Use of Video Technology in End-of-Life Care for Hospitalized Patients During the COVID-19 Pandemic

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CE 1.0 Hour

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Background Infection control protocols, including visitor restrictions, implemented during the COVID-19 pandemic threatened the ability to provide compassionate, family-centered care to patients dying in the hospital. In response, clinicians used videoconferencing technology to facilitate conversations between patients and their families.
Objectives To understand clinicians' perspectives on using videoconferencing technology to adapt to pandemic policies when caring for dying patients.
Methods A qualitative descriptive study was conducted with 45 clinicians who provided end-of-life care to patients in 3 acute care units at an academically affiliated urban hospital in Canada during the first wave of the pandemic (March 2020-July 2020). A 3-step approach to conventional content analysis was used to code interview transcripts and construct overarching themes.
Results Clinicians used videoconferencing technology to try to bridge gaps in end-of-life care by facilitating connections with family. Many benefits ensued, but there were also some drawbacks. Despite the opportunity for connection offered by virtual visits, participants noted concerns about equitable access to videoconferencing technology and authenticity of technology-assisted interactions. Participants also offered recommendations for future use of videoconferencing technology both during and beyond the pandemic.
Conclusions Clinician experiences can be used to inform policies and practices for using videoconferencing technology to provide high-quality end-of-life care in the future, including during public health crises. (*American Journal of Critical Care.* 2022;31:240-248)

Visitor restrictions in hospitals are a common part of infection prevention and control (IPAC) measures to combat the spread of COVID-19.[1-3] These restrictions and other IPAC measures compromise essential end-of-life care as patients' families and health care teams have less physical access to patients.[4,5] Clinicians report experiencing difficulty in communicating and building relationships with patients and their families because of the limited physical presence of patients' families[6] and the requirement for families and clinicians to wear full personal protective equipment.

Moral and psychological distress among clinicians increased as they were limited in their ability to provide essential components of care such as physical contact, comfort, and a sense of connection in patient-preferred ways. In response to visitor restrictions, clinicians have tried to compensate by being present for patients during their final moments of life and facilitating virtual connections between families and patients to allow communication, promote comfort, and create a meaningful death experience.[7,8]

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Before the pandemic, the use of telecommunication was increasing in many health care contexts. Documented benefits include improvements in assessment and management of symptoms through remote monitoring[9]; improvements in patients' knowledge, health behavior, and clinical outcomes[10]; facilitation of goal-of-care discussions[11]; and reductions in travel burden and cost related to in-person visitation.[12,13] Although many health care institutions have adopted videoconferencing as an alternative to traditional communication methods, research is limited on the experiences of clinicians who used videoconferencing to provide end-of-life care during the pandemic. As key individuals who influence the use of technology in the hospital setting, clinicians can help to generate recommendations for the effective use of videoconferencing technology in the current pandemic and beyond. This report addresses the research question, "What were clinician perspectives on using videoconferencing technology to adapt to IPAC practices when caring for dying patients during the first wave of the COVID-19 pandemic?"

Methods
Study Context

This study was embedded in a palliative care clinical program called the "3 Wishes Project." As part of the 3 Wishes Project, an interprofessional care team elicited and fulfilled terminal wishes for dying patients and their family members to help alleviate suffering and honor dying patients during their last moments.[14,15] This clinical program was expanded to the COVID-19 and medical step-down units as part of a research initiative on adapting approaches to end-of-life care for patients with COVID-19 during a surge of cases in Ontario, Canada. Approaches were initially adapted for visitor restriction policies that, in March 2020, prohibited visitors inside hospital rooms. When the policies were changed to allow a brief visit immediately preceding the patient's death, the approaches were again modified. We previously reported on clinicians' perceptions of the value of this program for allowing human connection; helping

Table
Demographic data

Characteristic	No. of clinicians (N=45)
Sex	
Female	35
Male	10
Unit	
Intensive care	34
COVID-19	7
Medical step-down	4
Interview format	
Telephone	20
Zoom	25
Role	
Registered nurse	18
Attending physician	11
Medical resident	8
Spiritual care clinician	2
Clinical nurse specialist	1
Registered practical nurse	1
Nurse manager	1
Social worker	1
Respiratory therapist	1
Dietician	1

the interprofessional clinician team, then pilot tested and refined. The guide consisted of questions about the experience of providing end-of-life care during the pandemic. It included questions about the use of technology to support patients, families, and other clinicians.

Data collection was completed by graduate-trained qualitative researchers employed as non-clinical research staff (M.S., A.T.) or faculty (M.V.). Data were collected past the point of theoretical saturation to ensure the representation of all clinicians who cared for each patient enrolled in the original study.[14,15,18] Interviews were conducted via either a videoconference or a telephone call, according to participant's preference. Interviews were recorded, transcribed verbatim, and deidentified. The transcripts were not shared with the participants.

Ethics

The Hamilton Integrated Research Ethics Board approved this study and all participants provided informed consent.

Data Analysis

Data were analyzed using a 3-step approach[19] to conventional content analysis.[20] First, open and axial coding were used to develop an initial coding framework that provided a more focused explanation of the clinician experience.[21] Two independent coders (A.E., M.S.) completed the initial framework, which was shared with and affirmed by the broader research team. Then the coding framework was further refined through discussions of key ideas and categories.[22] Last, the Framework Method[23] was used to abstract data and summarize them along 2 matrices: types of clinician-facilitated interactions and the contextual aspects of using technology-assisted communication tools. Comparisons between the matrices were made to construct higher-level themes.[23]

Results

The study included 45 participants with various clinical designations (see Table). Clinicians reported numerous opportunities and challenges when using videoconferencing technology to adapt to visitor restrictions: (1) facilitating patient-family virtual connections to provide family-centered care; (2) ensuring equitable access to technology to facilitate these interactions; (3) having consistently authentic interactions with the patients and their families; and accordingly, (4) making recommendations for future use of videoconferencing technology in end-of-life care.

ensure that family, friends, and clinicians were all focused on the patient's individuality and their preferences; and countering the challenges of providing optimal end-of-life care in the intensive care unit (ICU) during the pandemic.[15]

Study Design and Setting

As part of the 3 Wishes Project, this qualitative descriptive study[16] was undertaken from March 2020 to July 2020 to understand clinicians' perspectives on providing compassionate end-of-life care for critically ill patients during the first phase of the COVID-19 pandemic. The study was conducted across the ICU, medical step-down unit, and the COVID-19 unit at an academically affiliated acute-care hospital in Ontario, Canada. The current report is a nested secondary qualitative analysis of the data related to videoconferencing from that study.

Recruitment

Clinicians who cared for at least 1 dying patient in the hospital during the first wave of the pandemic were recruited through email requests to participate in a 30- to 45-minute semistructured interview. Purposive sampling was used to maximize the diversity of professional roles and hospital units.[17]

Data Collection

Semistructured interviews were conducted with clinicians who cared for dying patients. The interview guide was developed with input from members of

Virtually Putting the Family in Family-Centered Care

Clinicians adapted standard bedside interactions by using videoconferencing technology to facilitate family-patient interactions and discussions about the goals of care with patients' families. Patients and their families communicated through iPads that were provided by the hospital and equipped with a Zoom-for-Healthcare account. These interactions were compliant with the Personal Health Information Protection Act. The absence of family at the bedside was perceived as challenging and required telephone calls and virtual visits (videoconferences) to be integrated into the clinician workflow. Clinicians used videoconferencing software to facilitate discussions with families about medical details, prognosis, and goals of care and to provide emotional support. This technology was also used for final goodbyes:

> They had a session where they said their goodbyes over FaceTime and then I came in with the respiratory therapist and . . . we took him off the ventilator. (Registered nurse)

To facilitate communication between a patient and their family, clinicians chose the format that best suited the patient's physical and cognitive states. Scheduled synchronous methods included videoconference and telephone calls, which provided real-time interaction between clinicians, families, and patients. Asynchronous methods included prerecorded voice and text messages from a patient's family that were later played to the patient by a clinician. Synchronous virtual visits facilitated interaction in the moment for conscious patients, but one attending physician noted that patients with certain impairments or altered levels of consciousness were not able to benefit fully from this type of communication:

> Given her visual impairment and some hearing impairment, that wouldn't have been a viable option for her. Not to mention, her cognitive impairment—whether she would even understand that she's talking to her son through a screen.

Facilitating telephone and videoconference calls between patients and families required time from clinicians. Team members felt that this time could have been spent on other important tasks related to patient care.

> That would be time away, we have to sit by the bedside of one of our patients so that's time away where you're either

watching somebody else's patient or while [the patient is] chatting with family. (Registered nurse)

Despite these challenges, clinicians generally expressed appreciation for having videoconferencing technology to support virtual connections with families and patients. Videoconferencing technology allowed clinicians to mitigate barriers imposed by visitor policies and to connect patients with their families while preventing the spread of infection.

> I think the virtual visits are great especially in this time . . . [because virtual visits] keep [family members] safe versus coming to clinics. (Dietician)

Reflecting on the advantages of virtual visits, some clinicians described these modes of contact as rewarding because they allowed patients and families to feel connected. The absence of families in the hospital during the pandemic underscored the importance of family engagement in improving end-of-life quality and communication.

> I'm now convinced that family members at the bedside improves patients' ability to get better; [allows] people [to talk] through difficult times . . . and then [allows] communication around end of life. (Attending physician)

Other study participants described virtual visits to be the best option available under the circumstances but acknowledged that technology-assisted communication cannot replicate the impact of physical presence and face-to-face interactions, particularly for end-of-life care.

Inequitable Access and Use of Videoconferencing Technology

Clinicians reported various enablers and barriers to accessing and using technology, including limited availability of devices and varying degrees of technological literacy.

Clinicians reported issues of availability and access at the hospital and for families at home. At the beginning of the pandemic, there were not enough devices to facilitate regular contact with patients and families. In response, more iPads were quickly made available within the hospital. Many clinicians reported that facilitating these calls was sometimes time-consuming, as clinicians were required to locate and set up iPads as well as coordinate with colleagues. These factors limited clinicians' ability to conduct frequent virtual visits, a result that a medical resident described as "a disservice to the patients."

In their homes, some family members either had no access to a device or had access only to technology that was too old to support videoconferencing. Other family members had devices that allowed videoconferencing but had insufficient technical skills; for these family members, clinicians sometimes needed to put forth great effort to facilitate virtual visits. When remote coaching was provided by clinicians, it was not always successful.

> Helping [patient's daughter] to set up the Zoom calls was quite difficult . . . we were trying to set up Zoom on her iPad . . . she was struggling so much setting it up. (Registered practical nurse)

Authenticity of Technology-Assisted Interactions

Clinicians described difficulty giving nonverbal cues during virtual interactions. Other challenges included ethical concerns about unconscious patients participating in virtual visits and feelings of intrusion in private patient-family moments.

Compared with videoconferences, telephone interactions with family members were perceived to be less satisfactory for patient visits and clinical decision-making because nonverbal cues were harder to perceive and process. Clinicians generally preferred virtual visits because they enabled visual cues that were considered beneficial for building trust and rapport with patients' families.

Clinicians were reluctant to replace face-to-face interactions with virtual communication when not necessary.

> When you're talking, like Zooming here, when you're talking to somebody face to face [via videoconference], even if it's a nurse, you're reading [the] other [person's] body language. You're feeling like you can put a face to a name and that draws you into more of a trust[ing] and less of a helpless feeling. (Registered nurse)

While recognizing the value of virtual visits, clinicians described missing physical touch and other forms of nonverbal communication.

> The eye contact, the touch, human touch is not there through technology. (Registered nurse)

Authentic interactions through videoconferencing were disrupted by technical challenges such as technical lag, audio problems, unstable internet connection, and other difficulties with software-specific features of videoconferencing.

> One of the problems was that the [virtual Zoom] background of the iPad was stuck on outer space. That was unfortunate, but the son was really understanding. (Registered nurse)

Some patients did not have the physical or cognitive ability to hold the device on their own during a virtual visit, so a clinician would assist. Holding the device and being present in the background during the visit raised concerns among some clinicians about intruding on patients' personal moments with their families. Clinicians specifically expressed distress about hindering the patient's freedom to communicate their emotions with their families.

> A lot of times there are others in the room . . . there's constraint on being open emotionally. I find that difficult during this period of time. (Registered nurse)

During virtual visits, clinicians witnessed some family members becoming distressed when seeing their loved one with tubes in their mouth and nose, and concerns were raised about whether some unconscious patients would feel comfortable being seen on video. For one conscious patient who was able to communicate, an attending physician reported having to prematurely end a virtual family visit because the patient felt "embarrassed about [their] appearance" and said that they "didn't want to be remembered like that."

Suggestions on Future Implementation of Videoconferencing Technology

Clinicians discussed their perspectives on using videoconferencing technology in the near future and after the pandemic ends. Many expressed a need to improve access to videoconferencing technology. Several clinicians made recommendations that they felt would ensure that interactions were as meaningful as possible: increasing the availability and use of videoconferencing technology, explicitly scheduling more frequent and longer virtual visits, training staff on issues related to virtual visits, and preparing patients and their families for these visits. One clinician recommended assigning dedicated personnel to assist with the logistics of conducting virtual visits, a suggestion that was adopted later in the pandemic.

> Maybe a representative, superuser of Zoom that is on the unit who can help set up more Zoom meetings, because there's some patients who only get 1,

once a week for 15 minutes; that's just not enough. (Registered nurse)

Clinicians expressed that videoconferencing would be useful even after the pandemic to allow participation from distant family members near the end of the patient's life.

There's lots of families that can't drive or live far away, the virtual visits are a great idea so I'm hoping that we continue to do that, especially for families that are overseas. (Registered nurse)

Discussion

This study investigated clinicians' experiences with videoconferencing technology when caring for dying patients during the pandemic. Clinicians used videoconferencing technology to combat patients' isolation, virtually create family presence at the patient's bedside, describe patients' trajectories, discuss patients' prognosis, and conduct goal-of-care conversations. These functions are key to building rapport, delivering holistic patient care, and ensuring that interventions are aligned with a patient's preferences and values, especially with respect to their present and predicted quality of life.[24-26] Furthermore, enabling patient-family communication is important for addressing the psychological and spiritual needs of patients dying in isolation[25,27] and the psychological well-being of families.[28]

Clinicians in the study highlighted the need for and the importance of effective communication with patients and families in building trust and providing proper patient care. Similar results have been found in other studies: effective communication helps build rapport between clinicians, families, and patients and hence is an essential part of palliative care.[29,30] Establishing rapport between a clinician and a patient enhances communication and fosters connection, allowing the clinicians to become more involved in the patient's care journey.[31-33] In the current study, end-of-life communication often occurred through virtual visits, which clinicians preferred over telephone calls because of the visual dimension that was added to the interaction. The visual component was particularly valuable for our clinicians to understand nonverbal cues and establish trust with families. This finding mirrors that of another study, although in that study, clinicians still reported difficulties in observing nonverbal cues and establishing rapport, while patients either favored or were neutral toward videoconferencing.[34] Regardless of the degree to which technology can allow human interaction without

the parties being in the same room, clinicians in our study emphasized their reluctance to replace face-to-face interactions with virtual communication when not strictly necessary.

Despite the benefits of using videoconferencing technology, our study demonstrated that optimal implementation was hindered by inequitable access to technology, technical difficulties, clinician workload, and coordination of personnel and resources. These challenges are not unique to the 3 hospital wards in this study.[35] For example, other studies have shown that technical challenges such as audio quality and poor internet connections disrupted the flow and quality of communication,[36] decreased engagement, caused frustration,[36] challenged relationship building,[37] and consequently have led to an overall negative perception of using videoconferencing technology among clinicians.[38] These challenges may be overcome with proper training and workflow integration. In our study, clinician recommendations for dedicating personnel to support virtual visits align with other recommendations to involve telehealth champions in improving video communication services.[39-41]

Participants in our study did not raise significant concerns about confidentiality and information security when discussing personal health information virtually. However, in other studies, authors have reported risks in the exchange of confidential health care information through free video communication platforms.[42] Our study's clinicians mitigated such risks by using videoconferencing platforms that were compliant with the Personal Health Information Protection Act. Considering the importance of informing patients regarding the nature of virtual visits, Wong and colleagues advise that informed consent should be obtained from the patient or their substitute decision maker before connecting virtually.[43] The participants in our study were also conflicted about the necessity of their presence to facilitate virtual interaction with family members, often remarking that it felt intrusive.

Participants noticed that without regular visits between patients and their family members, family members did not view progressive decline and may not have anticipated the severity of the patient's condition. Furthermore, clinicians often did not have the opportunity to explain and show the full view of the patient and their room as they typically would during in-person visits because videoconferencing technology can create a segregated view of the setting.[44] Without regular in-person visits and with the often limited visibility of patients on video, family

members were sometimes emotionally unprepared for the altered appearance of their critically ill loved ones.[44] By describing the patient's condition in advance and using empathetic statements, clinicians can prepare family members before establishing a virtual connection.[45]

Because conveying empathy without using physical gestures can be challenging, various nonverbal gestures are recommended to express empathy during difficult conversations on virtual platforms. Nonverbal behaviors include maintaining eye contact through the camera, leaning in, nodding one's head while listening, and placing one's hands over one's own chest.[46,47] Suggestions for conveying empathy verbally include the use of "I wish" statements, such as "I wish that we could all be together in person right now."[46] When genuinely used, these actions are reported to help clinicians connect on a personal level during virtual visits with patients and their families.[47]

Limitations

Because recruitment was restricted to a single hospital center located in a large urban academic environment, the findings might not be transferable to other settings.[48] Also, the study was conducted during the first wave of COVID-19; clinician experiences later in the pandemic may differ. The transfer of patients across hospital systems increased the distance between patients and families; nonetheless, over time, visitor restrictions were relaxed, personnel such as social workers were redeployed to acute care settings to assist, and videoconferencing devices became more familiar and more available in the hospital. The breadth of perspectives was limited as participants were primarily nurses or physicians. Perspectives from patients, patients' families, other health care professionals, and companies that design videoconferencing technologies should be included in future studies investigating use of videoconferencing in health care settings.[49] Future videoconferencing research could also explore privacy and security concerns, economic implications, socioeconomic or linguistic barriers, and information technology infrastructure in hospital or hospice settings.[46,50-52]

Conclusions

The COVID-19 pandemic has presented clinicians with the opportunity to modify communication strategies for providing end-of-life care to dying patients and their families. When IPAC policies prohibited families from being present at the bedside, clinician-facilitated virtual interactions enabled families to transcend the walls of the ICU and participate in important patient-family interactions, such as discussing end-of-life care and providing emotional support to their loved ones. In doing so, clinicians were able to connect families with their dying loved ones throughout their hospital stay, including during their final moments. Clinicians also experienced challenges with using and providing access to videoconferencing technology when caring for dying patients. In this study, we gathered clinician experiences and recommendations about videoconferencing; this information can be used to shape policies for using videoconferencing to provide high-quality end-of-life care in the future, including during public health crises.

SEE ALSO

For more about virtual visitation during COVID-19, visit the *AACN Advanced Critical Care* website, **www.aacnac-conline.org**, and read the article by Copley and Morley, "Virtual Visitation and Microethical Decision-making in the Intensive Care Unit During COVID-19" (Winter 2021).

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