Overview

In recent years, telehealth or telemedicine has become an integral component of health systems. During the COVID-19 pandemic, telehealth became the primary route of treatment for patients and doctors. The goals of telehealth are to make healthcare more accessible to patients who have limited mobility, time, or transportation options and those who live in rural or isolated communities. Telehealth aims to improve coordination and care between healthcare teams and their patients. While addressing accessibility, telehealth sets health systems on a path to meet their decarbonization and energy reduction goals. The document provides insights and best practices for telehealth, including carbon reduction, space utilization, equitable access, and technology.

Reducing Your Organizations Carbon Footprint

Digital medical visits have been commonplace for years, but in the wake of the COVID-19 pandemic, they dramatically increased. In light of this, organizations have recognized reduced carbon emissions from the decrease of patient transportation. Savings from virtual visits have ranged from 0.70 to 372 kg CO2e per consultation.

▶ **CommonSpirit Health calculated over 15,000 metric tons of carbon dioxide were avoided because of telehealth visits.**

CommonSpirit Health had been studying the environmental benefits of telemedicine for nearly three decades, but with the uptick of virtual visits during the COVID-19 pandemic, an opportunity presented itself for a denser case study. Between March 2020 and April 2021, CommonSpirit providers calculated that the equivalent of 15,092 metric tons were avoided through 1.5 million virtual site visits.

▶ **University of California Davis Health System recognized nearly 2000 metric tons in carbon dioxide savings over 17 years.**

UC Davis has been utilizing telemedicine for years and studied these carbon savings, among other noxious emissions, between 1996 and 2013. These savings were calculated from over 20,000 outpatient and inpatient video-based consultations.

Based on this successful study and the uptick in virtual visits during the COVID-19 pandemic, UC Davis has continued to expand its virtual services. In March 2022, UC Davis launched five new telemedicine services: Express Care Platform, UC Davis Pediatric Telemedicine Program, ACTIVATE, Provider-to-Provider Telehealth, and the Digital Health Equity Program. These new programs will continue to have a profound impact on patient care in the UC Davis community and continue to serve underserved populations.

Space Utilization

Telehealth has allowed healthcare providers to reevaluate the way medical spaces are utilized. While healthcare staff have continued to commute to medical campuses to provide virtual care, patients can attend visits from their homes. In the wake of fewer patients on-site, health systems have become creative with their spaces to accommodate the increase in virtual visits. Telemedicine can take place throughout the healthcare system including primary and ambulatory care centers, cancer centers, emergency departments, patient rooms, and many other clinical and nonclinical spaces.

Many healthcare providers have opted to integrate telemedicine tools directly into patient rooms, like monitors for conducting virtual visits. These monitors can be used for more than virtual visits, including for entertainment, education programs, food orders, and more. Another option for healthcare workers is mobile telehealth carts. Staff can easily transport carts between rooms that can also double as charting stations for nurses and clinicians.

GUNDERSON HEALTH SYSTEM

During the COVID-19 pandemic, Gundersen Health System opened a [drive-through laboratory](#) for COVID-19 testing. In 2021, Gundersen decided to make this drive-through lab a permanent installation. This lab can accommodate patients who need routine blood draws, home testing supply pick-up and drop-off, fingerstick INR, and strep and influenza testing. The lab also continues to provide COVID-19 testing for patients that are pre-screened online or by calling.

Improving Equitable Patient Care

Virtual visits have vastly expanded patient's access to high quality healthcare. Healthcare providers have continued to improve the scope of services for everyone. Patients are more likely to receive the health care they need and deserve, regardless of social or economic status.

Cleveland Clinic Foundation

[Cleveland Clinic](#), a Better Buildings partner, has continued to provide high-quality, virtual healthcare to its patients before, during, and following the COVID-19 pandemic. Cleveland Clinic's Center for Digital Health and Telemedicine's mission reads, "To bridge the gap between digital health technologies and clinical practice through research and education by assessing these technologies and wearable devices, providing guidance to patients and health care providers and the community at large." Cleveland Clinic focuses on enhancing patient care with telehealth by:

- ▶ Minimizing potential misdiagnoses by expanding access to second opinions and specialists.
- ▶ Serving patients in rural communities.
- ▶ Training physicians to be web savvy and connect with patients virtually.
- ▶ Improving in-person patient care with the expedited transfer of patient records.

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While most Americans are connected to the internet, there are still patients that do not meet the required technology needs to access virtual healthcare. Healthcare providers are recognizing the importance of health equity in telehealth and are making changes to accommodate barriers in digital literacy, technology, and analytics. Some key factors to telehealth equity include:

- Asking patients about specific barriers and perceptions that may impede their ability to use telehealth.
- Emphasizing that digital modalities are being offered as an extension rather than a replacement for in-person care.
- Screening patients for their digital literacy and access to video-enabled devices and high-speed internet.
- Providing ongoing technical support.
- Selecting vendors that support the use of interpreters and easy-to-launch visits.
- Developing workflows that support patients and reduce clinician burnout.
- Connecting to existing community digital-inclusion infrastructure supported by libraries, government agencies and local organizations.
- Working to gain support for consideration of broadband as a utility or essential service.

Technology Considerations for Providers

Typically facilitated through a combination of mobile applications, video chat software, and online portals, telemedicine connects patients and doctors without the barriers of distance. Health providers should consider the impact of the computer server capacity required to provide care and the potential cybersecurity risks.

As demands for telehealth continue to ramp up, there's an increasing pressure added to existing IT infrastructure. Typically, hospitals have used on-premises data solutions for storage of electronic health records and the gradual digitization of healthcare. Data centers have proven to have reliable infrastructure in place to deliver needed technological services and meet HIPPA compliance.

The transition from in-person clinical visits to virtual visits calls for improved cybersecurity tactics for health systems. Many telehealth devices require network connections, enabling them to collect information from the patient and transmit the data to the healthcare provider. There are several safeguards to utilize when creating a secure telehealth system:

- **Device Security**

  While provider's devices are typically adequately protected, a patient's may not be. To secure telehealth devices, healthcare organizations may consider installing technical safeguards such as firewalls and intrusion detection systems (IDS) on all provider owned telehealth devices.

- **Access Security**

  To alleviate the risks of inappropriate access to personal patient information, healthcare organizations may consider providing secure logins for both the patient and provider, using multi-factor authentication, and requiring information beyond protected health information (PHI), such as security questions.

- **Business Associate Agreements (BAAs) and PHI Use**

  The HIPAA Privacy Rule requires that third-party entities must submit "satisfactory assurances" in writing that it will appropriately safeguard the PHI it receives or creates on behalf of the covered entity.

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▶ Data Encryption

Encryption is important at all stages of virtual care. While being stored, it's important to secure data before an attacker can bypass access controls. Encryption of data in transit guarantees that data is meaningless if a transmission is intercepted. End-to-end encryption ensures that unencrypted information is only ever available at the two end-points and never between.

▶ Authentication

Access to the central information system can be controlled using authentication and access control mechanisms, which restrict access to information based on the identity of the person accessing the device or data. Authentication options include knowledge-based, biometric, and multi-factor.

▶ Distribution

For telehealth to be secure, business practices surrounding its use must be secure, and everyone who engages with a the system must be aware of the healthcare provider's policies and procedures on telehealth.

Additional Resources

- ▶ [Kaiser Permanente Study Measures the Impact of Telehealth on the Environment](#)
- ▶ [Planning facilities for telehealth](#)
- ▶ [Health equity in telehealth](#)
- ▶ [Access, Equity, and Neutral Space: Telehealth Beyond the Pandemic](#)
- ▶ [How to implement telehealth in your practice with equity in mind](#)
- ▶ [Telemedicine can make healthcare greener](#)
- ▶ [Does telemedicine reduce the carbon footprint of healthcare? A systematic review](#)
- ▶ [Carbon footprint of telemedicine solutions--unexplored opportunity for reducing carbon emissions in the health sector](#)
- ▶ [Telehealth: Seven Strategies To Successfully Implement Disruptive Technology And Transform Health Care](#)
- ▶ [Cybersecurity Considerations for Telehealth Services](#)
- ▶ [The Rise of Telehealth and the Essential Role of Data Centers](#)
- ▶ [Industry Voices—An innovation engine for virtual care: 4 lessons from The Clinic by Cleveland Clinic](#)