The telehealth advantage: Supporting humanitarian disasters with remote solutions

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Telehealth support can rapidly and significantly increase access to healthcare. For example, during the COVID-19 pandemic, telehealth not only supported patients with COVID symptoms but also improved access to the entire continuum of care, from critical care to mental health services.[1] There has been a 100–175 fold increase in the number of patients that physicians are seeing through digital platforms; this has increased the economic impact of telehealth to account for $250 billion a year of visits, which accounts for 20 percent of Medicare, Medicaid, and commercial insurance budgets.[2] This is not surprising as telehealth platforms offer patients and clinicians convenience, access, and scalability with minimal infrastructure aside from the internet, computer, and phone access.[3] Furthermore, telehealth platforms continue to evolve, and many require only access to the internet and a computer or smartphone. There now exists a range of telehealth platforms that can be either downloaded or accessed through the internet from anywhere around the world through mobile devices. With the rapid and global adoption of telehealth platforms to deliver healthcare, the time is now to embrace, develop and scale telehealth to support humanitarian relief operations across the globe.[4]

History of telehealth in humanitarian relief

The Health Resources and Services Administration's (HRSA) definition of telehealth is "defined as the use of electronic information and telecommunication technologies to support long-distance clinical health care, patient and professional health-related education, health administration, and public health."[5] The earliest usage of telehealth in humanitarian relief was by the National Aeronautics and Space Administration (NASA) during the 1980s, assisting with earthquake relief efforts in Armenia and Mexico City, which became more focused on combat-heavy humanitarian situations during the early 2000s during conflicts in Pakistan and Afghanistan.[6] Because of this influence, telehealth developed the techniques and protocols to be deployed rapidly in many situations to assist people globally.[7] Many nongovernmental organizations (NGOs) that respond to humanitarian disasters already offer telehealth support; however, unfortunately these platforms are typically smaller scale and focused only on specific use cases.[8]

Considerations with telehealth and humanitarian relief

In order to deploy telehealth to humanitarian relief, we propose the following framework on issues that need to be addressed to allow for widespread utilization and adaptation. While previous frameworks have addressed the benefits of telehealth implementation and different methods for adoption, no current framework exists to focus on the issues which prevent widespread adoption of telehealth resources.[9] Our framework, which includes Technology, Equity and Accessibility, Cybersecurity, Healthcare Regulations, and Standardization issues, or TECHS, focuses on the issues which need to be addressed for telehealth to increase in general usage (Table 1).

Technology

For patients directly accessing telehealth services, the complexity of platform software should be considered. Platforms often require user registration, multiple registration screens and learning the platform. Lack of technological literacy by both clinicians and patients may limit adoption and use. This is especially true in humanitarian disasters as the local population and clinicians are already stressed and adding any additional layer of complexity will only lead to less adoption. It should also respect the limitations of speed of local connectivity networks. Any telehealth solutions used in humanitarian efforts need to be streamlined and simple to use.

Equity and accessibility

Access to telehealth is a large issue across the world, with patients of lower socioeconomic statuses (SES) having less access to electronic devices and broadband. Almost 7.6 billion people across the world have access to a cellular device (92 percent of the human population) along with 5 billion people (63 percent of the population) having internet access.[10] Telehealth also faces a generational divide, with older patients lacking the ability to use telehealth applications.[11] All these issues are exacerbated in humanitarian disasters, especially if the remote clinicians offering services and the technology platform does not support the local language, time zone, or bandwidth considerations. For example, in

the Ukrainian crisis, many volunteer clinicians do not speak Ukrainian and will require translation.[12] Similarly, many telehealth platforms do not support local languages or different time zones. Telehealth platforms deployed for humanitarian relief should have the ability to support local languages, as well as time zone differences between the volunteers and patients.[13–14]

Cybersecurity

The safeguarding of healthcare infrastructure in telehealth is a large concern, especially with the increasingly common cyberattacks towards servers and network connection nodes. Building a reliable physician and security infrastructure to prevent hacking, phishing, and other illegal activities is essential to making telehealth a well-trusted way of receiving healthcare.[15] For conflict zones like Ukraine, this is a key component as unfortunately cyberwarfare is a very real possibility. Furthermore, there could be distrust of any new software used for the local population as new technology and software can be viewed as a trick by bad actors to gain information, or could be hacked to reveal sensitive information, especially geospatial location.[16] As with any global health and humanitarian relief effort, there needs to be local, trusted partners to ensure adoption.

Healthcare regulations

Many telehealth platforms across the world do not meet the privacy regulations for health information from the United States Health Insurance Portability and Accountability Act (HIPAA) and/or the European Union's General Data Protection Regulation (GDPR).[17] Furthermore, credentialing, licensing and liability requirements vary by country, location, state and hospital. For example, in the United States, licensing requirements vary widely depending on the state, thus limiting access to telehealth options. For humanitarian disaster areas, the legal, licensure, and credentialing requirements for remote telehealth providers need to be considered. This typically requires collaboration with the local ministers of health or NGO partnerships along with local health systems which focus on providing local services. Furthermore, this becomes considerably more complex when using telehealth platforms to support patients and refugees across multiple countries. For example, the rules within Ukraine differ from those of EU-based countries supporting Ukrainian refugees.

Standardization

There is the issue of the lack of standardization patient care provided through telehealth. Standardizing clinical protocols and processes is much needed as delivering care remotely has unique and important challenges to overcome. For example, certain parts of the physician exam are impossible with remote patient visits. As digital health and telehealth expand in the humanitarian relief space, there needs to be standardization to ensure an adequate quality of care is delivered. This is especially true when using a large group of well-intentioned, but difficult to assess clinical volunteers from around the world.

Future potential

Telehealth holds great potential in the increasingly connected world that we live in. To address the challenges, telehealth enthusiasts should work toward developing a set of

standardized rules and guidelines for telehealth to allow for the best possible usage of evidence-based medicine based on our TECHs guidelines. These guidelines should then be advocated for and lobbied by other organizations internationally, especially NGOs that use telehealth in remote and humanitarian situations.

In addition, there needs to be more outreach and collaboration with platform technology companies about the privacy qualifications. Just as Microsoft® has done with Microsoft Teams, commonly used applications and social media platforms can become HIPAA and GDPR compliant to expand their use by doctors and their patients internationally.[26–28] These technical implementations include more frequent data backups, two party encryption, increased authorization monitoring, and automatic log-offs. Security concerns are also important to address by using cloud technology to remotely encrypt and store patient data as well as prevent cyberattacks. [29,30]

Lastly, research and development of more efficient and novel methods for delivering quality telehealth care is needed. For example, there is potential for the usage of 3-D printers in telehealth, which can cheaply print any object given a file. Physicians could meet remotely with rural patients who might need a specific cast for an injury, which they can quickly design and send to the patient to print at a nearby station.[31–33]

Conclusion

There will always be a need to deploy clinicians into disaster zones, yet we also have an opportunity to alleviate suffering with rapidly deployable digital and technological solutions. Telehealth is scalable and creates avenues for clinicians to assist remotely, especially those who could not otherwise offer support through standard deployments. The ability to enlist global clinicians and transcend geopolitical borders allows for a massive, international humanitarian response that could not have been accomplished previously. Utilizing telehealth to support Ukraine and future humanitarian crises will be crucial and lead to only a better and more connected future for healthcare. In the words of the late Dr. Paul Farmer, "moral clarity is: you're in front of someone who's suffering, and you have the tools at your disposal to alleviate that suffering or even eradicate it, and you act."

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Table 1.

TECHS concerns: Main five issues for telehealth

Technology	Software technology should be simple, intuitive, and easy to use with minimal training requirements. Self-guided platforms can be particularly useful when the platform workflow involves direct patient contact.
Equity and accessibility	Telehealth software should be made to be accessible by the largest patient populations, which often include non-English speakers and elderly people. Telehealth platforms should also be deployed in-conjunction with local officials to allow for individualized solutions to humanitarian situations.
Cybersecurity	Cybersecurity should be designed in order to meet the legal and ethical requirements of the country in which the software is being deployed. Building a reliable physician and security infrastructure to prevent hacking, phishing, and other illegal activities is essential to making telemedicine a well-trusted way of receiving healthcare.
Healthcare regulations	Many telehealth platforms across the world do not meet the privacy regulations for health information from the United States Health Insurance Portability and Accountability Act (HIPAA) and the European Union's General Data Protection Regulation (GDPR). Furthermore, credentialing, licensing and liability requirements vary by country, location, state and hospital.
Standardization	There should be an increasing focus on the standardization of clinical protocols, treatments and healthcare delivery methods through telemedicine.