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CROSS-BORDER DATA TRANSFERS & REMOTE HEALTH SERVICES

Cross-border access to remote health technologies often allows access to state-of-the-art cybersecurity and privacy protections, along with advantages from a health care cost, timeliness, and patient access perspective.

Few economic sectors have been more impacted by the recent shift to an international remote economy than the health care sector, as evidenced by the rise of telehealth and telemedicine (collectively referred to as "remote health services"), which are often delivered via cloud-enabled remote health technologies and software solutions. Remote health services can take many forms. In many countries, telemedicine services often involve a health care provider and a patient in the same region or locality engaging in medical consultation, yet that consultation frequently requires cross-border access to remote health care technologies that offer security and privacy features needed in the telemedicine context.

International organizations and national governments have highlighted the importance of access to these technologies during the COVID-19 crisis, underscoring the "urgency to expand the use of [remote] technology to help people who need routine care, and keep vulnerable [patients and those]…with mild symptoms in their homes while maintaining access to the care they need."[1] The scale and pace of the shift to remote health services are unprecedented: One recent study in a large municipal hospital system shows non-urgent telemedicine visits increasing by more than 4,000 percent in a short period–jumping from 95 daily telemedicine visits in early March 2020 to 4,209 daily telemedicine visits by mid-April 2020.[2] More broadly, telehealth services are expected to grow seven-fold growth by 2025.[3]

WHAT ARE REMOTE HEALTH SERVICES?

Remote health services comprise both telemedicine and telehealth–terms with different meanings. Broadly understood to involve the provision of remote clinical services to support patients, "telemedicine" includes "the use of electronic information and telecommunications technologies to support and promote long-distance clinical health care, and patient and professional health-related education."[4] "Telehealth" has been defined to cover a broader scope of remote health care services, including remote non-clinical services, such as provider training, administrative meetings, and

continuing medical education.[5] An example of a telemedicine service is an online consultation with a local doctor who makes a diagnosis and treatment recommendations after (often AI-enhanced) analysis of images of suspicious skin tissue.[6] An example of a remote telehealth service is the WHO's efforts to make available remotely to health care providers worldwide information relating to the classification of illnesses, their causes, and symptoms.[7]

Effectively providing remote health services depends on cloud-enabled connected devices, which can include:

> real-time, audio-video communication tools [to]…connect physicians and patients in different locations; store-and-forward technologies that collect images and data to be transmitted and interpreted later; remote patient-monitoring tools such as blood pressure monitors, Bluetooth-enabled digital scales and other wearable devices that can communicate biometric data for review; verbal/audio-only and virtual check-ins patient portals, messaging technologies, etc.[8]

Thus, even in a private, online consultation between a primary care physician and his/her patient, the underlying technology often requires the cloud-based integration of provider-side technologies (such as clinical telemedicine hubs and laboratory testing equipment), and patient-side technologies (such as health-related Internet of Things (IoT) devices integrated with personal computers or smartphones). Even in the case of providers and patients located in the same country, both provider and patient often require cross-border access to overseas-based remote health platforms, portals, or other technologies that can offer the highest levels of security, privacy, and functionality.

CROSS-BORDER DATA TRANSFERS ARE CRITICAL TO REMOTE HEALTH SERVICES

In many countries, cross-border access to cloud-based solutions undergirds remote health services. These cloud-based solutions allow doctors, nurses, researchers, laboratory specialists, pharmacists, and other health care providers to seamlessly support human health at the highest possible levels of security and functionality. We outline several relevant contexts below.

First, in many countries, telemedicine services offered by a provider to a patient within the same country may nevertheless involve **cross-border** access to a secure remote health technology hosted in another country. Such cross-border technology access may be necessary to offer a secure provider-patient interaction, to comply with legal requirements regarding the custody, storage, and disclosure of patient data, and to add new insights and functionality to diagnoses and treatment recommendations via AI-enhanced data analytics.[9] This includes:

- **Cross-border** access to state-of-the-art cyber, encryption, authentication, and blockchain technologies provided from cloud-based servers in another jurisdiction—protecting the privacy of patient data and guarding against unauthorized monitoring, intrusion, or data exfiltration; and
- **Cross-border** access to health care data analytics solutions that can analyze local data samples against databases of relevant information gathered from all over the world—enhancing the reliability and accuracy of diagnoses and treatment recommendations.[10]

Second, telehealth collaboration and research may be conducted among medical researchers and other professionals through:

- **Cross-border** collaboration, research, or expert consultations among providers or other specialists located in different countries;
- **Cross-border** exchange of data with laboratories or advanced research facilities with particular expertise in different types of analysis or testing; and
- **Cross-border** consolidation of anonymized data sets from around the world for purposes of real-time statistical tracking, analytics, and monitoring of aggregated anonymized data–e.g., to identify health trends, epidemiological patterns, or localized disease outbreaks.

Telehealth services are expected to grow seven-fold by 2025 in the US. One major US regional health system has seen a 4,000 percent increase in demand for such services, from 95 daily telemedicine visits in early March 2020 to 4,209 daily telemedicine visits by mid-April 2020.

Finally, in some jurisdictions, depending upon medical licensure and other legal requirements, telemedicine services may be provided directly to patients and health care information consumers through:

- **Cross-border** provision to patients of consultations, remote second opinions, or other information from a provider in one country to a patient in another; and
- **Cross-border** humanitarian assistance to underserved populations. According to the WHO, "telemedicine networks around the world deliver humanitarian services on a routine basis, many to low-income countries. These networks provide tele-consultations for physicians and other health professionals needing advice about the clinical management of difficult cases, and some also provide education."[11]

Please note that the cross-border provision of provider-to-patient telemedicine services is by no means universally accepted, as the rules governing telemedicine differ by jurisdiction–with varying approaches to regulatory oversight, licensing board requirements, reporting mandates, equipment specifications and other technical regulations, and so forth.

BENEFITS AND LIMITATIONS OF REMOTE HEALTH SERVICE

Telemedicine services, secured and enabled through cross-border access to best-in-class technologies, come with both limitations and benefits. On the one hand, there are inherent limitations to the remote clinical environment: Many conditions cannot be diagnosed or treated by telemedicine services, nor can those services fully substitute for in-person medical treatment. However, telemedicine can help to relieve capacity constraints at hospitals, while reducing the spread of disease. It may be deployed more effectively where, for example, the patient is capable of responding to provider questions in detail and with accuracy; the patient exhibits symptoms that are identifiable through visual inspection (e.g., dermatological conditions); the patient and his/her medical history are already known to the provider; and/or the patient would benefit from treatment options that are standardized and well-established. Within these or other appropriate parameters, telemedicine can offer significant benefits, including:

- Lower costs to provide medical services;
- More coordinated health care workflow, e.g., through fewer unnecessary emergency room visits;
- Improved timelines and speed in responding to patient needs;
- Better safety and quality, particularly for patients in remote areas that may have reliable broadband internet access, yet lack sufficient local health care capacity;

- Access to more specialized types of procedures that might not otherwise be available in a particular locality, including through robotic surgery or remote VR/AR enhanced procedures, where specialists in a central location guide or assist providers to conduct services that might otherwise not be available;
- Real-time monitoring of aggregated anonymized data to monitor for health trends, epidemiological patterns, or localized disease outbreaks;
- Reduced spread of disease (e.g., where possible, by treating some patients with communicable diseases remotely without exposing others, or conversely, by treating patients remotely without exposing those patients to communicable diseases prevalent in hospital settings);
- The ability to address emergency surges in demand for medical services and/or shortages of medical professionals;
- The ability to offer home-based patient treatment, recuperation, and monitoring–improving patient comfort and recovery times, and freeing up space and capacity in clinics and hospitals;
- Added insights and functionality (e.g., by leveraging diagnostics and analysis of patient data submitted to a provider). Such data may include trends in blood sugar, blood pressure, oxygen levels, temperature, heart rate, weight, height, etc. collected and shared with patient consent via sensors in wearables or other health tracking devices.

Real-time aggregation and analytics of anonymized data from around the world is critical to global health–allowing for the rapid detection and response to emergent health trends, epidemiological patterns, and localized disease outbreaks.

These benefits depend, in part, on ensuring that providers and patients within a country have cross-border access to the remote health technologies that enable these important services.

CONCLUSION

Alongside a country's levels of internet access and computer literacy, cross-border connectivity is a critical factor in enabling the benefits of remote health services. Countries can promote diverse health care delivery options for their citizens by ensuring that data transfer restrictions do not unduly interfere with the ability to offer secure and private remote health care services.

Endnotes

[1] See e.g., Center for Medicare and Medicaid Services, Medicare Telemedicine Health Care Provider Fact Sheet (March 2020), https://www.cms.gov/newsroom/fact-sheets/medicare-telemedicine-health-care-provider-fact-sheet; and World Health Organization, Rational Use of Personal Protective Equipment for Coronavirus Disease 2019 (COVID-19) (February 2020), https://apps.who.int/iris/bitstream/handle/10665/331215/WHO-2019-nCov-IPCPPE_use-2020.1-eng.pdf (encouraging patients to "consider using telemedicine to evaluate suspected cases of COVID-19 disease, thus minimizing the need for these individuals to go to healthcare facilities for evaluation.").

[2] Mann et al., COVID-19 Transforms Health Care through Telemedicine: Evidence from the Field (April 2020), https://academic.oup.com/jamia/advance-article-pdf/doi/10.1093/jamia/ocaa072/33120297/ocaa072.pdf (showing increases in daily telemedicine visits from March 2, 2020, to April 14, 2020, of 4,345 percent for non-urgent telemedicine visits and 135 percent for urgent telemedicine visits).

[3] See Mariana Fernandez, Telehealth to Experience Massive Growth with COVID-19 Pandemic, Says Frost & Sullivan (May 2020), https://ww2.frost.com/news/press-releases/telehealth-to-experience-massive-growth-with-covid-19-pandemic-says-frost-sullivan/.

[4] See US Department of Health and Human Services, HIPAA FAQ–What Is Telehealth? (2020), https://www.hhs.gov/hipaa/for-professionals/faq/3015/what-is-telehealth/index.html.

[5] See US Department of Health and Human Services, What Is Telehealth? How Is Telehealth Different from Telemedicine?, HeathIT.gov website (2020), https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine; and World Health Organization, Telemedicine–Opportunities and Developments, Report on the Second Global Survey on eHealth (2010), https://www.who.int/goe/publications/goe_telemedicine_2010.pdf.

[6] Michael Rucker, Health Tech Is Successful in Developing Countries, VeryWell Health (March 2020), https://www.verywellhealth.com/digital-health-developing-countries-1739155.

[7] World Health Organization, WHO Releases New International Classification of Diseases (ICD 11) (2018), https://www.who.int/news-room/detail/18-06-2018-who-releases-new-international-classification-of-diseases-(icd-11).

[8] American Medical Association, AMA Quick Guide to Telemedicine in Practice (April 2020), https://www.ama-assn.org/practice-management/digital/ama-quick-guide-telemedicine-practice; Centers for Medicare and Medicaid Services, General Medicine Toolkit (March 2020), https://www.cms.gov/files/document/general-telemedicine-toolkit.pdf (providing links and identifying technical ICT requirements for telemedicine and telehealth service providers); and American Medical Association, Telehealth Implementation Playbook (2020), https://www.ama-assn.org/system/files/2020-04/ama-telehealth-playbook.pdf (identifying relevant ICT equipment needed for providing telemedicine services).

[9] Relatedly, because internet traffic between providers and patients often transits among computing equipment and servers across borders, cross-border data transfers may be relevant to remote health services even in cases in which the remote health technologies are stored on servers in-country. See e.g., Casalini and Lopez González, Trade and Cross-Border Data Flows, OECD Trade Policy Papers (2019), http://dx.doi.org/10.1787/b2023a47-en (explaining that, "[t]he internet is a global network of computers, each with its own Internet Protocol (IP) address. When a file is sent from a computer in Country A to a recipient in Country B it is first broken down into different 'packets' …marked with the IP address of the sender, that of the recipient and a code identifying the sequence in which the packets are to be reassembled at destination. Once the packets are ready, they leave the origin computer, crossing different networks and taking different routes to destination.…In some instances, what might seem to be a domestic transfer involves a cross-border flow.")

[10] For example, algorithms can be trained to distinguish benign and malignant cancers based on a referential analysis of thousands of images of benign and malignant tissue samples, resulting in more accurate detection rates than a dermatological oncologist. See e.g., Computer Learns to Detect Skin Cancer More Accurately Than Doctors, Agence France Presse (May 2018), https://www.theguardian.com/society/2018/may/29/skin-cancer-computer-learns-to-detect-skin-cancer-more-accurately-than-a-doctor; Charles Towers-Clark, The Cutting-Edge of AI Cancer Detection, Forbes (April 2019), https://www.forbes.com/sites/charlestowersclark/2019/04/30/the-cutting-edge-of-ai-cancer-detection/#43acb1b67336; Taylor Kubota, Deep Learning Algorithm Does as Well as Dermatologists in Identifying Skin Cancer, Stanford News (January 2017), https://news.stanford.edu/2017/01/25/artificial-intelligence-used-identify-skin-cancer/.

[11] World Health Organization, Long-Running Telemedicine Networks Delivering Humanitarian Services, Bulletin of the World Health Organization (2012), https://www.who.int/bulletin/volumes/90/5/11-099143.pdf.