

Does Your COVID-19 Telemedicine Approach Support Patient Experiences and Outcomes?

Making Telemedicine and Remote Monitoring Work for Healthcare Providers and Patients

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Health systems across the U.S. are increasingly expanding their use of telemedicine and telehealth applications in response to the COVID-19 pandemic. Interactive telemedicine approaches allow for remote, real-time audio, video, and text-based interactions on patients' cell phones, tablets, or computers. Remote monitoring devices are increasingly used to support this approach by providing patient data to healthcare professionals in between or in advance of telemedicine appointments.

As use of these technologies continues to grow, it is important for designers of telehealth systems to remember that remote interactions between patients and healthcare professionals are inherently different from in-person interactions (Demiris et al. 2010). To meet system and user safety requirements, health systems, healthcare professionals, and manufacturers of remote monitoring devices must understand these differences and consider how best to accommodate them when applying telemedicine applications over traditional in-person patient care. Doing so can help optimize patient engagement and patient/provider communication, improve the accuracy of diagnosis and treatment planning, and support positive health outcomes. It can also help to manage and potentially mitigate the risk of adverse outcomes related to telemedicine use.

For Health Systems, Healthcare Professionals, and Patients

Telemedicine applications can significantly impact perceptions and interactions for both the healthcare employees and patients who use them. Patients are often not the ones who decide whether conventional

medicine or telemedicine applications are used, and recent surveys indicate that patients are concerned over quality of care when using telemedicine and whether the care is comparable to in-person visits (Sykes Survey Report 2020). Concerns are not unwarranted; telemedicine research has indicated differences in how practitioners and patients communicate, ultimately impacting patient engagement, patient participation, and overall patient interactions with healthcare professionals (Miller 2010). Additionally, remote interactions limit the amount of both visual and tactile information exchanged, impacting the manner in which physical abnormalities and complaints are assessed. Without careful consideration of the combined perceptual and communication challenges facing patients and practitioners, incidents have emerged involving misdiagnoses and questionable treatment (e.g., Resneck et al. 2016).

It is important for health systems to evaluate which appointment types and patient scenarios are most appropriate for telemedicine services and structure their use accordingly within a given patient population. This can help ensure that evaluations and diagnoses are accurate, that both patients and clinicians perceive the quality of care as being similar to traditional in-person visits, and that patients are both comfortable with and

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likely to agree to telemedicine interactions for certain forms of healthcare delivery. We also encourage health systems to evaluate telemedicine applications from a human factors and usability perspective to confirm that appropriate communication requirements are in place to ensure that patient engagement and participation are not negatively affected. These requirements should address health and technical literacy as well as the comfort and emotive states of patient users and support precise communication between patients and healthcare professionals.

Equally critical, health systems should structure telemedicine training and implementation for their personnel to minimize interruption to clinician workflow. Shifting medical care to accommodate remote access to patients can result in changes to work routines and redistribution of clinical tasks, potentially impacting responsibility and processes for handling patient issues and resulting in potential errors (as discussed in Kaplan & Litewka 2008). Indeed, research indicates that poor integration into existing workflows is a commonly cited barrier to successfully implementing telemedicine technologies (Uscher-Pines & Kahn 2014).

For Developing Remote Monitoring Applications

Alongside traditional telemedicine applications, health systems are increasingly relying on remote monitoring devices for patients to use at home. These devices collect and transmit patient data, often non-invasive physiological metrics, to healthcare professionals to support clinical decision-making and the prescription of treatment options. Given the current COVID-19 climate, the U.S. Food & Drug Administration (FDA) is permitting at-home distribution of some monitoring products and applications originally cleared for clinician use in medical settings (FDA 2020). Requirements for these devices to be used in home settings are different in part owing to the variance among patient users when compared to clinical healthcare populations. Therefore, factors such as patient technical literacy, at-home accessibility and connectivity, and patient compliance and measurement accuracy should be considered.

Although FDA's guidance is limited to the duration of the declared public health emergency, it is anticipated that the demand for in-home use of these temporarily approved remote monitoring devices will remain after the crisis, given both patient and clinician expectations as well as the benefits of health data accessibility and convenience. Adapting these clinical environment devices for long-term in-home use will require human factors and usability assessments that are specific to at-home user patient populations and that conform to FDA guidelines.

How Exponent Can Help

Exponent's multi-disciplinary team of human factors and user researchers, biomedical engineers, and cognitive psychologists can help health systems optimize existing telemedicine technologies in accordance with human factors and user experience principles. We can also help medical device manufacturers incorporate specific user requirements into the development and testing of new and current remote monitoring devices to support regulatory approvals.

References & Links

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