Critical Care Explorations

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Leveraging Tele-Critical Care Capabilities for Clinical Trial Consent

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Abstract: A severe coronavirus disease 2019 patient admitted to our institution for medical management was enrolled in a randomized placebo-controlled trial of an investigational therapeutic for coronavirus disease 2019. We leveraged existing video-telecommunication equipment to obtain informed consent. We found video-telecommunication use closely mirrored person-to-person contact for research consent by maintaining engagement and ensuring understanding. Video-telecommunication use facilitated clinical research while minimizing unnecessary exposure to coronavirus disease 2019 and conserving personal protective equipment. Prior to the coronavirus disease 2019 pandemic, research regulatory agencies were essentially silent on the matter of video-telecommunication consent. Regulatory guidance became available during the pandemic in response to increased isolation and social distancing practices. Virtual health and telemedicine use expanded greatly during the pandemic, and this increase will likely persist after the pandemic ends. We anticipate video-telecommunication adoption and implementation for research consent will also continue to grow after the coronavirus disease 2019 pandemic is over.

Key Words: clinical research; clinical trials; informed consent; teleconsent; telehealth; telemedicine

A 66-year-old man with confirmed coronavirus disease 2019 (COVID-19), bilateral pulmonary infiltrates and an oxygen requirement was recently admitted to our ICU for step down-level care with enhanced transmission-precautions; this proved serendipitous for obtaining his informed consent for a randomized placebo-controlled trial of an investigational therapeutic for COVID-19. We discuss his case and highlight other recent instances where we used existing tele-critical care (TCC) infrastructure to perform the initial research approach and informed consent process for patients in isolation.

The Virtual Critical Care Center (VC3) at Madigan Army Medical Center has dedicated computer workstations for patient interaction with hard-wired, high definition, far end control pan/tilt/zoom (PTZ) video cameras and display monitors in the ICU. As there was no regulatory guidance on video-telecommunication (VTC) consent at the time, clarification was obtained from the Institutional Review Board (IRB) and Human Research Protections Officer (HRPO). Both verified that VTC consent would be valid. Using our existing TCC equipment, the Principal Investigator (PI) and Clinical Research Coordinator (CRC) discussed the study with the subject via VTC. The nurse remained at the bedside and witnessed the consenting process. A high definition screenshot captured an image of the patient's original signed consent form to be included in the research record.

Patient and research team interaction through VTC closely mirrored traditional face to face consent. Using the PTZ function, the research team could address nonverbal cues of confusion or loss of attention and visually confirm participant engagement throughout the process. For example, the CRC saw the patient re-reading a section of the consent and waited for him to finish before moving on. Furthermore, the pause prompted a follow-up question to ensure clarity. Conversely, audio-only telephone consent has the potential to lead to misinterpretations, especially if the participant becomes distracted or loses concentration (1). In our case, VTC consent maintained patient interest, engagement and understanding of the consent. Both the participant and research team expressed high satisfaction with the process.

During our study, a competing COVID-19 expanded use access protocol for the same investigational agent was underway. The site PIs, IRB, and ethics board recognized both options would need to be offered to eligible patients since clinical equipoise existed

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for the investigational therapeutic agent at the time. Each protocol had separate research teams to avoid conflict of interest. Because of strict infection control practices, it became obvious that multiple approaches, or multiple personnel engaging in an in-person simultaneous approach, would rapidly consume personal protective equipment (PPE) and increase the risk of inadvertent exposure to COVID-19. Additionally, a lengthy informed consent process for two investigational therapy protocols is a burden to an ill and often dyspneic patient. In two instances, the VC3 connected to a mobile device (tablet) to allow for a combined, coordinated approach to a patient eligible for both research protocols, while minimizing individuals in the room, use of PPE, and patient and investigator time.

A medically austere environment is typically caused by geographic isolation, but medical supplies and provider number and expertise can also be resource limitations (2). The COVID-19 pandemic has shown us that resource limitations occur in traditionally resource-rich locations. Leveraging established VTC technology for research consent, we were able to mitigate several COVID-19 specific concerns: 1) avoiding unnecessary provider exposure to COVID-19; 2) minimizing PPE consumption; and 3) capturing an electronic record of the signed consent form to prevent fomite transmission.

In 2016, the Food and Drug Administration (FDA) recognized the validity of electronic signatures for informed consent (3). As of the writing of this article, the Office of Human Research Protections offers no guidance except to defer to local laws (4). In March 2020, the FDA issued nonbinding recommendations for the duration of the public health emergency which allowed local IRBs to consider alternative methods to in-person visits (5). Consistent with the interim guidance, our IRB and HRPO authorized VTC consent to "mitigate immediate hazard" (5). It remains to be seen whether regulation will catch up with technology and if the interim guidance is adopted as "new normal" once the crisis passes.

Even before the current pandemic, clinical trials world-wide struggled to recruit and retain qualified enrollees (6). VTC consent is one approach used to engage a more diverse population and overcome geographic barriers (6). VTC consent may improve recruitment and participation in research trials during the pandemic, helping normalize the use case and lead to VTC consent practices persisting after the pandemic. Further improvements on VTC consent are certainly possible. There are many commercially available software options used to "electronically sign" documents, and combined with VTC technology could allow for a paperless, remote informed consent process. This has the potential to be far superior to current audio-only telephone consent, with printing, signing, and scanning/faxing of documents for inclusion in the research record.

Telecommunication has undergone an explosive growth and telehealth has become increasingly embedded in healthcare, particularly critical care. Healthcare providers have used telemedicine to provide patient-centered care despite the barriers of self-quarantine and social distancing (7). VTC capabilities in smartphones and other mobile devices has also become more common place. The perception that smartphone access is only available to higher socioeconomic classes brings concerns VTC use may exacerbate economic disparities in research engagement. However, over two-thirds of individuals in lower socioeconomic classes have smartphones with broadband internet (6). Consequently, even those individuals who do not personally own a smartphone are likely to be acquainted with a person or facility that does have an internet-capable device. Although this misconception about access may not truly be an issue, screen size or comfort level with the device for consent needs to be addressed (6).

The COVID-19 pandemic requires high quality and "high-velocity" research while maintaining appropriate isolation precautions, limiting number of potential healthcare exposures, and minimizing use of limited PPE. We demonstrated that leveraging existing technology for new use cases is a valid approach to manage these competing priorities. Permanent regulatory guidance must acknowledge existing technology including VTC, screen capture, and remote signature software. The implications for future use are clear: post-COVID-19, virtual health is going to be used more frequently, not less. Clear and thoughtful applications of this technology during the crisis will likely lead to more appropriate long-term use cases.

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