A variety of clinicians were recruited, including hospitalists (ie, physicians who manage the care of acutely ill, hospitalised patients) who round alone, medicine teams (generally consisting of an attending physician, residents, interns, medical students and various allied health professionals), surgeons, NPs and PAs. Once a physician agreed to participate, we set up a time to video-record rounds when that physician was next on service. Recruitment was a rolling process extending from February to June 2017 (ie, we recruited three to four physicians in February, another three to four in March, and so on). We recruited nurses in person about 1–2 hours before a scheduled video recording session, although nurses were notified via email a few days ahead of time and given instructions on how to opt out of participating.

A DESCRIPTION OF THE VRE PROCESS

VRE phase 1: video recording

Details of the entire VRE process are described in table 2. The 'dry run' was especially useful to the videographer so she could stand where the camera would capture both physician and nurse in the same frame. Our videographer carried a GoPro HERO4 Silver video camera, which records full high-definition video and is completely portable. Features such as a fixed lens, image stabilisation and wide-angle capability (to capture large groups and their surroundings) are additional qualities deemed important for generating high-quality video recordings.[9] We also used recorder and lavalier microphones for optimal audio quality. Immediately after the video recording ended, physicians were given a $40 gift card in appreciation for participating, while nurses were given a $20 gift card. The larger amount given to physicians acknowledged the greater length of time of their participation.

VRE phase 2: independent review

Independent review stimulates reflection because the video acts as a 'mirror' providing insight into a participant's communication behaviours.[8] As this step required additional commitment on the part of participants, we could not assume that because participants agreed to be video-recorded they would also continue to participate in the study. Independent review was included because of the power differential between physicians and nurses that can inhibit nurses from speaking up.[2627] We invited participants to independently construct a commentary on the recorded events, but with an understanding that parts of this commentary would be shared with the other party to the conversation, thus potentially influencing what was said. Comments from both nurse and physician participants of the same conversation were audio-recorded and later edited into the video in the location where the comment was made, as described elsewhere.[7] Adobe Premiere Pro CC was used for video editing because of its high-quality effects and ease of use.

VRE phase 3: joint review

Joint review is needed to understand the interaction from the perspective of both participants.[8] However, inviting physicians and nurses both, together, to reflect on their original commentaries requires careful consideration of the authority gradient between them, or else nurses may not speak up.[2728] To demonstrate sensitivity to hierarchical differences, we used the following strategies: at least two members of the research team were present for every joint review session; semistructured interviews were held in a private conference room with a large display screen which was hooked up to the laptop computer, allowing the video to be easily viewed by everyone; and interviews with both participants were held in most cases when the nurse was already working and could get patient care duties covered by another nurse, and when the physician was no longer on service.

ASSESSMENT OF THE EXPOSURE TO THE VRE PROCESS

VRE phase 1

We video-recorded 12 medical team patient care rounds in which 14 physicians had participated. The recordings generated vast amounts of data. Three surgeons and 11 physicians from different medical specialties were video-recorded during the 12 patient care rounds. The recruitment rate for nurses was about 75%. In total, the 12 sets of rounds generated 7 hours and 53 min of video; the video-recorded rounding periods ranged from slightly more than 11 min to over an hour in length. Two sets of rounds involved nurses minimally or not at all, and one physician declined to participate beyond the first VRE phase. In the nine remaining videos, physicians had conversations with 56 nurses; 73 nurses provided consent but they did not all participate in rounds. Video conversations ranged from 48 s to almost 5 min in length (average 3 min), and this wide variability had an impact on editing described below.

VRE phase 2

Using the steps outlined in table 2, we chose one conversation from each of the nine patient rounds for phase 2. Phase 2 first required video editing, which was highly variable

depending on factors such as the length of recorded rounds, and on how much sensitive information captured on video had to be blurred to protect privacy (eg, faces of patients or non-participants, identification badges, sensitive information on doors). For VRE phase 2, approximately 3–5 hours of editing per video was required. The number of conversations per set of rounds ranged from 3 to 15 (mean 7.3). Participant independent reviews ranged from 10:10 to 23:50 min for physicians (average 15:08 min), and from 7:18 to 17:50 min for nurses (average 11:30 min). We hired an external transcription service and used a secure cloud-based server for transmitting video files and receiving transcripts. On receipt, to verify all transcripts prior to analysis, two reviewers watched the videos, comparing them against the transcripts and making corrections as needed.

As a result of VRE phase 2, nurses and physicians gained insight into their communication behaviours, so that this step took on the characteristics of an intervention. In several cases, nurses noticed how they alluded to their needs when talking with physicians instead of asking directly for specific orders, and commented that their indirect communication may have made them less effective as patient advocates. One physician gained insight into her communication behaviours when she noticed how, after she had asked for the nurse's input, she interrupted the nurse, saying during the review, "I should have given the nurse a little bit more time to…go through her concerns."

VRE phase 3

We conducted joint review with seven of the nine physician–nurse dyads who participated in VRE phase 2. One nurse and one physician from separate dyads declined to participate further in the study and their data were not included in the formative evaluation process. Editing for VRE phase 3 was dependent on the number and length of comments, taking about 2–4 hours per video. VRE phase 3 reviews lasted on average 29:05 min (range 17:46–41:06 min).

As a result of the VRE phase 3 process, differences in viewpoints between physicians and nurses (which emerged during independent review) allowed participants to develop an appreciation of each other's viewpoints, which had not come to light previously. For example, in one video both the physician and nurse noted that a patient was having difficulty swallowing pills because of oral thrush. The physician focused on the medical problem and wanted to increase the dose of the medication used to treat the thrush. The nurse focused on the patient's pain and wanted to administer a stronger analgesic to lessen the discomfort associated with swallowing pills. During VRE phase 3, however, the physician said, "It took me a little while to sort of understand that…her discomfort from having the difficulty in swallowing these pills was actually in a sense inhibiting her treatment." Thus, VRE phase 3 acted as an intervention to improve communication in this dyad by bringing about shared understanding. Each member of another physician–nurse dyad described how participating in the study would change their communication practices going forward, as described in box 1. Both examples demonstrate that this methodology has the potential to be used as an intervention.

CHALLENGES ENCOUNTERED AND SUGGESTIONS FOR CHANGE

We encountered several challenges associated with recruitment and during formative evaluation. Recruitment might have been enhanced by getting access to physicians' schedules and aligning their schedules with the project timeline earlier in the process. Many physicians agreed to participate but were not on service when we were available to video-record rounds. A more focused recruitment strategy would have likely saved time and made the process more efficient.

During the VRE phase 1 process, we did not track the amount of time the research assistant spent on the unit in proportion to the number of interactions captured. We did note a lot of variability however, owing to differences in each unit's culture: nurses were expected to participate in rounds on some units but not on others. Our research team in the field was possibly too lean, consisting only of a videographer and a single research assistant. The research assistant was responsible for obtaining informed consent from all participants ahead of time, taking general observation notes and distributing monetary incentives at the end. The informed consent process was especially hectic, given that we had to get verbal permission from patients as well. Another assistant could have helped with these logistical activities.

After the third set of rounds, we stopped capturing rounds in one continuous video because of the amount of 'dead' space generated by following physician teams from room to room, frequently across multiple units on multiple floors. However, the beginning and end of rounds represent engagement and disengagement periods where interactions are likely to occur.[6,29] We did not capture these because they involved interactions among physicians only. All interactions between physicians and nurses were captured on video, but we missed the opportunity to capture subtle or non-verbal cues leading up to these interactions (eg, head nod acknowledging a nurse, waving a hand to flag down a physician). In reflecting on what we did (which is part of the VRE process), we determined start and stop times rather than participants, and we acknowledge this researcher-created boundary.[19,29]

In terms of exposure to the VRE process, one dyad commented that they were aware of being video-recorded. The mere existence of the videographer may have contributed to their awareness, although we did not ask participants about their awareness of the camera. We will certainly do so in future work, because the video camera is a 'presence in the research in its own right' instead of simply a recording device.[29,30] Although we had a process for scheduling clinicians for video recording, we underestimated the time needed to edit videos and schedule meetings with clinicians to review a video. Additional efforts are needed to shorten the amount of time between video recording and independent and joint reviews, because minimising the time delay between event and recall increases accuracy and trustworthiness of responses.[31] In the case of our first physician participant, 3 months elapsed between video-recorded rounds and VRE phase 2 review, and while the physician stated that the video helped him to remember the conversation with the nurse, he did not remember the details of the specific patient.

Finally, although we video-recorded conversations in patient rooms, we did not involve patients in the study. This saved time and some administrative complexity, such as needing to get IRB approval for patient participation. But by not involving patients we missed the opportunity to invite patients to contribute their perspective of the recorded conversations, in addition to those of the physician and nurse, and to learn more about the effect of communication on issues that were discussed.

IMPROVING HEALTHCARE QUALITY AND PATIENT SAFETY USING VRE

VRE is an intervention itself in that participants learn from the VRE process, which stimulates behaviour change.[532] VRE may have broader intervention potential by identifying what practices require intervention. For example, we noticed that many nurses used indirect communication when making requests of physicians, suggesting that an intervention aimed at nurses could consist of teaching them to be more assertive and use direct language, and at the same time teaching physicians to be more sensitive to the use of indirect language.

The value of this methodology for improving healthcare quality and patient safety lies in two mechanisms. First, VRE brings into the foreground clinicians' expertise and abilities to assess their own (and their colleagues') behaviours, uncovering 'the actual and potential richness hidden in everyday activity and front-line staff relationships'.[12] As a result, when researchers use VRE, answers to questions of how and why specific events occur align more closely with the reality of everyday practice, promoting better understanding of the phenomenon under investigation so that interventions can be more effective.

Second, VRE is an intervention that can change behaviour because of the learning and behaviour change that occur through reflexivity.[11] Engendering reflexivity in clinicians has been described,[23] but it is worth reiterating that clinicians' incentive to change behaviour is strengthened by the control given to them to direct clinical change, as part of the reflexivity process. Using VRE methodology researchers have explored improving end-of-life care,[32] and demonstrated the ability to improve end-of-shift handovers,[33] the handover process from ambulance to the emergency department[5] and infection control practices.[15]

CONCLUSION

The results of our formative evaluation demonstrate that it is feasible to video-record communication between physicians and nurses during patient care rounds across many units in a large teaching hospital. Our method was shown to be generally acceptable to most clinicians, as the majority of those who we asked consented to participate in the review process. The VRE process generated reflexivity in both nurse and physician participants, an important precursor to the behaviour change that is necessary to improve communication. Moreover, VRE has utility in assessing communication and, based on the review comments by our participants, can serve as an intervention, with positive potential for improving patient safety.

Whether used to study communication or some other clinical process, VRE can help researchers develop interventions, as well as serve as an intervention itself, to better align care, quality and safety for patients. VRE is also a method that can illuminate the stream and

structure of behaviours associated with complex practices and relationships and, in so doing, can stimulate learning and change, both of which are necessary to advance patient safety.

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Box 1 From VRE phase 3: an example of VRE's potential as an intervention

INTERVIEWER: "Have you learnt anything through this process of participating in the study that may affect your communication practices in the future?"

RN: "…and I think even just, I try to not be wordy with you or any doctor for that fact because I know that you want to get on to see your next patient. But maybe if I was just a little bit more including of everything, maybe then you would get more of a full story. You wouldn't have to ask me, 'oh, was GI panel sent too?'"

MD: "So learning from the study, one it was helpful to know that it's important to share the reasons behind…because I usually have it to go ahead and tell the plan for today, CT, MRI or looking for scans. But chest x-rays, these kinds of things, tests that we sometimes don't consider that big, it can be big because of the patient mobility or other issues…are also equally important to be shared because it's more of the logistics, not necessarily medical necessity thing. So that's definitely helpful to know. Because nurses spend more time with patients than we, or have to pace the patient for me when they're getting all these tests done. The other thing sometimes I find helpful is…or basically in sharing this conversation with nurses, they do bring up the scheduling part, like which one will be first, second, so NPO status. The patient comes back from the study, 'can I feed them?' and my response is 'no' because they have just one more study that we need, or the second study doesn't need NPO so you're okay to resume diet. So again, it…would be good for nurses to know all those things. I think that would be the one take-home message for me."

GI, gastrointestinal; MD, medical doctor; NPO, nil per os, or nothing by mouth; RN, registered nurse; VRE, video reflexive ethnography.

Table 1

Recruitment and logistical activities

Timing	Activities
2 months before	• Obtained endorsement from physician (eg, Director of Hospitalist Programme) and nursing leadership (eg, Nursing Research Council). • Presented study at hospitalist group and nursing leadership meetings. • Set up individual meetings with nurse leaders and professional network of physician colleagues. • Scheduled date/time for video recording with a specific physician.
4–5 days before	• Sent ‘blast’ email to all nursing staff of the general care unit where video recording was occurring. Included attachment (single-page, bulleted study protocol). • Posted flyers on the unit.
1–2 days before	• Sent a second email to nurses on the general care unit where video recording was scheduled. • Contacted charge nurse to alert him/her as well to the upcoming video recording session.
Day of video recording	• Posted notices at the nursing station about the time and duration of video recording. • Obtained informed written consent from nurses, making note of who declined to participate. • Alerted patients/families; got advice from staff on which patient rooms not to enter (eg, confused and frightened by large/unknown groups of people, frequently combative, newly diagnosed with terminal disease). • Obtained verbal consent from other patient care team members who were not subjects of the study (eg, pharmacists, care coordinators).
Immediately after	• Distributed gift cards to physician and nurse subjects. • Recruited physician and nurse subjects for the second phase of the study.

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Table 2

Phases of video reflexive ethnography (VRE)

VRE phases	Analysis process
Phase 1: video recording 1.1 Conducted a'dry run' 1–2 days before video recording to understand logistical issues that may have created a challenge. 1.2 During the 'dry run' we considered the positioning of videographer to minimise disruptions during video recording. 1.3 Video-recorded patient care rounds in their entirety. 1.4 Position of the videographer was adjusted if necessary. 1.5 Each set of rounds was edited into separate clips, each clip containing one conversation between the physician and a nurse.	First-level analysis • Members of the research team reviewed each video as soon as possible after recording to assure that the phenomenon of interest (communication between physicians and nurses) was being captured. • Research team voted on which clip contained the most interesting communication exchange to take forward to phase 2. Communication exchanges were deemed 'interesting' if there was lack of consensus or differing perspectives between nurses and physicians.
Phase 2: independent review 2.1 Participants independently reviewed a copy of the video-recorded conversation on a laptop that we took to them. 2.2 Participants were asked to stop the video at any point and comment on their thoughts or feelings, recalling their cognitive activity at the time. 2.3 Specific questions were asked during the interview to prompt recall (eg, "What surprised you about the conversation, if anything?"). 2.4 Comments from both nurse and physician participants of the same conversation were audio-recorded. 2.5 Comments were edited into the video at the exact timestamp when the comment was made.	Second-level analysis • In research team meetings we watched videos with embedded comments and discussed what we were seeing. • Preliminary themes were identified through individual video reviews and discussed in team meetings.
Phase 3: joint review 3.1 In semistructured interviews conducted by the study team members, each physician-nurse dyad first watched the video together with both sets of comments embedded in it. 3.2 To generate reflexivity, we asked participants to describe why—during the independent review—they paused the video at a particular juncture, to understand the interaction from their perspectives. 3.3 To learn about the development of shared understanding, we asked if any independent review comments from the other participant revealed information that was unknown or misunderstood during the original conversation.	Third-level analysis • Using a constant comparative technique, the members of the research team independently reviewed the transcripts of both phase 2 and phase 3 reviews, looking for similarities as well as differences in themes between the phases. • Discussion of findings to reach consensus.