Telehealth: Current Definitions and Future Trends

A publication of The Rural Telehealth Evaluation Center (RTEC)

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Purpose

Telehealth helps ensure patients receive optimal and timely healthcare by connecting them to needed services through telecommunication, remote patient monitoring (RPM), store-and-forward technologies, and mobile health (mHealth). Telehealth promotes healthcare access, improves care, and offers patients a level of convenience difficult to obtain with in-person care.[1] A 2018 rapid review by Shigekawa et al. shows telehealth interventions for certain conditions are equally effective as in-person care.[2] As a result of the COVID-19 pandemic, the majority of U.S. hospitals now use telehealth to connect with patients and practitioners who are not onsite.[3] Despite recent policy changes, many barriers remain that hinder the widespread and successful adoption of telehealth.[4] The Department of Health and Human Services (DHHS) has made efforts to streamline telehealth-related information for both providers and patients by providing a resource website, https://telehealth.hhs.gov/.

Prior to the pandemic and the public health emergency declared on January 27, 2020, many barriers existed to telehealth including availability of telehealth services and limitations for reimbursement of those services. In 2019, Medicaid in all states began covering real-time video, but none allowed for telephone-only communication to be reimbursed. There were also limits in 2019 concerning the originating site for the telehealth encounter with less than half of the states reimbursing encounters where home was the originating site.[5]

Since the U.S. government declared a public health emergency due to COVID-19, telehealth services have expanded expediently.[6] Nearly nine million Medicare beneficiaries received telehealth services from mid-March through mid-June 2020.[7] As of May 2020, almost all state Medicaid programs allowed the originating site to be the patient's home.[5] In addition, the types of reimbursable services expanded substantially after the declaration of the public health emergency. Many states allowed behavioral health (47) and primary care services (36) in 2019, but by May 2020 all states reimbursed these services.[5]

Currently, all state Medicaid programs reimburse telehealth services to some degree,[8,9] and many temporary changes have been made to telehealth reimbursement policies nationwide due to the COVID-19 pandemic. This unprecedented increase in telehealth service among Medicare and Medicaid beneficiaries is due, in part, to changes in technologies required for telehealth visits. For example, interactive audio-video technology typically required for telehealth visits prior to the COVID-19 pandemic is now no longer required. Although this flexibility may be a temporary change for telehealth practices, telehealth itself has proven to be a lifeline for healthcare providers and patients. Telehealth's rapid adoption shows that it provides a unique opportunity to reach patients where they are while addressing a major healthcare access barrier. For this reason, telehealth services will continue to be a viable solution for rural and other underserved populations to access healthcare post-pandemic. Further, legislative action will be necessary to ensure telehealth access remains. The Center for Connected Health Policy (CCHP) tracks legislation across the U.S. to provide timely updates on continually changing laws and policies and provides updates on their website https://www.cchpca.org/.

Therefore, the purpose of this document is to provide clarification of telehealth terminology so healthcare professionals, researchers, legislators, and consumers can communicate clearly about telehealth when making healthcare decisions and policies. Given telehealth services' rapid expansion and adoption, it is essential to examine telehealth definitions to successfully determine best practices, standardize telehealth-related language, and expand telehealth adoption.

Key Questions

A scoping review was conducted using the Arksey and O'Malley framework.[10] This review was guided by the three questions:

1. What issues and challenges exist with current telehealth definitions, especially the terms "telehealth" and "telemedicine" in the U.S.?

2. What are the current telehealth definitions used among U.S. stakeholders and across the healthcare literature?

3. What are key considerations when selecting telehealth definitions that are the right fit for services or programs provided?

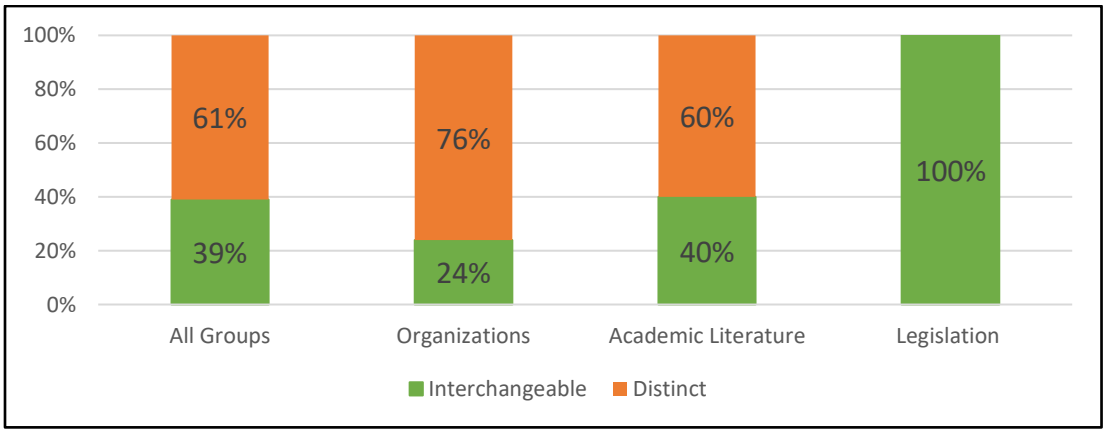
1. What issues and challenges exist with current of telehealth definitions, especially the terms "telehealth" and "telemedicine" in the U.S.?

Variations in telehealth definitions and using two distinctly different terms interchangeably[8] (i.e., "telehealth" and "telemedicine") makes it challenging to understand which is the appropriate term and definition. The many definitions for telehealth and telemedicine may create confusion for healthcare professionals when providing telehealth. The various definitions may also increase confusion among state and national legislators when writing laws and policies that govern telehealth. The differences in how telehealth is defined may lead to variations in telehealth reimbursement policies across states and among private payers. For example, the Centers for Medicare & Medicaid Services (CMS) states telemedicine is specifically *"two-way, real-time interactive communication between a patient and physician."*[11] Telehealth, on the other hand, is often used to encompass a broader definition of remote healthcare that is inclusive of other, non-live healthcare services. For instance, HSRA defines telehealth 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."*[12]

Historically, the term "telemedicine" was used to describe the subject of medicine at a distance. The term "telehealth" gained popularity in the 1990s.[13] In 2005, a federal subcommittee identified both telemedicine and telehealth as key resources to advance patient care.[13] The number of terms used in the field has continued to expand. The need to accurately define emerging terms is timely given the increase in telehealth visits due to the COVID-19 pandemic.[3]

Most organizations and federal agencies consider the terms "telehealth" and "telemedicine" to be distinct. Those that recognize a distinction state that the term "telehealth" is the broader term and "telemedicine" is the component of "telehealth" specific to clinical care. Figure 2 shows that organizations and federal agencies are more likely to view the terms as distinct while legislation always uses the terms "telehealth" and "telemedicine" interchangeably. Among all groups included in the source data (n=31 articles/websites/legislative bills whose definition specifically identified the terms as distinct or interchangeable in the definition), the terms were considered interchangeable 39% of the time, whereas 61% of the time the source considered the terms to be distinct. It was more common for academic literature, organizations, and federal agencies to distinguish between the terms. The main takeaway is that legislation always considered "telehealth" and "telemedicine" as interchangeable terms in their definitions regarding reimbursement.

Figure 2: Interchangeability of "telehealth" and "telemedicine"

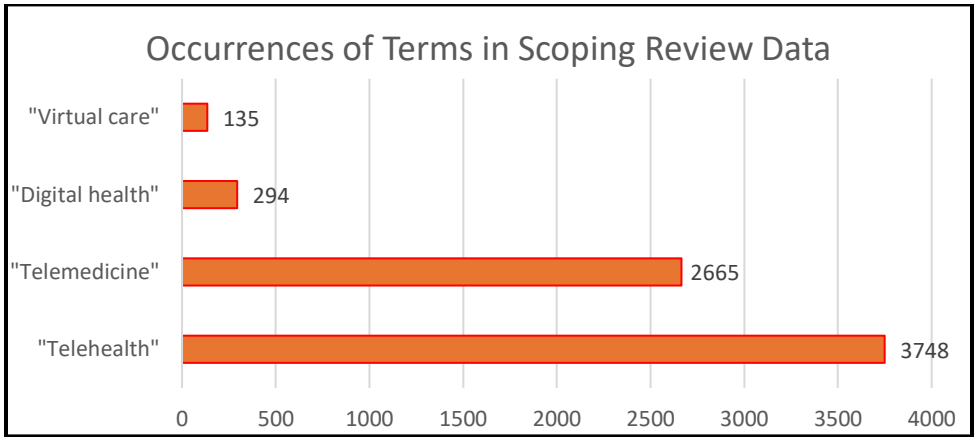


2. What are the current telehealth definitions used among U.S. stakeholders and across the healthcare literature?

A review of definitions was conducted from three sources of bibliographic data and grey literature: 1) GovHawk.com, 2) PubMed, and 3) websites for organizations and federal agencies with a significant telehealth interest (e.g., the American Telehealth Association (ATA), and World Health Organization (WHO)). GovHawk.com is a web-based legislative and regulatory tracking tool that allows a person to search for bills by topic from all U.S. states.[14] The following keywords were used in the scoping review: "telehealth," "telemedicine," "virtual care," and "digital health." A summary of the academic literature and gray literature sources, inclusion and exclusion criteria by source, and the number of articles included in the analysis are listed in Appendix B. Nineteen organizational websites were reviewed. A total of fifteen organizations had either a definition for the term "telehealth" or "telemedicine." These are included in Tables 1 and 2. A full list of the organizations and federal agencies can be found in Appendix A.

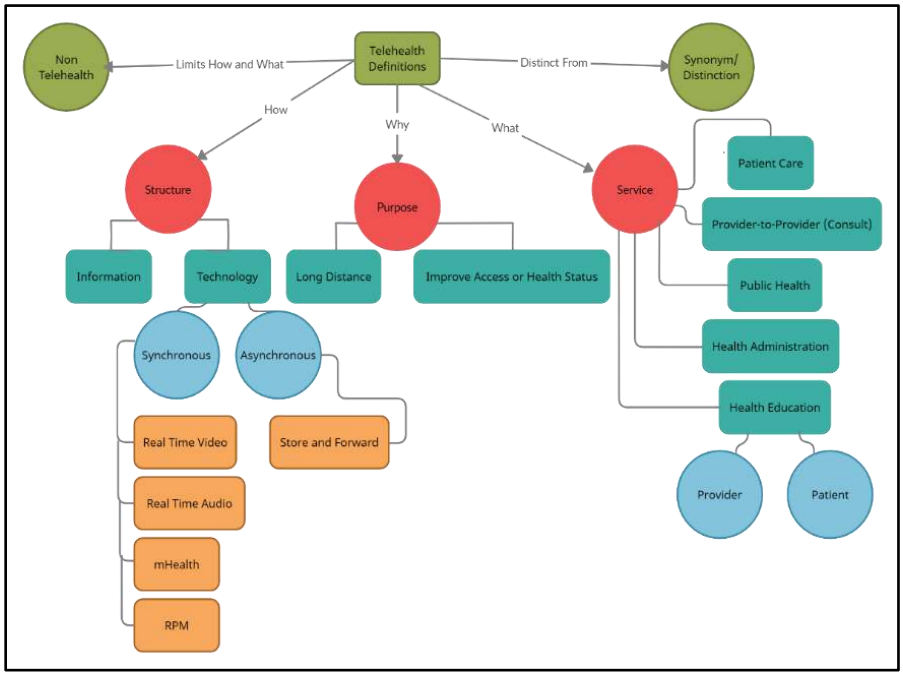
When comparing the occurrences of the terms used in the scoping review source (i.e., "telehealth," "telemedicine," "virtual care," and "digital health") the term "telehealth" was the most used. The terms "virtual care" and "digital health" emerged more recently and were the least used (Figure 1). Each term will be subsequently discussed in terms of how it is being used by federal entities that have a vested interest in telehealth. Further descriptions of the definitions for each of these terms as used by these entities is presented below:

Figure 1: Occurrences of Terms in Scoping Review Source Data



Telehealth definitions were reviewed regarding the constructs of structure, purpose, and service (see Figure 3). This project compared telehealth-related definitions from academic literature, websites for organizations with a telehealth interest, and state/federal legislation. Definitions varied substantially depending on the source and intended audience. The most comprehensive definitions of telehealth included three key components: service (what?), structure (how?), and purpose (why?). However, the broader definition of telehealth provides a comprehensive description of the wide range of services available and does not fit the needs of all stakeholders. For example, legislation generally provides a more succinct and specific definition based on what reimbursement a particular state will allow.

Figure 3: Concept Map of Definition Structure



Telehealth

"Telehealth" is the most used term in the scoping review. Nineteen entities—federal and other agencies with vested interests in telehealth—were identified, and their use of telehealth definitions examined (Table 1). Sixty percent of the identified entities listed below provided a specific definition for telehealth, and 27% of the entities cited the HRSA definition on their website. These telehealth definitions most commonly refer to the delivery of healthcare at a distance through technology. Some definitions defined telehealth as being a larger umbrella that encompasses more than just direct medical care delivery. In the academic literature, "telehealth" was the term most used when describing the process of delivering healthcare across a distance. The most cited "telehealth" definitions in the academic literature were from telehealth-related organizations or U.S. federal agencies (e.g., DHHS, HRSA ATA, CMS, WHO, etc.).[15–20] The WHO definition was cited most often in the academic literature. Some authors developed their own definition by combining various organizational definitions or listing multiple definitions from telehealth-related organizations and federal agencies.[20]

Table 1: Telehealth Definitions

Federal Agency or Organization	Definition Provided	Definition in Source Material
Agency for Healthcare Research and Quality (AHRQ)	Yes	**"Telehealth**, often referred to as telemedicine, is the delivery of health-related services and information via telecommunications technologies in the support of patient care, administrative activities, and health education."[22]
American Medical Association (AMA)	Yes	**"Telehealth,** telemedicine, and related terms generally refer to the exchange of medical information from one site to another through electronic communication."[23]
American Telemedicine Association (ATA)	Yes	**"Telehealth** effectively connects individuals and their healthcare providers when an in-person interaction is not clinically necessary and facilitates physician-to-physician consultation. Using **telehealth** services, patients can receive care, consult with a provider, get information about a condition or treatment, arrange for prescriptions, and receive a diagnosis."[21]
Centers for Disease Control and Prevention (CDC)	No	Cites HRSA's definition for **telehealth**.[24]
Centers for Medicare & Medicaid Services (CMS)	Yes	**"Telehealth,** telemedicine, and related terms generally refer to the exchange of medical information from one site to another through electronic communication to improve a patient's health."[25,26]
Federal Communications Commission (FCC)	Yes	**"Telehealth** is similar to telemedicine but includes a wider variety of remote healthcare services beyond the doctor-patient relationship."[27]

Federal Agency or Organization	Definition Provided	Definition in Source Material
Health Resources and Services Administration (HRSA)	Yes	**"Telehealth** is defined as the use of electronic information and telecommunication technologies to support long-distance clinical healthcare, patient and professional health-related education, public health, and health administration."[12]
Indian Health Service (IHS)	No	Cites HRSA's definition for **telehealth.**[28]
National Institutes of Health (NIH)	Yes	**"Telehealth** – The use of communications technologies to provide and support health care at a distance."[29]
National Institute of Standards and Technology (NIST)	No	Does not provide a definition for **Telehealth**.
The Office of the National Coordinator for Health Information Technology (ONC)	No	Cites HRSA's definition for **telehealth**.[30]
U.S. Department of Agriculture (USDA)	Yes	"**Telehealth** uses technology such as mobile phones or computers to deliver health care."[31]
U.S. Department of Labor	No	Cites HRSA's definition for **telehealth.**[32]
U.S. Department of Veteran's Affairs (VA)	Yes	"eHealth and **telehealth** leverage computer and telephone-based technologies—in concert with health informatics, specialty care, and case managements—to improve Veterans' care delivery, quality, and access."[33]
World Health Organization (WHO)	Yes*	"**Telehealth** is the "delivery of health care services, where patients and providers are separated by distance." ***Note: WHO no longer has the link to this definition active. It was accessed February 2021.**[34,35]

Telemedicine

The term "telemedicine" is the second most used term in the source data and has often been defined as a subset of telehealth. For example, HRSA describes telemedicine as being specific to clinical services under the broader umbrella of telehealth, which encompasses nonclinical aspects as components of healthcare. These services include, but are not limited to, administrative meetings, provider training, and patient education.[36] Some organizations, however, use the terms "telemedicine" and "telehealth" interchangeably. Agencies that use the terms interchangeably include CMS, AMA, and AHRQ.[22,23,25] Table 2 provides examples of common telemedicine definitions used by organizations and federal agencies that have a vested interest in telehealth. The National Institute of Standards and Technology (NIST) defines the term "telemedicine" as simply "the electronic exchange of medical information."[37]

Of the organizations and federal agencies included in this scoping review, 53% have a definition for the term "telemedicine" on their website. One-third of the organizations and federal agencies represented telemedicine as having a clinical care focus, while the other half included activities other than clinical care, such as continuing medical education or administrative processes.

Table 2: Telemedicine Definitions

Federal Agency or Organization	Definition Provided	Definition in Source Material
Agency for Healthcare Research and Quality (AHRQ)	Yes	"Telehealth, often referred to as **telemedicine**, is the delivery of health-related services and information via telecommunications technologies in the support of patient care, administrative activities, and health education."[22]
American Medical Association (AMA)	Yes	"Telehealth, **telemedicine,** and related terms generally refer to the exchange of medical information from one site to another through electronic communication."[23]
American Telemedicine Association (ATA)	No	Does not provide a definition for telemedicine.[21]
Centers for Disease Control and Prevention (CDC)	Yes	**Telemedicine** is defined by the Federation of State Medical Boards as "the practice of medicine using electronic communication, information technology, or other means between a physician in one location, and a patient in another location, with or without an intervening healthcare provider."[24]
Centers for Medicare & Medicaid Services (CMS)	Yes	"For purposes of Medicaid, **telemedicine** seeks to improve a patient's health by permitting two-way, real time interactive communication between the patient and the physician or practitioner at the distant site. This electronic communication means the use of interactive telecommunications equipment that includes, at a minimum, audio and video equipment."[25]
Federal Communications Commission (FCC)	Yes	**"Telemedicine** can be defined as using telecommunications technologies to support the delivery of all kinds of medical, diagnostic, and treatment-related services, usually by doctors."[27]

Federal Agency or Organization	Definition Provided	Definition in Source Material
Health Resources and Services Administration (HRSA)	Yes	"The term telehealth includes **telemedicine** services but encompasses a broader scope of remote healthcare services. **Telemedicine** is specific to remote clinical services, whereas telehealth may include remote non-clinical services, such as provider training, administrative meetings, and continuing medical education, in addition to clinical services."[36]
Indian Health Service (IHS)	No	Does not provide a definition for **telemedicine**.
National Institutes of Health (NIH)	No	Does not provide a definition for **telemedicine**.
National Institutes of Standards and Technology (NIST)	Yes	"**Telemedicine**, the electronic exchange of medical information…"[37]
The Office of the National Coordinator for Health Information Technology (ONC)	No	Does not provide a definition for telemedicine
U.S. Department of Agriculture (USDA)	No	Does not provide a definition for **telemedicine**.
U.S. Department of Labor	Yes	" The Wage and Hour Division (WHD) will consider **telemedicine** visits to be in-person visits for purposes of establishing a serious health condition under the FMLA. To be considered an in-person visit, the telemedicine visit must include an examination, evaluation, or treatment by a health care provider; be permitted and accepted by state licensing authorities; and, generally, should be performed by video conference."[38]
U.S. Department of Veteran's Affairs (VA)	No	Does not provide a definition for **telemedicine**.
World Health Organization (WHO)	Yes*	**"Telemedicine** is the delivery of healthcare services, where distance is a critical factor, by all healthcare professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment, and prevention of disease and injuries, research, and evaluation, and for the continuing education of healthcare providers, all in the interests of advancing the health of individuals and their communities."[19,34,39,40] ***Note: The WHO no longer has this definition on its website.**[35] **It was cited in these academic articles and was still current on their website as of February 1, 2021. It is also cited in a publication by WHO.**[41]

Virtual Care

The term "virtual care" occurred infrequently in the scoping review. There were only 135 mentions of "virtual care" and few published definitions of the term. For example, "virtual care" was defined by Bhatia et al. 2017 as being *"commonly defined as medical care delivered at a distance by means of technology,"* limiting the definition of *"virtual care"* to be synonymous with "telemedicine."
There are also few references to "virtual care" among federal agencies. The term "virtual care" was used in two funding opportunities from the HRSA Bureau of Primary Health Care (BPHC) – Optimizing Virtual Care grant program, one which states "*Virtual care uses technologies, such as telehealth, remote patient monitoring, and self-management tools driven by artificial intelligence and machine-based learning."*[42] The second funding opportunity by HRSA BPHC provides examples of virtual care to include systems and services *"that increase patient engagement and self-management, home monitoring of symptoms and medication adherence, 24-hour access, and synchronous and asynchronous patient visits."*[43] This use of the term is consistent with the rising use of the term "virtual care" as a broad term encompassing both the term "telehealth" and "telemedicine" under its umbrella. The Department of Defense (DoD) describes Virtual Health (VH) rather than the term "virtual care." The DoD defines VH as "*connecting patients and providers to health care across the world."*[30] Furthermore, the DoD states that "*telehealth, referred to in the Defense Department as virtual health or VH,"*[44] indicating that they are moving towards the term VH as an agency. VH, includes direct-to-consumer care and provider-to-provider consults. The ATA describes virtual care as follows, "*Virtual care is so much more than online urgent care; it is healthcare you can access from the comfort and safety of your home. It is all four modes of care; asynchronous, chat, phone, and video visits."*[45]

Overall, the scope of "virtual care" is unclear. Within these references to "virtual care," the expanse of what is included in the definition ranges widely from "virtual care" being synonymous with "telemedicine" to "virtual care" going beyond traditional "telehealth" to include self-management tools driven by artificial intelligence.[42]

Digital Health

Many organizations and federal agencies use the term "digital health" as a synonym of the terms "telehealth" and "telemedicine;" however, some posit telehealth is under the digital health umbrella. For example, WHO described digital health as, *"a broad category encompassing electronic health, mobile health, telehealth and health data, among others."*[46] Digital health is a broad category encompassing electronic health, mobile health, telehealth, and health data, among others. It offers solutions that can strengthen health systems, such as bringing health services directly to people's homes and to underserved communities, helping to map outbreaks of disease, and integrating digital tools that make health care more responsive and productive. Table 3 contains the available digital health definitions.
The White House Office of Science and Technology Policy (OSTP) released a Request for Information (RFI) in January of 2022 asking for comments on the use of digital health technologies to improve community health, personal wellness, and health equity.[47] The RFI states the term *"digital health technologies"* should be interpreted broadly as *"any tool or set of tools that improve health or enable better healthcare delivery by connecting people with other people, with data, or with health information. Examples of this include but are not limited to: telehealth, remote patient monitoring devices, health trackers, mobile devices (e.g., smart phones, tablets), mobile health apps, and technologies for managing health information including electronic health records."*[47] Also, a recent publication the National Academy of Medicine (NAM) used the term "digital health" citing the definition provided by the FDA.[48] While, the term "digital health" is emerging, the RFI and publication both published in

January 2022 suggest that the term "digital health" is a timely term that needs to be defined by stakeholders and policymakers.

As with the terms "telehealth" and "telemedicine," discrepancies exist on whether the term "digital health" is an umbrella term encompassing more than direct clinical care or if it is specific to the delivery of care between a clinician and a patient. A CDC blog provides a description of the applications of the term "digital health," stating that *"numerous measurement technologies such as personal wearable devices, internal devices, and sensors that could be used to identify health status and help with disease diagnosis and management."*[49] The same CDC blog lists wearable devices that capture continuous patient data as technologies included under digital health but does not state that the term "digital health" encompasses the terms of "telehealth" and "telemedicine" in its scope or provide an official definition of the term.[50] Frequently, "digital health" is used as a general term that includes direct patient care visits as well as the collection of health data using wearable devices.

Table 3: Digital Health Definitions

Federal Agency or Organization	Definition Provided	Definition in Source Material
Agency for Healthcare Research and Quality (AHRQ)	Yes	**"Digital health**care research applies to activities involving the transfer of information between patient and provider throughout the entire patient journey, as well as the intelligent use of all related data."[51]
American Medical Association (AMA)	Yes	"For the purposes of this Playbook, we define telehealth as a **digital health** solution that connects the patient and clinician through real-time audio and video technology and can be used as an alternative to traditional in-person care delivery, and in certain circumstances can be used to deliver such care as the diagnosis, consultation, treatment, education, care management and self-management of patients."[52]
World Health Organization (WHO)	Yes	**Digital health** is "a broad category encompassing electronic health, mobile health, telehealth and health data, among others."[35]

Common Telehealth-Related Terms

Terms related to telehealth, including terms such as asynchronous, synchronous, store-and-forward, remote patient monitoring, remote physiological monitoring, and remote therapeutic monitoring are provided in Table 4. There is less diversity and more congruency in these ancillary definitions than among the overarching definitions of telehealth, telemedicine, virtual care, and digital health.

Asynchronous

"Asynchronous" refers to not happening in real-time, allowing for a more relaxed schedule, with participants accessing information in their own time during different hours and from multiple locations. In most cases, "asynchronous" is synonymous with "store-and-forward." Asynchronous, also known as store-and-forward, refers to the use of prerecorded information used to deliver services. The term "synchronous" is stated to be the use of live technology to deliver services. One of the most detailed definitions of "synchronous" comes from CDC, which states, *"[Asynchronous] includes real-time*

telephone or live audio-video interaction typically with a patient using a smartphone, tablet, or computer."[50]

Remote Monitoring Technologies

Remote Patient Monitoring (RPM) can include peripheral medical equipment (e.g., digital stethoscopes, otoscopes, ultrasounds) to conduct a remote evaluation of the patient in addition to the traditional remote monitoring devices (e.g., glucometers, blood pressure monitors, scales).[53,54] Remote physiological monitoring is sometimes used interchangeably with RPM. CMS provides codes for physiological monitoring; however, CMS does not provide a definition separate from general RPM. The definitions for the term RPM are also consistent; RPM definitions discuss how to collect health data from patients that can be monitored by providers at a distant site. The ATA expands on this definition to state RPM "*supports ongoing condition monitoring and chronic disease management"* to emphasize the purpose of using RPM in telehealth. [21] Remote therapeutic monitoring (RTM) appears to be a newer term, as CMS published ICD-10 codes for the use of RTM in October 2020.[55] One source states, *"Remote therapeutic monitoring allows for the observation and control of a broader range of health conditions when compared to RPM."*[56] All sources consider asynchronous, store-and-forward, synchronous, and RPM to fall under the umbrella of "telehealth" and/or "telemedicine."

Mobile Health (mHealth)

"Mobile health" or "mHealth" are terms that have been commonly used to describe the provision of health services via a mobile device. mHealth is defined by the telehealth.HHS.gov website as *"an evolving area where digital applications on smartphones can support patients between provider visits. Smartphones and third-party apps can assist with: remote patient monitoring, push notifications reminding patients to follow treatment plans, and storing detailed instructions or education materials."*[57] WHO states that mHealth should be defined as *"medical and public health practice supported by mobile devices, such as mobile phones, patient monitoring devices, personal digital assistants (PDA), and other wireless devices."*[58] The term "mHealth" was not used in the legislation reviewed but was included in the search terms for twenty-six of the systematic reviews examining telehealth topics.

Telehomecare and Point-of-Care (POC)

NIH started using "telehomecare" and "point-of-care" (POC) as new ancillary terms related to telehealth. The National Institute for Biomedical Imaging and Bioengineering defines "telehomecare" as providing *"the remote care needed to allow people with chronic conditions, dementia, or those at high risk of falling to remain living in their own homes. The approach focuses on reacting to emergency events and raising a help response quickly."* [29] It further states "*POC medicine relies on diagnostic devices that can perform at the time and place of patient care, which includes at home, in doctor's offices and clinics, and remote areas without electricity or laboratory equipment. POC devices can detect micronutrient deficiencies, anemia, infectious agents, and even some cancers. Combined with telehealth, POC technologies allow health care workers to test patients and rapidly obtain results without the need for a complex laboratory setting which can result in significant cost-reduction."*[29]

Table 4: Other Telehealth and Telemedicine-Related Term Definitions		
Source	**Definitions Provided**	**Definition in Source Material**
Asynchronous or Store-and-Forward		
Agency for Healthcare Research and Quality (AHRQ)	Yes	"**Store and forward** (S&F) telehealth - involves the transmission of medical or health information, such as an x-ray, lab results, or prescriptions, from one provider to another for a consultation or interpretation."[22]
American Medical Association (AMA)	Yes	**"Asynchronous: Store-and-forward technologies**…collect images and data to be transmitted and interpreted later. Online digital visits and/or brief check-in services furnished using communication technology that are employed to evaluate whether an office visit is warranted (via patient portal, smartphone)."[23]
American Telemedicine Association (ATA)	Yes	"Chat-based Interactions: **Asynchronous** online or mobile app communications to transmit a patient's personal health data, vital signs, and other physiologic data or diagnostic images to a healthcare provider to review and deliver a consultation, diagnosis, or treatment plan at a later time."[21]
Centers for Disease Control and Prevention (CDC)	Yes	"This includes **"store and forward"** technology where messages, images, or data are collected at one point in time and interpreted or responded to later. Patient portals can facilitate this type of communication between provider and patient through secure messaging."[50]
Centers for Medicare & Medicaid Services (CMS)	Yes	**Asynchronous or Store-and-Forward**: "Transfer of data from one site to another using a camera or similar device that records (stores) an image that is sent (forwarded) via telecommunication to another site for consultation. **Asynchronous** or store and forward applications would not be considered telemedicine but may be utilized to deliver services."[11]

Source	Definitions Provided	Definition in Source Material
Indian Health Service (IHS)	Yes	**"Asynchronous (Store-and-Forward)** Videoconferencing: Transmission of a recorded health information to a health practitioner, usually a specialist."[28]
The Office of the National Coordinator for Health Information Technology (ONC)	Yes	"Transmission of a recorded health history to a health practitioner, usually a specialist."[59]
Synchronous		
Agency for Healthcare Research and Quality (AHRQ)	Yes	"Real-time video telehealth - involves the patient and his or her primary care provider or other health care professional interacting with a remote specialist via video-conferencing or other real-time telehealth technology."[22]
American Medical Association (AMA)	Yes	"Real-time, audio-video communication that connects physicians and patients in different locations."[23]
Centers for Disease Control and Prevention (CDC)	Yes	"This includes real-time telephone or live audio-video interaction typically with a patient using a smartphone, tablet, or computer."[50]
Indian Health Service (IHS)	Yes	**"Synchronous (Live) Videoconferencing**: A two-way audiovisual link between a patient and a care provider."[28]
The Office of the National Coordinator for Health Information Technology (ONC)	Yes	"Live (**synchronous**) videoconferencing: a two-way audiovisual link between a patient and a care provider."[59]
U.S. Department of Labor	Yes	"**synchronous** telemedicine service rendered via a real-time interactive audio and video telecommunications system"[32]
Remote Patient Monitoring		
American Medical Association (AMA)	Yes	**"Remote Patient Monitoring (RPM)** can be defined as collecting and interpreting physiologic data digitally stored and/or transmitted by the patient and/or caregiver to the physician or qualified healthcare professional."[23]

Source	Definitions Provided	Definition in Source Material
American Telemedicine Association (ATA)	Yes	**"Remote Patient Monitoring:** The collection, transmission, evaluation, and communication of individual health data from a patient to their healthcare provider or extended care team from outside a hospital or clinical office (i.e., the patient's home) using personal health technologies including wireless devices, wearable sensors, implanted health monitors, smartphones, and mobile apps. Remote patient monitoring supports ongoing condition monitoring and chronic disease management and can be synchronous or asynchronous, depending upon the patient's needs."[21]
Centers for Disease Control and Prevention (CDC)	Yes	"This allows direct transmission of a patient's clinical measurements from a distance (may or may not be in real time) to their healthcare provider."[50]
Centers for Medicare & Medicaid Services (CMS)	Yes	"...**remote patient monitoring** devices, which are used to collect and transmit patient data for monitoring and interpretation. While they do not meet the Medicaid definition of telemedicine, they are often considered under the broad umbrella of telehealth services."[11]
Indian Health Service (IHS)	Yes	**"Remote Patient Monitoring (RPM)**: The use of connected electronic tools to record personal health and medical data in one location for review by a provider in another location, usually at a different time."[28]
National Institutes of Health (NIH)	Yes	**"Remote Patient Monitoring (RPM):** enables patient monitoring outside of clinical settings, such as in the home. Patients use or wear sensors that wirelessly collect and transmit physiological data to health professionals. RPM can significantly improve an individual's quality of life. For example, in diabetes management, the real-time transmission of blood glucose readings enables healthcare providers to intervene when needed and avoid acute events and hospitalizations."[29]

Source	Definitions Provided	Definition in Source Material
The Office of the National Coordinator for Health Information Technology (ONC)	Yes	**"Remote Patient Monitoring (RPM):** the use of connected electronic tools to record personal health and medical data in one location for review by a provider in another location, usually at a different time."[59]

Common Telehealth-Related Supporting Tools

Many tools support and enhance the delivery of care at a distance. These tools include but are not limited to, Artificial Intelligence (AI), Virtual Reality (VR), and Electronic Health (eHealth). Each of these modalities are discussed in detail below.

Artificial Intelligence (AI)

The use of AI has increased drastically in recent years. In the domain of telehealth, AI is used to support automated diagnosis and prognosis by using existing data (e.g., imaging). Based on the increasing references in the literature, AI is an emerging component of the telehealth landscape. The term was used mostly in the literature (nine articles) and one legislative bill concerning telehealth. When the source data was retrieved in March 2021, no organizations mentioned AI in the definitions of the terms "telehealth" and "telemedicine." However, a notice of funding opportunity released by HRSA through BPHC in May 2021 defined the emerging term "virtual care" to include AI.[42] The ATA has noted AI as an emerging technology that can be used to *"enable better disease surveillance, improve diagnosis and early detection of disease, and support the practice of personalized medicine."*[21]

Virtual Reality (VR)

VR is a tool that can aid in the delivery of services and provide the patient with a virtual space to communicate with their healthcare provider much like a traditional office visit. This term was found in eight of the academic articles but was not addressed in the legislation. National Aeronautics and Space Administration NASA defines VR as being *"the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence."*[60] This definition is broad and does not speak to the application of VR in the health space. VR has been used to provide simulated provider visits where the provider and patient are both in the VR environment using headsets at different locations. Other current uses are for patients in rehabilitation and for group therapy sessions.[61,62] One author posits that VR invokes the concept of "presence" for the users.[62]

Electronic Health (eHealth)

The term "eHealth" or Electronic Health is noted to have originated in the business world when terms associated with electronic commerce (e-commerce) started being used to describe various business areas.[63] This same publication defines the term "eHealth" as *"an emerging field in the intersection of medical informatics, public health, and business, referring to health services and information delivered or enhanced through the Internet and related technologies."*[63] The VA used the term eHealth interchangeably with the term "telehealth."[33] A systematic review of eHealth definitions published in 2005 reviewed 51 definitions and found two universal themes in the definitions: health and technology. Other descriptions of the term emphasize the role of electronic records in the scope of eHealth.[64] The term "ehealth" was only used once among the legislation reviewed but was discussed by twenty-two of the academic manuscripts.

3. What are key considerations when selecting telehealth definitions that are the right fit for services or programs provided?

It is important for stakeholders to consider their audience when using terms related to telehealth. The more comprehensive definitions included *how* telehealth would be delivered, *why* it was being done, and *what* services are included. However, the most comprehensive definition is not always the most suitable for all stakeholders. Legislation typically defines both "telehealth" and "telemedicine" narrowly, outlining only what services are reimbursable. For example, a state-specific definition may limit the term "telehealth" to only the provision of clinical care, with a minimum of audio and visual services. Stakeholders who educate on telehealth and telemedicine generally used a definition describing multiple modalities of delivery and various types of service, regardless of reimbursement. Overall, legislators were less likely to incorporate a purpose as a component of their definition. However, legislators were more likely to describe the specific modalities that they considered part of telehealth. Academic researchers were more likely to have a purpose component to their definition. Telehealth-related organizations would typically have both the components of purpose and structure for delivery. Stakeholders must decide which components of a telehealth definition best represent their intended audience and provide sufficient details to adequately delineate the concept.

Correlation Between Telehealth Terms

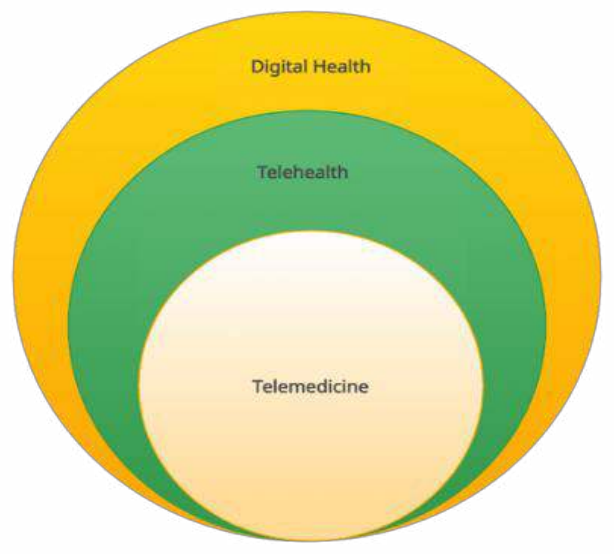
During this review, we sourced many definitions from government legislation, web sources, and academic literature. We found many definitions throughout the source data; however, variation existed in the definition structures. Some definitions only represent the structure and services identified. Other definitions were more comprehensive to include a purpose. It is important to consider your audience when choosing the most appropriate definition for your needs. Outlined below are relationships between commonly used terms and factors that might be important for clinicians, academic researchers, and members of the federal government to consider when defining telehealth.

The relationship between commonly used terms:

Telehealth terms are continuously evolving as the field continues to expand. The most commonly used terms are" telehealth" and "telemedicine". The terms "virtual care" and "digital health" are emerging but are not as commonly used compared to telehealth and telemedicine. The term "digital health" was first used in 2017 but has become more common within the academic literature and websites since 2019. In comparison to "virtual health", the term "digital health" is currently used more often. It can be noted that during the period of this review the use of the term "telehealth" was replaced with "digital health" on the WHO's website.[46] The term "virtual care" was first presented in 2018 but is not used in a way that would make it distinct from the term "digital health."

Figure 4 conceptualizes the relationship between the terms in a Venn diagram. Conceptually eHealth has been noted to be an umbrella term that includes the subtopics of mHealth, telemedicine, and electronic health records.[64,65] However, the term eHealth is used less commonly in this umbrella context than the term "digital health." As such, the term "digital health" is considered an umbrella term above the term "telehealth" and "telemedicine."

Figure 4: Conceptual Venn Diagram of Terms



Factors for Consideration

Important factors when considering a definition for Clinicians:

1. Most patients will not distinguish between the terms "telehealth" and "telemedicine" in their use.

2. When dealing with issues of reimbursement, legislators define the terms "telehealth" and "telemedicine" interchangeably; therefore, clinical usage of these terms should be consistent with applicable laws and policies.

Important factors when considering a definition for Academia:

1. Academic researchers seek to understand how the terms are interrelated and the specific nuances between the terms.

2. Academic researchers may need to distinguish the terms to accurately describe and frame their research.

Important factors when considering a definition for Federal Stakeholders:

1. Telehealth is currently the most used term and would have the most recognition among federal stakeholders.

2. For reimbursement related policies (i.e., legislation), it will be important to identify what is being recognized as telehealth for reimbursement.

Considerations for policymakers and stakeholders:

- When adopting or adapting definitions related to telehealth, policymakers and other stakeholders should consider adding example terms to the definition of telehealth to highlight emerging technologies such as AI. AI is a term being used more commonly within the telehealth community; however, few telehealth definitions currently include AI in their descriptions and/or examples of the technologies. Retaining the use of broad terms like "telecommunications technologies" would also be helpful given the ever-growing field of technology and adding

examples of these technologies such as audio/video conferencing, AI, and VR should be considered when adopting or adapting a telehealth definition.

- Providing a broader definition that includes the term “digital health” as a larger umbrella term that encompasses the terms “telehealth” and “telemedicine” while acknowledging that these two terms may still be commonly used in patient-provider settings.
- Adopting or adapting definitions of emerging ancillary, telehealth-related terms. Such terms include, but are not limited to, asynchronous, synchronous, remote patient monitoring, telehomecare, mHealth, and point-of-care. Adding or adopting definitions for these ancillary terms would help clarify their meaning and relationship to the primary terms.

Ultimately, there are many terms and definitions related to the remote delivery of health care. Understanding the definitions that are used and the distinction in terms is important for healthcare professionals, researchers, legislators, and other stakeholders. Choosing the right definition for one’s intended purpose is imperative to communicate clearly with the audience. Further policy briefs are recommended to explore how to align the terminology and recommendations for updating definitions.

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References

1. Tuckson RV, Edmunds M, Hodgkins ML. Telehealth. *N Engl J Med*. 2017;377(16):1585-1592. doi:10.1056/NEJMsr1503323
2. Shigekawa E, Fix M, Corbett G, Roby DH, Coffman J. The Current State Of Telehealth Evidence: A Rapid Review. *Health Aff Proj Hope*. 2018;37(12):1975-1982. doi:10.1377/hlthaff.2018.05132
3. Telehealth Fact Sheet | AHA. Accessed January 10, 2022. https://www.aha.org/center/emerging-issues/market-insights/telehealth/telehealth-factsheet
4. Fischer SH, Ray KN, Mehrotra A, Bloom EL, Uscher-Pines L. Prevalence and Characteristics of Telehealth Utilization in the United States. *JAMA Netw Open*. 2020;3(10):e2022302. doi:10.1001/jamanetworkopen.2020.22302
5. Chu RC, Peters C, Lew ND, Sommers BD. State Medicaid Telehealth Policies Before and During the COVID-19 Public Health Emergency. Published online 2021:16.
6. Koonin LM, Hoots B, Tsang CA, et al. Trends in the Use of Telehealth During the Emergence of the COVID-19 Pandemic - United States, January-March 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(43):1595-1599. doi:10.15585/mmwr.mm6943a3
7. Early Impact Of CMS Expansion Of Medicare Telehealth During COVID-19 | Health Affairs. Accessed January 10, 2022. https://www.healthaffairs.org/do/10.1377/forefront.20200715.454789/full/
8. Center for Connected Health Policy Fall 2020 Telehealth Report. PAVMT.org. Published October 20, 2020. Accessed January 10, 2022. https://www.pavmt.org/blog-detail/center-connected-health-policy-fall-2020-telehealt
9. State Telehealth Laws & Reimbursement Policies Report. CCHP. Published October 26, 2021. Accessed January 26, 2022. https://www.cchpca.org/resources/state-telehealth-laws-and-reimbursement-policies-report-fall-2021/
10. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. *Int J Soc Res Methodol*. 2005;8(1):19-32. doi:10.1080/1364557032000119616
11. Telemedicine | Medicaid. Accessed January 10, 2022. https://www.medicaid.gov/medicaid/benefits/telemedicine/index.html
12. What is Telehealth? Official web site of the U.S. Health Resources & Services Administration. Published September 30, 2021. Accessed January 10, 2022. https://www.hrsa.gov/rural-health/telehealth/what-is-telehealth
13. Doarn CR, Pruitt S, Jacobs J, et al. Federal Efforts to Define and Advance Telehealth—A Work in Progress. *Telemed J E Health*. 2014;20(5):409-418. doi:10.1089/tmj.2013.0336
14. GovHawk | Legislative & Regulatory Tracking. GovHawk. Accessed January 29, 2022. https://govhawk.com/
15. Sasangohar F, Davis E, Kash BA, Shah SR. Remote Patient Monitoring and Telemedicine in Neonatal and Pediatric Settings: Scoping Literature Review. *J Med Internet Res*. 2018;20(12):e295. doi:10.2196/jmir.9403
16. Makkar A, Siatkowski RM, Szyld E, Ganguly A, Sekar K. Scope of telemedicine in neonatology. *Zhongguo Dang Dai Er Ke Za Zhi Chin J Contemp Pediatr*. 2020;22(5):396-408.
17. Markert C, Sasangohar F, Mortazavi BJ, Fields S. The Use of Telehealth Technology to Support Health Coaching for Older Adults: Literature Review. *JMIR Hum Factors*. 2021;8(1):e23796. doi:10.2196/23796
18. Cole TO, Robinson D, Kelley-Freeman A, et al. Patient Satisfaction With Medications for Opioid Use Disorder Treatment via Telemedicine: Brief Literature Review and Development of a New Assessment. *Front Public Health*. 2021;8:557275. doi:10.3389/fpubh.2020.557275

19. Kruse C, Pesek B, Anderson M, Brennan K, Comfort H. Telemonitoring to Manage Chronic Obstructive Pulmonary Disease: Systematic Literature Review. *JMIR Med Inform*. 2019;7(1):e11496. doi:10.2196/11496
20. Tauben DJ, Langford DJ, Sturgeon JA, et al. Optimizing telehealth pain care after COVID-19. *Pain*. 2020;161(11):2437-2445. doi:10.1097/j.pain.0000000000002048
21. Telehealth Basics. ATA. Accessed January 10, 2022. https://www.americantelemed.org/resource/why-telemedicine/
22. Telehealth | Digital Healthcare Research. Accessed January 10, 2022. https://digital.ahrq.gov/telehealth-0
23. Telehealth resource center: Definitions. American Medical Association. Accessed January 10, 2022. https://www.ama-assn.org/practice-management/digital/telehealth-resource-center-definitions
24. CDC | Public Health Law Anthologies: Telehealth and Telemedicine. Published July 26, 2019. Accessed January 10, 2022. https://www.cdc.gov/phlp/publications/topic/anthologies/anthologies-telehealth.html
25. MEDICARE TELEMEDICINE HEALTH CARE PROVIDER FACT SHEET | CMS. Accessed January 10, 2022. https://www.cms.gov/newsroom/fact-sheets/medicare-telemedicine-health-care-provider-fact-sheet
26. CMS. TELEHEALTH FOR PROVIDERS: WHAT YOU NEED TO KNOW. http://askccg.com/wp-content/uploads/2021/03/C2C-Telehealth-Provider-Toolkit_Digital_508c.pdf
27. Telehealth, Telemedicine, and Telecare: What's What? Federal Communications Commission. Published September 17, 2014. Accessed January 10, 2022. https://www.fcc.gov/general/telehealth-telemedicine-and-telecare-whats-what
28. About TeleHealth and Telebehavioral Health. Telebehavioral Health. Accessed January 28, 2022. https://www.ihs.gov/telebehavioral/abouttelehealth/
29. Telehealth NIH. Accessed January 10, 2022. https://www.nibib.nih.gov/science-education/science-topics/telehealth
30. What is telehealth? How is telehealth different from telemedicine? | HealthIT.gov. Accessed January 10, 2022. https://www.healthit.gov/faq/what-telehealth-how-telehealth-different-telemedicine
31. USDA Outlines Telehealth Service Changes as a Result of the COVID-19 Pandemic. Rural Development. Published May 4, 2020. Accessed January 28, 2022. https://www.rd.usda.gov/node/17512
32. U.S. Department of Labor. FECA Bulletins 2020-2024. https://www.dol.gov/agencies/owcp/FECA/regs/compliance/DFECfolio/FECABulletins/FY2020-2024
33. eHealth/Telehealth. Published January 28, 2022. Accessed January 28, 2022. https://www.hsrd.research.va.gov/research_topics/ehealth.cfm
34. Adejumo OA, Adejumo OA. Prospects of telemedicine during and post COVID-19: highlighting the environmental health implications. *Malawi Med J*. 2020;32(4):235-238. doi:10.4314/mmj.v32i4.11
35. WHO Telehealth. WHO. Accessed February 19, 2021. www.who.int/gho/goe/telehealth/en
36. UDS Manual 2021. Published online 2021. https://bphc.hrsa.gov/sites/default/files/bphc/datareporting/pdf/2021-uds-manual.pdf
37. swenson. December Workshop Focuses on Advancing Telemedicine. NIST. Published November 22, 2006. Accessed January 28, 2022. https://www.nist.gov/news-events/news/2006/11/december-workshop-focuses-advancing-telemedicine

38. COVID-19 and the Family and Medical Leave Act Questions and Answers | U.S. Department of Labor. Accessed January 28, 2022. https://www.dol.gov/agencies/whd/fmla/pandemic#13
39. Kruse CS, Lee K, Watson JB, Lobo LG, Stoppelmoor AG, Oyibo SE. Measures of Effectiveness, Efficiency, and Quality of Telemedicine in the Management of Alcohol Abuse, Addiction, and Rehabilitation: Systematic Review. *J Med Internet Res*. 2020;22(1):e13252. doi:10.2196/13252
40. Kruse C, Fohn J, Wilson N, Nunez Patlan E, Zipp S, Mileski M. Utilization Barriers and Medical Outcomes Commensurate With the Use of Telehealth Among Older Adults: Systematic Review. *JMIR Med Inform*. 2020;8(8):e20359. doi:10.2196/20359
41. World Health Organization. *WHO Guideline: Recommendations on Digital Interventions for Health System Strengthening*. World Health Organization; 2019. Accessed January 10, 2022. https://apps.who.int/iris/handle/10665/311941
42. Optimizing Virtual Care, The Bureau of Primary Health Care (BPHC) Notice of Funding Opportunity. Published 2021. file:///C:/Users/leahc/Downloads/BPHC%20HRSA-22-097%20(H80)%20Optimizing%20Virtual%20Care_Final%20(4).pdf
43. BPHC. HRSA-22-104 Funding Announcement.
44. Partnerships, COVID-19 are Catalysts for Enterprise Virtual Health. U.S. Department of Defense. Accessed January 31, 2022. https://www.defense.gov/News/Feature-Stories/Story/Article/2470534/partnerships-covid-19-are-catalysts-for-enterprise-virtual-health/
45. Reimagining Virtual Care beyond COVID-19. ATA. Published June 4, 2020. Accessed January 10, 2022. https://www.americantelemed.org/blog/reimagining-virtual-care-beyond-covid-19/
46. Digital health: transforming and extending the delivery of health services. Accessed January 10, 2022. https://www.euro.who.int/en/health-topics/Health-systems/digital-health/news/news/2020/9/digital-health-transforming-and-extending-the-delivery-of-health-services
47. Request for Information (RFI) on Strengthening Community Health Through Technology. Federal Register. Published January 5, 2022. Accessed January 26, 2022. https://www.federalregister.gov/documents/2022/01/05/2021-28193/request-for-information-rfi-on-strengthening-community-health-through-technology
48. Lee P, Abernethy A, Shaywitz D, et al. Digital Health COVID-19 Impact Assessment: Lessons Learned and Compelling Needs. *NAM Perspect*. Published online January 18, 2022. doi:10.31478/202201c
49. Public Health Impact of Digital Health: Reinventing the Wheel | Blogs | CDC. Accessed January 10, 2022. https://blogs.cdc.gov/genomics/2021/01/15/public-health-impact-2/
50. CDC. Healthcare Workers. Centers for Disease Control and Prevention. Published February 11, 2020. Accessed January 10, 2022. https://www.cdc.gov/coronavirus/2019-ncov/hcp/telehealth.html
51. Health Information Technology (HIT) | Agency for Healthcare Research and Quality. Accessed January 10, 2022. https://www.ahrq.gov/topics/health-information-technology-hit.html
52. Telehealth Implementation Playbook overview. American Medical Association. Accessed January 10, 2022. https://www.ama-assn.org/practice-management/digital/telehealth-implementation-playbook-overview
53. HIT RPM. https://mhcc.maryland.gov/mhcc/pages/hit/hit/documents/HIT_Remote_Patient_Monitoring_Providers_Brief.pdf
54. CMS Guidance for Remote Patient Monitoring (RPM). ICD10monitor. Published June 30, 2020. Accessed January 31, 2022. https://icd10monitor.com/cms-guidance-for-remote-patient-monitoring-rpm/

55. CMS Proposes New Remote Therapeutic Monitoring Codes: What You Need to Know | Foley & Lardner LLP. Accessed January 31, 2022. https://www.foley.com/en/insights/publications/2021/07/cms-new-remote-therapeutic-monitoring-codes
56. Remote Therapeutic Monitoring (RTM): Everything We Know So Far. Accessed January 10, 2022. https://www.coachcare.com/2021/08/10/remote-therapeutic-monitoring-rtm-everything-we-know-so-far.html
57. Getting started with telehealth | Telehealth.HHS.gov. Accessed January 30, 2022. https://telehealth.hhs.gov/providers/getting-started/
58. WHO Global Observatory for eHealth. mHealth: new horizons for health through mobile technologies: second global survey on eHealth. Published online 2011. Accessed January 26, 2022. https://apps.who.int/iris/handle/10665/44607
59. Telemedicine and Telehealth. The Office of the National Coordinator for Health Information Technology.
60. Virtual Reality. Accessed January 26, 2022. https://www.nas.nasa.gov/Software/VWT/vr.html
61. Expanding Horizons Virtually. Accessed January 25, 2022. https://muschealth.org/health-professionals/progressnotes/2020/spring/virtual-reality
62. Slater M. From presence to consciousness through virtual reality. Accessed January 26, 2022. https://core.ac.uk/reader/1669418?utm_source=linkout
63. Eysenbach G. What is e-health? *J Med Internet Res*. 2001;3(2):e20. doi:10.2196/jmir.3.2.e20
64. Main Difference Between eHealth and mHealth_Healthcare_ezTalks_Video Conferencing, Webinar, Online Meeting, Screensharing Tips and Reviews. Accessed January 26, 2022. https://eztalks.com/healthcare/main-difference-between-ehealth-and-mhealth.html
65. Wernhart A, Gahbauer S, Haluza D. eHealth and telemedicine: Practices and beliefs among healthcare professionals and medical students at a medical university. *PLoS ONE*. 2019;14(2):e0213067. doi:10.1371/journal.pone.0213067

Appendix A: List of Telehealth Related Organizations/Federal Agencies Included in the Scoping Review

List of Telehealth Related Organizations and Federal Agencies		
Agency for Healthcare and Research Quality	American Psychological Association	National Telehealth Technology Assessment Resource Center
American Academy of Family Practitioners	American Telemedicine Association	New England Journal of Medicine
American Academy of Pediatrics	Center for Connected Health Policy	Office for the Advancement of Telehealth
American Association of Retired Persons	Centers for Disease Control and Prevention	Office of the National Coordinator for Health Information Technology
American Health Information Management Association	Centers for Medicare & Medicaid Services	Rural Health Information Hub
American Health Insurance Plans	Federal Communications Commission	Telehealth Center for Excellence – University of Mississippi Medical Center (UMMC)
American Hospital Association*	Federal Office of Rural Health Policy	U.S. Department of Agriculture
American Medical Association	Health Resources and Services Administration	Veterans Affairs
American Pharmacists Association	Healthcare Information and Management Systems Society	World Health Organization
U.S. Department of Defense	U.S Department of Labor	National Institute of Standards and Technology
U.S. Department of Justice	U.S. Department of Veteran's Affairs	Indian Health Service
U.S. Department of Agriculture	National Science Foundation	The Office of the National Coordinator for Health Information Technology
* This organization had two definitions of telehealth represented on its website. It was counted as two documents in the scoping review analysis numbers.		

Appendix B: Scoping Review Data Sources

Scoping Review Data Sources			
	Research Literature	**Organization Websites**	**Legislation**
Sources	PubMed	Organization/Entity websites with an interest in telehealth	GovHawk.com
Inclusion criteria	Review or Systematic review conducted from March 1, 2016 - March 1, 2021*	U.S.-based organizations and federal agencies, as well as the WHO (List of organizations in Appendix A.	Any field containing "telehealth," "telemedicine," "virtual care," and/or "digital health" published in the U.S. between January 1, 2015- March 15, 2021*
Exclusion criteria	• mHealth app/smartphone app/wearables, wearables/text messaging/electronic health technology/implantation device development/intervention evaluation • Remote Patient Monitoring (RPM) technologies • Not U.S.-focused • Imaging studies • Clinical practice guidelines • Psychometric evaluation • Biomarker studies • Non-human studies • Written in a language other than English	N/A (A list of organizations with a significant telehealth interest was developed. Those without a definition on their website were dropped.)	None
# Included in Analysis	22	38	15

*The inclusion criteria dates on the research literature and the legislation differ since the search engines used to extract the information did not have the same choice options.

Appendix C: PRISMA-ScR – Telehealth Definitions