

Recommendation

ITU-T F.780.2 (V2) (04/2023)

SERIES F: Non-telephone telecommunication services

Multimedia services

Accessibility of telehealth services

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Recommendation ITU-T F.780.2

Accessibility of telehealth services

Summary

Recommendation ITU-T F.780.2 defines accessibility requirements for technical features to be used and implemented by governments, health-care providers and manufacturers of telehealth platforms to facilitate the access and use of telehealth services by persons with disabilities and specific needs, including older persons with age-related disabilities.

With the passage of the United Nations Convention on the Rights of Persons with Disabilities in 2006, and its ratification by numerous countries, persons with disabilities have the right to enjoy the highest attainable standard of health without discrimination on the basis of disability. Countries need to take all appropriate measures to ensure access to health services for persons with disabilities.

During the COVID-19 pandemic, the use of telehealth services increased substantially in many countries and telehealth has become a basic need for the general population, especially for those in quarantine, enabling patients in real time through contact with health-care providers to access advice. However, due to the lack of global and comprehensive standards and guidelines for accessibility of telehealth services, many persons with disabilities experience difficulties accessing and using such services and are often forgotten. This Recommendation summarizes and defines those requirements and features that industries can implement to ensure accessible provision of telehealth services.

Technical requirements defined in this Recommendation are based on comprehensive feedback collected from civil society on barriers that persons with disabilities experience when accessing and using telehealth services, as well as on the feedback from industry. This Recommendation was developed collaboratively by the World Health Organization (WHO) and ITU.

History

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FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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Introduction

The World Health Organization (WHO) defines telehealth as the "delivery of health-care services, where patients and providers are separated by distance. Telehealth uses information communication technology for the exchange of information for the diagnosis and treatment of diseases and injuries, research and evaluation, and for the continuing education of health professionals" [b-WHO-1]. Telehealth is a service that has been widely applied in many countries for decades. During the COVID-19 pandemic, the use of telehealth services increased substantially in many countries, becoming a basic need for the general population and enabling people to contact health-care providers from home in real time. As such, telehealth contributes to achieving universal health coverage in countries by improving access to quality and cost-effective health services for patients regardless of their setting. It is particularly valuable for those who live in remote areas and for marginalized populations.

While telehealth provides the means for an equitable health service provision, in reality many persons with disabilities experience difficulties and challenges accessing and using telehealth services. There is more and more evidence that especially in low- and middle-income countries persons with disabilities cannot benefit from telehealth services due to highly inaccessible formats of delivery. For example, very often telehealth platforms are not compatible with devices such as screen readers that facilitate people with vision impairment to access information, or the lack of captioning or volume control in video conferencing impedes persons who are deaf or hard of hearing to interact with health professionals virtually. It is, therefore, critical to upscale efforts to address the "digital divide" faced by persons with disabilities, in order to ensure equitable access to telehealth services and address any structural inequalities.

This Recommendation provides a list of technical requirements that telehealth platforms must have to ensure accessible telehealth-service provision for persons with disabilities. All requirements are based on the best available evidence, as well as comprehensive feedback and input collected from civil society and industry.

Specific requirements are provided for people with different types of impairments:

- 1) Requirements 1 to 6 for persons with vision impairment and blindness;
- 2) Requirements 7 to 11 for deaf and hard of hearing persons;
- 3) Requirement 12 for persons with speech difficulties;
- 4) Requirements 13 to 15 for persons with mobility impairments;
- 5) Requirements 16 to 20 for persons with mental health conditions and psychosocial disabilities;
- 6) Requirements 21 to 23 for persons with developmental and intellectual disabilities;
- 7) Requirements 24 and 25 for persons with learning disabilities.

This Recommendation is a joint global standard of WHO and the International Telecommunication Union (ITU) that is published as technically aligned texts.

The requirements in this Recommendation are recommended for adoption by Member States as regulations or legislation and should also be voluntarily implemented by health-care professionals and manufacturers.

Recommendation ITU-T F.780.2

Accessibility of telehealth services

1 Scope

This Recommendation is a WHO–ITU global standard for the accessibility of telehealth services which outlines some of the most common requirements for accessible telehealth services. More specifically, this Recommendation includes requirements on concrete accessibility features that health-care providers and manufacturers of telehealth platforms need to ensure when delivering telehealth services. The standard can be used and implemented by governments, manufacturers of telehealth platforms and health-care providers.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T K.127] Recommendation ITU-T K.127 (2017), *Immunity requirements for telecommunication equipment in close proximity use of wireless devices*.
- [ITU-T K.136] Recommendation ITU-T K.136 (2022), *Electromagnetic compatibility requirements for radio telecommunication equipment*.
- [ITU-T K.137] Recommendation ITU-T K.137 (2022), *Electromagnetic compatibility requirements and measurement methods for wireline telecommunication network equipment*.
- [IEC 60601-1-2] IEC 60601-1-2:2014, *Medical electrical equipment – Part 1-2: General requirements for basic safety and essential performance – Collateral standard: Electromagnetic disturbances – Requirements and tests*.
- [IEC 61000-2-2] IEC 61000-2-2:2002, *Electromagnetic compatibility (EMC) – Part 2-2: Environment – Compatibility levels for low-frequency conducted disturbances and signalling in public low-voltage power supply systems*.
- [NIST FIPS 197] National Institute of Standards and Technology NIST FIPS 197 (2001), *Advanced Encryption Standard (AES)*. <https://doi.org/10.6028/NIST.FIPS.197>

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 telehealth [b-WHO-1]: Delivery of healthcare services, where patients and providers are separated by distance. Telehealth uses information and communication technologies (ICT) for the exchange of information for the diagnosis and treatment of diseases and injuries, research and evaluation, and for the continuing education of health professionals.

3.1.2 assistive technology [b-ISO 9999]: Any product (including devices, equipment, instruments and software), especially produced or generally available, used by or for persons with disability for



participation; to protect, support, train, measure or substitute for body functions/structures and activities; or to prevent impairments, activity limitations or participation restrictions.

3.1.3 accessibility [b-ITU-T F.791]: The degree to which a product, device, service or environment (virtual or real) is available to as many people as possible.

3.1.4 accessibility feature [b-ITU-T F.791]: An additional content component that is intended to assist people hindered in their ability to perceive an aspect of the main content.

3.1.5 electromagnetic compatibility [ITU-T K.127]: Ability of equipment to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

3.1.6 electromagnetic interference [b-ITU RR]: The effect of unwanted energy due to one or a combination of emissions, radiations, or inductions upon reception in a radiocommunication system, manifested by any performance degradation, misinterpretation or loss of information which could be extracted in the absence of such unwanted energy.

3.2 Terms defined in this Recommendation

This Recommendation defines the following term:

3.2.1 disability: The result from the interaction between health conditions or impairments that a person experiences and environmental barriers that may hinder the person's full and effective participation in society on an equal basis with others.

NOTE – Adapted from [b-WHO-2] and [b-ITU-T F.791].

4 Abbreviations and acronyms

This Recommendation uses the following abbreviations and acronyms:

AES	Advanced Encryption Standard
AI	Artificial Intelligence
ASR	Automated Speech Recognition
ATAG	Authoring Tool Accessibility Guidelines
DPO	Disabled Persons Organization
DTLS	Datagram Transport Layer Security
EHR	Electronic Health Record
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
HTML	Hypertext Markup Language
ICT	Information and Communication Technologies
LMS	Learning Management System
mHealth	Mobile Health
RTP	Real-Time Transport Protocol
SMS	Short Message Service
SRTP	Secure Real-Time Transport Protocol
TTS	Text-to-speech
UHC	Universal Health Coverage

VRI	Video Remote Interpretation
W3C	World Wide Web Consortium (W3C)
WCAG	Web Content Accessibility Guidelines
WebRTC	Web Real Time Communication

5 Conventions

None.

6 Background

The World Health Organization (WHO) defines telehealth as the "delivery of healthcare services, where patients and providers are separated by distance. Telehealth uses ICT for the exchange of information for the diagnosis and treatment of diseases and injuries, research and evaluation, and for the continuing education of health professionals." [b-WHO-1]. Telehealth can contribute to achieving universal health coverage in countries by improving access to quality and cost-effective health services for patients regardless of their setting. It is particularly valuable for those who live in remote areas, for vulnerable groups and ageing populations.

Telehealth is a service that has been introduced and used in many countries for decades. With the rapid evolution of technology, most families have at least one digital device that can provide the means for communication between a patient and a health-care provider. During the COVID-19 pandemic, however, the use of telehealth services increased substantially in many countries. Telehealth has become a basic need for the general population, especially for those in quarantine, enabling patients in real time through contact with health-care providers to access advice on their health problems. In fact, a recent WHO report showed that telehealth is the most common modality adopted by countries for service provision during the pandemic [b-WHO-3]. The report also shows that there is a trend of increasing utilization of telehealth as income level increases, although even among low-income countries, 42% of those with service disruptions during the COVID-19 crisis report utilizing this technology. However, due to the lack of standards and guidelines for access to telehealth services, many persons with disabilities and specific needs are experiencing difficulties and challenges in accessing and using such services. Their needs are often forgotten and not accommodated.

During the initial phase of the COVID-19 pandemic, the United Nations Under-Secretary-General convened an emergency time-bound working group on disability inclusive health response and recovery with the participation of several organizations, including the Economic and Social Commission for Western Asia, the Executive Office of the Secretary-General, the Office of the High Commissioner for Human Rights, the UN Development Programme, the UN Entity for Gender Equality and the Empowerment of Women, International Disability Alliance, International Disability and Development Consortium, International Telecommunication Union (ITU), and WHO. One of the main outcomes of this working group was the development of a terms of reference document outlining the importance of telehealth and e-health guidance for persons with disabilities (Appendix I). These terms of reference served as a basis for the development of the current standard. The methodology and development process of the standard are described in clause I.4.

Most of the common challenges faced by persons with disabilities can be addressed through standardization and regulation. The development of standards for telehealth is an important and valuable process to help ensure accessible, effective and safe delivery of health care. There are examples of existing guidelines in different countries. For example, the American Telemedicine Association (ATA) has created practice guidelines that are being adopted by numerous professionals [b-Krupinski]. The Government of New South Wales, Australia, has adopted a telehealth framework and implementation strategy for the 2016-2021 period [b-NSW]. The WCAGs are universal



guidelines used in many countries and practices [b-W3C WAI]. However, none of these guidelines and standards cover all the areas of accessibility which end-users with disability might experience. This current standard aims to fill this gap by providing a comprehensive set of requirements on concrete accessibility features that health-care providers and manufacturers of telehealth platforms can implement when delivering telehealth services.

7 Challenges that persons with disabilities face in a telehealth environment

This clause outlines common challenges that persons with disabilities experience when accessing and using telehealth services. The clause is divided into six subclauses, outlining challenges that persons with vision impairment and blindness, persons who are deaf or hard of hearing, persons with speech difficulties, persons with mobility issues, persons with mental health conditions and psychosocial disabilities, and persons with developmental, intellectual or learning disabilities experience. Some of the challenges may overlap across different groups.

7.1 Persons with vision impairment and blindness

- Telehealth platforms are often not compatible with some specific assistive devices such as screen readers or Braille keyboards.
- Scanned documents, text images, infographics or diagrams have no alternative text.
- Background music interferes with audio voice-over.
- Colour contrast and screen magnification are also important elements of accessible virtual visits that, if missing, do not allow people to view images and text on the screen, also reducing access to their own medical records and lab results.
- The health-care provider is not sensitized on the specific needs of people with vision impairment.
- A lack of a fixed phone line means that there are fewer options for people with vision impairment when a digital platform is not accessible.
- Software providers of telehealth apps may not consider accessibility for persons with disabilities.
- Smartphones tend to use touch screens which are not always as navigable as phones with larger buttons.

7.2 Persons who are deaf or hard of hearing

- Unstable connection over the phone presents barriers.
- Inadequate captioning or volume control in video conferencing.
- Unstable Internet interferes with the video signal (e.g., video/audio delay) making lip-reading and sign language less clear.
- Text messaging can be a solution when the video or audio are not working well, but it is often not available as an option in telehealth platforms.
- Background music during videos and background noise during consultations presents a barrier for people who are hard of hearing.
- Small screens of smartphones can make lip-reading and sign language less clear.
- Lack of speech-to-text generators.
- Bad signal-to-noise ratio does not allow for good communication.
- When captioning is available, no speech-to-text reporters and real-time captioners are used.
- In the context of COVID-19, wearing masks during telehealth services can impede people relying on lip-reading to communicate.

- When the audio signal is not good, lack of an option to use a microphone to improve audio.
- Lack of options for scheduling sessions through text or email when audio phone systems are not accessible.
- No option to include accommodation requests in an online platform for scheduling.
- The size on screen for sign language interpretation is not appropriate.
- Lack of hearing loop on phone available.

NOTE – If a user decides to use a phone to participate in a telehealth session, it is the responsibility of the user to select a hearing-aid-compatible phone.

7.3 Persons with speech difficulties

- Voice synthesizers and text-to-speech generators are not available on telehealth platforms.
- Standard timetabling does not accommodate people who need more time for communication.
- Pace and tone and rhythm of voice being used when synthesizing might be a challenge.
- Telehealth services sometimes offer only phone numbers as the way to communicate with health-care providers.
- Unstable or poor audio quality can be a challenge for people who have speech difficulties who might be required to repeat the same sentences many times, causing fatigue and deteriorating speech.
- Services and platforms which do not allow video or have poor video quality limit the possibility to rely on non-verbal communication.

7.4 Persons with mobility impairments

- Platform's icons and navigation system are too restrictive in size or not structured in a way that is easy for people with fine motor movement difficulties to use (e.g., requiring people to double-click instead of single-click).
- Insufficient time limits to respond or to complete tasks, such as to fill out online forms.

7.5 Persons with mental health conditions and psychosocial disabilities

- Unexpected, irrelevant and inappropriate content can be upsetting.
- Sufficient information is not provided on how the telehealth service ensures safety, privacy, and security, including the role of the user in achieving these goals, which can foster negative feelings and discourage usage.
- Sufficient guidance is not provided on how to use the telehealth service.
- Difficulty using complicated and unnecessarily effortful user interfaces on the platform and troubleshooting or overcoming system errors.
- Difficulty trusting resources with poor information quality and design.

7.6 Persons with developmental and intellectual disabilities

- Use of technical language by the provider or administrative personnel may be difficult to understand and lead to misinterpretation.
- Health information in the platforms is not simple and accessible, key documents are not in easy-to-read formats.
- People who provide personal support to persons with intellectual disabilities are not included in the conversation.
- Simple educational material on how to use telehealth services is not available.