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

Milisa Manojlovich, Richard M. Frankel, Molly Harrod, Alaa Heshmati, Timothy Hofer, Elizabeth Umberfield, Sarah Krein

ABSTRACT

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. In this article, we describe how 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. We describe lessons learned as part of the evaluation process and the broader application of this methodology to other quality and safety practices in healthcare settings. We sought to: (a) recruit and video record sufficient numbers of physicians and nurses to understand the logistics that would best facilitate recording; (b) develop and implement a process to capture independent comments on a video-recorded conversation between two clinicians; and (c) conduct a joint review of the same video with clinicians who were involved in the conversation.

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 center. We describe several lessons learned that helped to identify procedural changes for future projects. The VRE process did generate increased reflection in both nurse and physician participants. Moreover, VRE has utility in assessing communication

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and, based on the comments of our participants, can serve as an intervention to possibly improve communication, with implications for patient safety. Whether used to study communication or some other clinical process, VRE can help develop interventions, as well as potentially serve as an intervention itself, to better align care, quality, and safety for patients.

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 are reproducible and 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[4,11,12] have used video recording methodology to analyze 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 behaviors directly. Unlike other methods, video recording provides both primary data and playback capability for analysis of interactions, rather than relying purely on recall.[6,13] 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."[6, p.44] Videos provide better access to nonverbal communication and other behaviors 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, 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, visual, and contextual cues are all 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 reproducible, 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 behavior multiple times as a check on trustworthiness. In general, videos provide an analytic resource that can add insight into observed behavior, reduce bias, and increase the rigor of findings.[14]

There are also several challenges and potential disadvantages to video recording.[16] Video recording is time- and resource-intensive[9] and may inhibit participants' discussion of certain conflict-laden topics. Participants' behavior may be changed by the video recording itself, although such a Hawthorne effect appears to be small[9,17,18] 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 balk 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.[19,20]

Researchers have adopted different video-based methods such as video elicitation interviews[9,21] and video ethnography.[22] Video reflexive ethnography (VRE) has elements of both.[4,11,13] The richly contextualized data captured on video mirror events as they occurred, representing the "ethnography" portion of the method. 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 behavior change.[4,23] 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 to assess 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.

Feasibility studies identify any changes that are needed in procedures or interventions prior to an efficacy study.[24] After a brief description of the IRB approval process and recruitment activities, we describe components of the formative evaluation process, adapted from Hulscher:[25] (1) a description of the VRE process itself; (2) an assessment of the exposure to the VRE process; and (3) problems 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] Various ethical issues have been discussed in a prior publication.[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.[26] However, in our case the informed consent document covered all study phases because participants could at any time choose to opt out of the study.

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 three to five 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 five declined to participate (84% recruitment rate). A variety of clinicians were recruited, including hospitalists (i.e., physicians who manage the care of acutely ill, hospitalized 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 (i.e., we recruited three to four physicians in February, another three to four in March, etc.). We recruited nurses in person about one to two 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 One: Video Recording

Details of the entire VRE process, including the analysis conducted at every phase, 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 stabilization, 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 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 Two: Independent Review

Independent review stimulates reflection because the video acts as a "mirror" providing insight into a participant's communication behaviors.[8] As this step required additional commitment on the part of participants, we could not assume that because participants agreed to be video recorded that 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. Independent review is also an important step because it captures each participant's individual recall and interpretation of recorded events without the influence of other participants. 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 Premier Pro CC was used for video editing because of its high quality effects and ease of use.

VRE Phase Three: Joint Review

Joint review is needed to understand the interaction from the perspective of both participants.[8] Semi-structured 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. Interviews were held in a conference room with a large display screen which was hooked up to the laptop computer, allowing the video to be easily viewed by everyone.

ASSSESSMENT OF THE EXPOSURE TO THE VRE PROCESS

VRE Phase One

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 seven hours 53 minutes of video; the video-recorded rounding periods ranged from slightly more than 11 minutes 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 seconds to almost five

minutes in length (average three minutes), and this wide variability had an impact on editing described below.

VRE Phase Two

We used nine sets of patient care rounds for VRE Phase Two. Phase Two 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 (e.g., faces of patients or non-participants, ID badges, sensitive information on doors). For VRE Phase Two, approximately three to five hours of editing per video was required. Participant independent reviews ranged from 10:10 – 23:50 minutes for physicians (average 15:08 minutes), and from 7:18 – 17:50 minutes for nurses (average 11:30 minutes). The video footage was also transcribed and the number of conversations per set of rounds ranged from three to 15 (mean 7.3).

As a result of VRE Phase Two, nurses and physicians gained insight into their communication behaviors, so that this step took on 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 noticed how she had asked for the nurse's input, but then interrupted the nurse before she was finished, saying during the review, "I should have given the nurse a little bit more time to… go through her concerns."

VRE Phase Three

We conducted joint review with seven of the nine physician/nurse dyads who participated in VRE Phase Two. One nurse and one physician from separate dyads declined to

participate further in the study and their data were not included in analysis. Editing for VRE Phase Three was dependent on the number and length of comments, taking about two to four hours per video. VRE Phase Three reviews lasted on average 29:05 minutes (range 17:46 – 41:06 minutes).

Through the VRE Phase Three process, participants learned about similarities and differences in their viewpoints and discovered how inferences and assumptions underlying those viewpoints affected communication. 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 Three, 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 Three 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 the 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 One 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 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.[6,27] 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 (e.g., head nod acknowledging a nurse, waving a hand to flag down a physician). In reflecting on our process, we determined start and stop times rather than participants, creating an artificial boundary for rounds, which is inconsistent with the VRE process.[19,27]

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.[27,28] 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 minimizing the time delay between event and recall increases accuracy and trustworthiness of responses.[29] In the case of our first physician participant, three months elapsed between video-recorded rounds and VRE Phase Two 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 obtain informed consent from patients because they were not the focus of this study. By not getting consent from patients, we missed the opportunity to have them confirm or reject what we were told, 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 video in which they participated in, which in turn stimulates behavior change.[5,30] VRE may have broader intervention potential by providing educational content to those who did not participate. 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, so that VRE may have utility in clinical contexts beyond that of communication. First, this method allows researchers to engage with the complexity of the "sites and processes the research sets out to describe"[31] to assess clinicians' behavior and better understand the influence of context on quality and safety. As a result, answers to questions of how and why specific events occur align more closely with the reality of every day practice, promoting better understanding of the phenomenon under investigation so that interventions can be more effective.

Second, VRE is an intervention that can change behavior because of the learning and behavior change that occur through reflexivity.[11] Engendering reflexivity in clinicians has been described,[23] but it is worth reiterating that clinicians' incentive to change behavior 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[30] and demonstrated the ability to improve end of shift handovers,[32] the handover process from ambulance to 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 behavior 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 behaviors 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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Table 1. Recruitment and Logistical Activities

Timing	Activities
Two months before	• Obtained endorsement from physician (e.g., Director of Hospitalist Program) and nursing leadership (e.g., 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.
Four to five 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.
One to two 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 nursing station about 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 (e.g., 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 (e.g., 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.

Table 2. Phases of Video Reflexive Ethnography

VRE Phases	Analysis
Phase One: Video Recording	First-level Analysis
1.1 Conducted a "dry run" one-two days before video recording to understand logistical issues that may have created a challenge. 1.2 During "dry run" we considered the positioning of videographer to minimize 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.	• 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 Two.
Phase Two: Independent Review	Second-level Analysis
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 (e.g., "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 in the exact location where the comment was made.	• 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 Three: Joint Review	Third-level Analysis
3.1 In semi-structured interviews conducted by 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 they paused the video at a particular juncture, to understand the interaction from their perspectives.	• Using a constant comparative technique, members of the research team independently reviewed transcripts of both phase two and phase three reviews, looking for similarities as well as differences in themes between the phases. • Discussion of findings led to consensus, and were shared with the entire team.

Box 1. From VRE Phase Three: An Example of VRE's Potential as an Intervention

INTERVIEWER: Have you learned 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 n.p.o. 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 n.p.o. 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.

Legend: RN = registered nurse; GI = gastrointestinal; MD = medical doctor; CT = computerized tomography; MRI = magnetic resonance imaging; n.p.o = *nil per os*, or nothing by mouth.