

Guide for Reducing Barriers to Virtual Healthcare

Version Date: July 6, 2021



With funding from The National Research Council of Canada

Table of Contents

Introduction	7
Co-design method.....	7
An evergreen guide.....	7
Understanding barriers.....	7
Scope.....	8
Possible audiences for this Guide	8
How to use this guide	8
Contributing to this guide	9
Glossary.....	9
Structure of the guidelines	10
Inclusive design for healthcare	11
Plan for human diversity.....	11
Use inclusive practices and tools	11
Recognize complexity, evolution, and interconnectedness of systems	11
Guiding principles to reduce barriers	11
Design for diversity	12
Extreme and evolving difference should be the baseline.....	12
Contextualization can individualize healthcare experiences.....	13
Understandability is fundamental to quality care	14
The Guidelines	14
1 Healthcare recipients.....	15
1.1 Place of care.....	15
1.1.1 Functional needs.....	15
1.1.2 Clarifying questions.....	15
1.1.3 Practices	15
1.1.4 Software approaches	15
1.2 Supports for using technology	16
1.2.1 Functional needs.....	16
1.2.2 Clarifying questions.....	16
1.2.3 Practices	16
1.2.4 Software approaches	16
1.3 Booking and attending a virtual meeting.....	17

1.3.1	Functional needs	17
1.3.2	Clarifying questions.....	17
1.3.3	Practices	17
1.3.4	Software approaches	18
1.3.5	Other related guidelines	18
2	Healthcare providers.....	18
2.1	Humanizing wait queues.....	18
2.1.1	Functional needs	18
2.1.2	Clarifying questions.....	18
2.1.3	Practices	19
2.1.4	Software approaches	19
2.2	Pooling practitioner availability	19
2.2.1	Functional needs	20
2.2.2	Clarifying questions.....	20
2.2.3	Practices	20
2.2.4	Software approaches	20
2.2.5	Other related guidelines:	21
2.3	Building and nurturing trust through feedback.....	21
2.3.1	Functional needs	21
2.3.2	Clarifying questions.....	21
2.3.3	Practices	21
2.3.4	Software approaches	21
2.4	Enhancing intake process to personalize service delivery.....	21
2.4.1	Functional needs	22
2.4.2	Clarifying questions.....	22
2.4.3	Practices	22
2.4.4	Software approaches	22
2.5	Avoiding assumptions	23
2.5.1	Functional needs	23
2.5.2	Clarifying questions.....	23
2.5.3	Practices	23
2.5.4	Software approaches	23
2.6	Improving service by storing and sharing complimentary information	24

- 2.6.1 Functional needs 24
- 2.6.2 Clarifying questions..... 24
- 2.6.3 Practices 24
- 2.6.4 Software approaches 24
- 2.7 Addressing financial barriers..... 25
 - 2.7.1 Functional needs 25
 - 2.7.2 Clarifying questions..... 25
 - 2.7.3 Practices 25
 - 2.7.4 Software approaches 25
- 3 Healthcare technology 26
 - 3.1 Managing privacy in different contexts 26
 - 3.1.1 Functional needs 26
 - 3.1.2 Clarifying questions..... 26
 - 3.1.3 Practices 26
 - 3.1.4 Software approaches 27
 - 3.2 Maintaining security 27
 - 3.2.1 Functional needs 27
 - 3.2.2 Clarifying questions..... 28
 - 3.2.3 Practices 28
 - 3.2.4 Software approaches 28
 - 3.3 Interoperability with assistive technology..... 29
 - 3.3.1 Functional needs 29
 - 3.3.2 Clarifying questions..... 29
 - 3.3.3 Practices 29
 - 3.3.4 Software approaches 30
 - 3.3.5 Other related guidelines 30
- 4 Healthcare systems 30
 - 4.1 Virtual meeting connectivity..... 30
 - 4.1.1 Functional needs 30
 - 4.1.2 Clarifying questions..... 30
 - 4.1.3 Practices 31
 - 4.1.4 Software approaches 31
 - 4.2 Technology access..... 31

4.2.1	Functional needs	31
4.2.2	Clarifying questions.....	31
4.2.3	Practices	32
4.2.4	Software approaches	32
4.3	Technical literacy	32
4.3.1	Functional needs	32
4.3.2	Clarifying questions.....	32
4.3.3	Practices	33
	Software approaches	33
5	Healthcare empowerment.....	33
5.1	Understandable communication	34
5.1.1	Functional needs	34
5.1.2	Clarifying questions.....	34
5.1.3	Practices	34
5.1.4	Software approaches	34
5.1.5	Other related guidelines	35
5.2	Provide extra opportunities for questions and feedback	35
5.2.1	Functional needs	35
5.2.2	Clarifying questions.....	35
5.2.3	Practices	35
5.2.4	Software approaches	36
5.2.5	Other related guidelines	36
5.3	Encourage self-documentation and personal data logging	36
5.3.1	Functional needs	36
5.3.2	Clarifying questions.....	36
5.3.3	Practices	36
5.3.4	Software approaches	37
5.4	Understandable healthcare processes	37
5.4.1	Functional needs	37
5.4.2	Clarifying questions.....	37
5.4.3	Practices	38
5.4.4	Software approaches	38
5.4.5	Other related guidelines	38

5.5	Establishing and expanding the circle of care.....	38
5.5.1	Functional needs.....	38
5.5.2	Clarifying questions.....	38
5.5.3	Practices.....	39
5.5.4	Software approaches.....	39
5.5.5	Other related guidelines.....	39
6	Healthcare community.....	Error! Bookmark not defined.
6.1	Nurture reassurance.....	Error! Bookmark not defined.
6.1.1	Functional needs.....	Error! Bookmark not defined.
6.1.2	Clarifying questions.....	Error! Bookmark not defined.
6.1.3	Practices.....	Error! Bookmark not defined.
6.1.4	Software approaches.....	Error! Bookmark not defined.
6.1.5	Other related guidelines.....	Error! Bookmark not defined.
6.2	Welcoming and supporting caregiver involvement.....	39
6.2.1	Functional needs.....	39
6.2.2	Clarifying questions.....	39
6.2.3	Practices.....	39
6.2.4	Software approaches.....	40

Introduction

During the pandemic response and recovery, many health units have moved to offering services using virtual healthcare. While there are many opportunities with virtual healthcare, there are also risks that individuals and communities will become excluded in this shift in service delivery if it is not designed inclusively. This guide has two main purposes: 1) to identify the virtual healthcare needs of Canadians and 2) to provide guidance for reducing the barriers in receiving care.

Guide for Reducing Barriers to Virtual Healthcare (the Guide) is the result of a collaboration between the Inclusive Design Research Centre at OCAD University and the National Research Council of Canada (visit the [project wiki site](#) for more details). The Guide was created using inclusive methods for participatory design and incorporates input from Canadians who have experienced challenges and successes in receiving healthcare, healthcare practitioners who have provided services during the COVID-19 pandemic, and a review of information on current virtual healthcare practices.

Co-design method

This guide was created with input from seven co-design participants of differing cultural backgrounds, languages, ages, and abilities. Five practitioners across Canada also provided their professional input and insight into providing care with remote services during the COVID-19 pandemic. Co-design method details are available on [the project wiki](#).

An evergreen guide

This guide is authored with the intention that it will grow, adapt, and be adjusted alongside with changes in the healthcare landscape and the people engaged in it. The Guide does not aspire to be complete at any time. The Guide is an ongoing project and will evolve with input from stakeholders. See *Contributing to this guide*, below for additional information on how to participate in the evolution of this guide.

Understanding barriers

This guide outlines barriers in terms of functional requirements and personal constraints that need to be considered to provide flexible ways to access services or operate devices and systems that may be part of virtual healthcare. When understanding barriers to access, it is helpful to use the social model of disability as the standpoint. The social model views the product, environment, design and even society as the source of disability not the individual. The social model is counter to the medical model which views disability as a deficiency rather than difference. In the social model way, a barrier or a disability can be viewed as a *mismatch* between the needs of the individual and the options provided by the service. Systems (from technology to social) that are flexible and responsive to individual needs and preferences are most likely to be accessible and able to meet the needs of diverse populations, including needs not yet articulated. To support access, it is best to address mismatches affecting individuals rather than homogeneous "vulnerable populations".

Scope

Virtual healthcare can mean any part of a healthcare experience that is not in person. It can be healthcare that is conducted synchronously or asynchronously. For example, healthcare can be live and synchronous on the phone or video call with a receptionist, pharmacist or doctor, or asynchronous using a website, app, or messaging system where an immediate response is not expected. While the scope of this guide is virtual healthcare, it has potential for broader application of in-person practices and physical spaces.

Possible audiences for this Guide

While written for the virtual healthcare context, the Guide has broader applications. The following list of possible users of the Guide is not exhaustive:

- Recipients of care, and their circle of care,
- Practitioners, which includes:
 - family physicians,
 - nurse practitioners,
 - pharmacists,
 - telephone health advice services,
 - medical office administrative assistants,
- system builders & designers
- procurement officers

Practitioners can use this guide to help identify areas in their practices, processes, or services that may be causing challenges or barriers for others. The Guide can also be used to identify areas that are working well so those offerings can be expanded and improved.

Individuals engaged in healthcare, as recipients of care or as members of a circle of care, can use this guide as a resource to help them increase their understanding of virtual healthcare, and learn possible strategies to improving their healthcare interactions.

The guide provides suggestions, ideas, and approaches to establishing and enhancing existing practices; it is not a checklist of features or tasks to be implemented. The Guide can also be motivation for changes to systems and approaches for inclusion. For existing products and solutions, this guide can be used to review, validate, and plan for future improvements.

Parties looking to procure systems or who are examining their current systems can use this guide to help evaluate their processes to identify areas for improvement, new features to request, or gaps in their existing practices.

How to use this guide

The Guide provides suggestions, ideas, inspiration, and approaches to establishing and enhancing existing practices; it is not a checklist of features or tasks to be implemented.

Many of the guidelines are interconnected, related, and work together. The process of addressing one issue might lead to addressing other issues as well. This is a result of working and engaging in a complex, evolving, and interconnected system (see *Inclusive design for healthcare*, below).

The guide may be used to develop design standards. When using the Guide, choose to implement the guidelines that will work best for your context, it is unlikely that *all* the guidelines will fit a single context. Just as needs and preferences change over time, the guidelines that fit a context may also change over time. Reassess guidelines that fit your context in later iterations of your products, systems or approaches.

Contributing to this guide

The [live version of the Guide](#) is hosted on the [Fluid Project wiki](#). Fluid is an international community of inclusive designers, developers, researchers, and other members who believe that inclusion can be accomplished through open collaboration. Anyone can contribute to this guide by [becoming a Fluid Wiki editor](#). Editorial oversight will be provided by the collective Fluid community.

Glossary

Circle of care:

- providers of care or support for an individual. This can include medical practitioners, therapists, support care workers, as well as family and friends.

Context:

- individual circumstances that affect the needs and preferences of how someone may be able to address tasks; they can be physical (e.g. a noisy environment) or experiential (e.g. financial stress).

The Guide:

- refers to this document *Guide for Reducing Barriers to Virtual Healthcare*.

Guideline:

- considerations for a virtual healthcare goal or objective that is general in scope including functional needs, practices, and possible software approaches.

Patient-centred care (also person- or family-centred care):

- “For patients, it can mean that the care they receive reflects their values and preferences and they feel they are treated as a whole person.”
- “Clinicians may see patient-centredness as advocating for their patients to ensure their needs are met.”¹

¹ <https://healthydebate.ca/2015/01/about-healthy-debate/opinions-about-healthy-debate/patient-centred-mean-achievable/>

Practitioner:

- a term used to generally describe a provider of medical care.

Primary care provider:

- general practitioner, nurse practitioner, physician assistants, etc. for whom a referral is not required.

Recipient of care:

- a person who is receiving treatment or care from a practitioner as a patient or client. Also referred to as the “individual” the guidelines.

Virtual healthcare:

- any part of a healthcare experience that is not done in person. For example: on a phone or video call with a receptionist, pharmacist, or doctor. Virtual healthcare can be conducted using combinations of tools like a website, web conferencing app, text messaging, and telephone.

Structure of the guidelines

The guidelines are grouped under categories (e.g. practitioner, technology) and have a unique name and number. Each guideline begins with a high-level, plain-language version of the content for those who want to understand the issues, concepts, and approaches to reducing barriers to virtual healthcare.

Next, each guideline is divided into five sections:

1. Functional needs:
 - individual services or supports that are needed to accomplish the task or goal.
2. Clarifying questions:
 - questions that help expand the understanding of different perspectives, including client and patient perspectives, and support thinking critically about needs. Clarifying questions can also be used to help validate practices and software approaches.
3. Practices
 - different approaches that can help address functional needs in a virtual health context. These practices are flexible rather than prescriptive and may not be applicable to every situation and context. Use these practices as they are, build on or adapt them, or create your own inclusive approaches that suit your situation.
4. Software approaches:
 - ideas that can help address functional needs by using a software design, feature, or existing technology combination.
5. Other related guidelines:
 - links and references to other related guidelines

Inclusive design for healthcare

This guide follows the three dimensions of inclusive design (Treviranus, 2018²) contextualized for healthcare. Using these three dimensions as values helps provide a framework in which to develop guidelines for virtual healthcare that reduce barriers.

Plan for human diversity

In healthcare there may be individuals who exhibit the same healthcare needs, but the delivery of care and their outcomes can be drastically different from each other. These differences can be explained by the fact that everyone is unique and has different backgrounds, contexts, and personal needs. Adapting standardized practices to meet such a wide human diversity requires approaches, tools, and systems that are flexible and robust.

Use inclusive practices and tools

To create guidance, practices, and approaches that are useful to diverse individuals, the traditional strategies of “guidance by industry experts” alone is not enough. The people working and engaging in healthcare at the margins often experience a wide sapectrum of challenges and must overcome many different barriers. By intentionally seeking out the involvement and perspective of these individuals through participatory design approaches, their lived experiences help create guidance, practices, and approaches that not only address the difficult issues at the edges, but also help everyone. The tools used in these co-design activities must also be inclusive and accessible to support full participation. The goal is to enable *design by and with* stakeholders rather than *design for*.

Recognize complexity, evolution, and interconnectedness of systems

Creating designs, systems, and guidance that have longevity and are broadly applicable requires that approaches consider coexistence in complex, evolving, and interconnected systems. A solution created to address a single need will only be useful if the system it resides in does not change. Instead of creating a solution for a static context, healthcare systems and processes should aim to adopt more resilient approaches that have broader beneficial impact within their interconnected systems and ability to account for an ever-changing, healthcare landscape.

Guiding principles to reduce barriers

These principles extend the concepts from Inclusive design for healthcare deeper into the context of the practice of reducing barriers to quality healthcare. These guiding principles are informed by the *Co-design method* (see above).

² Treviranus, J. (2018). *The three dimensions of inclusive design: Part one*. Medium.com. <https://medium.com/fwd50/the-three-dimensions-of-inclusive-design-part-one-103cad1ffdc2>

Design for diversity

Human diversity can be expressed as the many different needs and preferences individuals have. Needs and preferences are not static; they change with the environment, time of day, and personal circumstances. An individual may need or prefer many different modes of access along a healthcare journey.

Consider, for example, health systems used by patients and practitioners either in-person or virtually, that are available in Canada's two official spoken languages: English and French. If someone's preferred language is not one of the two official languages, then language can become an access challenge and, a barrier to quality healthcare. Having a system that can easily flex to provide translation or sign language, means that the system can continue to work as intended without this barrier to care.

It is more achievable to have systems that adapt and flex to different needs and preferences when diversity and flexibility is part of the core design.

Extreme and evolving difference should be the baseline

In healthcare interactions, the most unique and extreme differences should be considered the baseline for creating quality healthcare access. If the focus of interactions is commonalities, then there will be an inability to reach 20% of the population while continuing to uplift 80% of the population (see: Figure 1, below). If instead, the focus is on the 20% with the most unique needs and preferences then the remaining 80% will be included by design. As individuals spread out from the hypothetical average at the centre of the scatterplot of needs, their needs become more diverse and there is greater difference in needs between this 20% than between individuals in the 80%. This diversity means that one-size cannot fit all. Instead, systems need to flex to fit individuals. Inclusive processes and individualized preference expression are ways healthcare systems can adapt and flex to support one-size-fits-one approaches.

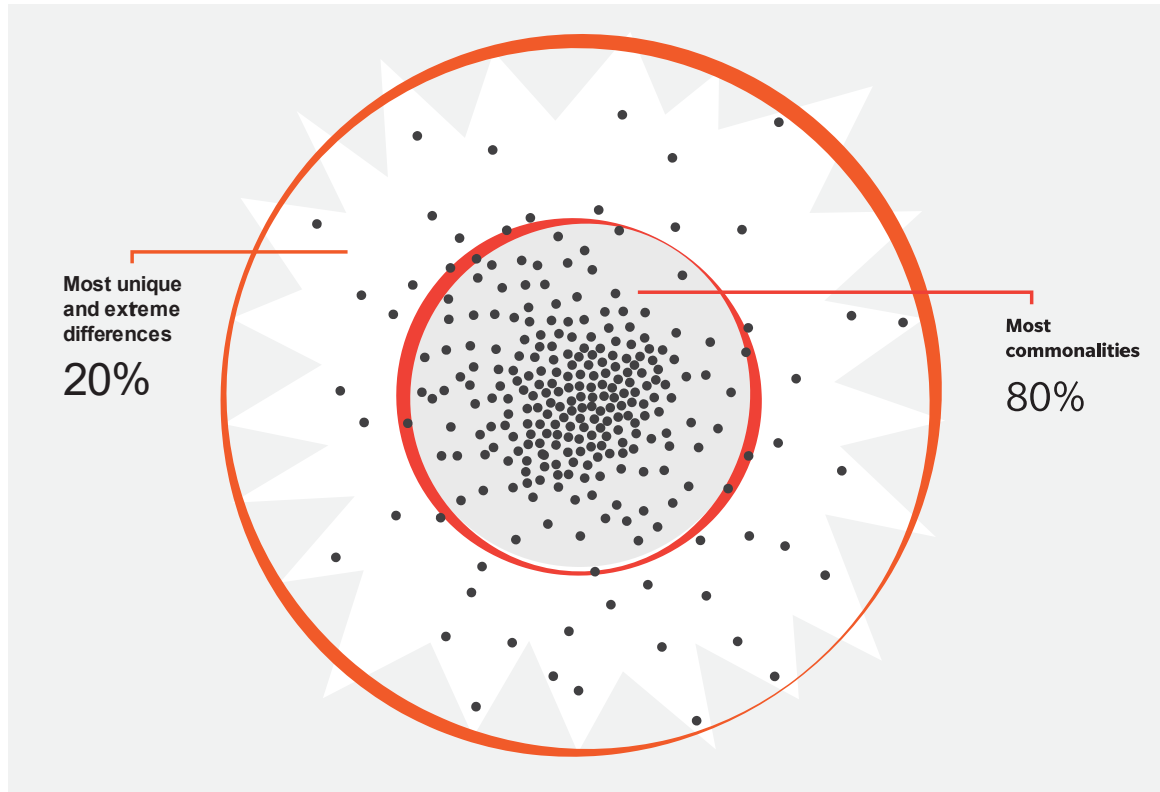


Figure 1: Creating solutions for the inner 80% majority by nature excludes the outer 20%. But by designing for the other 20%, the inner 80% benefit from those solutions.

Contextualization can individualize healthcare experiences

Contexts are individual circumstances that affect the needs and preferences of how someone may be able to address tasks; they can be physical (e.g., noisy environment) or experiential (e.g., financial stress). Contexts are not singular; an individual can have multiple contexts that layer and overlap. Some contexts can change rapidly, while others can be more static, contexts can include history, patterns, preferences, and needs. Practitioner and client understanding of the rich and evolving complexities of an individual's contexts can remove ambiguity, enhance the personalization of healthcare, and support a patient-centered care model. Consider, for example, heart rate data logged by a personal wearable device — the information collected may be interesting but much more useful when that data is contextualized. Maybe the client had less sleep last night, is going through weight fluctuation, is experiencing housing insecurity, or their child is having problems at school. With these layers of context, the data becomes much more useful for individualized healthcare.

Supporting a patient-centered care model encourages patient agency. Simply being told about something versus being invested in the development and control of something can have psychologically different outcomes. Studies show that patient agency and the involvement of their non-clinical circle of

care in healthcare decisions has been “associated in primary care settings with reduced pain and discomfort, faster recovery in physical health, and improvements in emotional health”.³

Understandability is fundamental to quality care

Everyone should be able to understand and comprehend their healthcare situation including care options, costs, privacy, and rights. The interaction goal is to equip both recipients of care and practitioners with the tools and mindset to have effective and meaningful exchanges. Lack of understandability is a common reason for anxiety and confusion.

The Guidelines

These guidelines are available to [view online](#) or [to download as a Word document](#) on [the project wiki site](#).

³ <https://www.ncbi.nlm.nih.gov/books/NBK207234/>

1 Healthcare recipients

These guidelines deal with factors that are under the recipient of care's influence or control. These guidelines document suggestions, ideas, and approaches those recipients of care can undertake to reduce barriers to accessing virtual healthcare.

1.1 Place of care

Where an individual is situated can affect how they engage in virtual healthcare in positive and negative ways. Understanding these contexts and providing alternatives, controls, or adjustments can help improve a person's healthcare experience.

1.1.1 Functional needs

- Environment has sufficient light, privacy, acoustics, etc. to receive desired care. There may or may not be an ability to control these factors.
- There may be a preference for a particular place or setting. For example, a person may desire to receive care at home instead of travelling to a clinic.
- Individuals may not have predictable or reliable housing to be able to attend virtual visits.

1.1.2 Clarifying questions

- Does the environment match the patient's needs and preferences?
- Can the recipient of care be situated in their preferred space and still receive the desired care?
- If the recipient of care cannot be situated in their preferred space or a space where care can be received, then what are some mutually acceptable alternatives?

1.1.3 Practices

- Recipient of care informed of flexibility of setting that can be accommodated, like their home, or a friend / supporter's residence. Community centres, shelters, mobile clinics, and alternate offices can also be used to serve individuals seeking services in closer proximity.
- Individual has an opportunity to express information about location preferences and sensitivities.
- Provide information and access to alternate private and secure locations for conducting virtual health visits.

1.1.4 Software approaches

- Have a way for individuals to discover alternate locations for having virtual healthcare visits. This could be a searchable index of possible locations that match different criteria.

1.2 Supports for using technology

Some virtual consultations require the individual to be able to use, move, or manipulate technology physically. These tasks may require strength, motor control, or knowledge to accomplish.

1.2.1 Functional needs

- Support person or service animal needed to accomplish tasks.
- Adaptable and flexible technology requirements to meet the individual's unique situation and setting.
- Additional physical supports and strategies to facilitate handling of technical hardware used.

1.2.2 Clarifying questions

- Will the client/patient require changing positioning of equipment, such as a camera, computer display, or laptop? Will they need assistance?
- Is there an ideal configuration, arrangement, or specification of equipment? Is the individual aware of this? Can other configurations be acceptable?
- Does the recipient of care have assistance? Do they require support to arrange for assistance?

1.2.3 Practices

- Communicate technology requirements in advance so arrangements can be done before the session.
- Share suggestions and best practices to improve effectiveness of technology during a virtual visit. For example, for an observation it may be beneficial to use multiple cameras - one to follow the subject, and the other in a fixed location for different angles.
- Plan for options for an assistant to facilitate session with the recipient of care. The assistant may be someone from their personal circle of care like a family member or caregiver or appointed by the practitioner such as a technician.
- Consider benefit of conducting sessions where the recipient of care is in the relevant context, such as their home, where they have access to the equipment they would be using for their care.
- In situations where cameras are used, ask individuals to use props, tripods, or mounts which help positioning, reduce physical strain, and reduce disorienting camera shifts.

1.2.4 Software approaches

- Allow for multiple people, such as support persons, to connect to the same session.
- Provide a way for attendees to access resources, documentation, and help material while in session.
- Allow for multiple devices to connect to the same session for multiple cameras.
- Assist camera positioning and framing by using a guide or positioning grid.

- Display size (resolution) and orientation (aspect ratio) should behave seamlessly regardless of what the user chooses. This will allow users to interact with any user interface in both portrait and landscape orientations in case the device position or settings change.

1.3 Booking and attending a virtual meeting

Have a way to attend a virtual meeting without having to recall or access login information or passwords, which are hard to remember, and often lost. Provide different ways to book appointments, and different meeting methods.

1.3.1 Functional needs

- Booking virtual meetings can be done using a variety of methods that many different people can use – not just through a single booking method.
- Support for different ways of having a meeting that support different preferences and accessibility needs.
- Meetings require tracking of meeting information such as date, time, website, username, and password. Individuals may not have a reliable way of tracking or remembering meeting information or meeting credentials.
- Recipients of care may have accessibility needs or preferences to attend the meeting. This may include transportation, service animals, and accessibility technology.

1.3.2 Clarifying questions

- Is there more than one way to book an appointment? Do these booking methods cover different access options?
- When booking appointments, is there a way for individuals to specify any needs or preferences?
- Is there a way for individuals to see availability of possible appointments?

1.3.3 Practices

- Provide multiple ways to book appointments, such as by phone, email, and online booking or web form.
- Provide information that is important to the appointment that can be accessed in multiple modalities and languages.
- When booking appointments, have options for specifying needs, preferences, and other contextual information as a way of providing useful information to the practitioner ahead of time. This might include options for meeting method, meeting location, language needs, transportation, accessibility preferences.
- When confirming appointments, use the opportunity for the practitioner to communicate any requirements for the meeting so the recipient of care has sufficient time to prepare.
- Disclose in advance if the individual is required to remember and recall meeting information such as date, time, web addresses, and login information.

- Provide ways of simplifying remembering and recalling meeting information such as sending reminders using their preferred contact method.
- Provide a way for appointments to be conducted without needing to recall meeting credentials or web addresses. Use unique, single-use URLs coupled with identity verification for security.

1.3.4 Software approaches

- Provide automated booking through different methods such as a web form, text, or phone.
- Appointment reminders through integration with calendar, email, and other services like to-do apps.
- Appointments should offer a way of being scheduled and attended without creation of accounts, recalling passwords, etc. Use single-use URLs with verification can be one such approach.

1.3.5 Other related guidelines

- *2.4 Enhancing intake process to personalize service delivery*
- *3.2 Maintaining*

2 Healthcare providers

These guidelines deal with factors that are under the practitioner's influence or control. These guidelines document suggestions, ideas, and approaches practitioners can undertake to reduce barriers to accessing virtual healthcare in their services.

2.1 Humanizing wait queues

Waiting in a queue may be unavoidable and in these situations many individuals experience heightened anxiety, stress, and other emotions. Some stress can be mitigated by recognizing the humanity in the circumstance and being proactive with information.

2.1.1 Functional needs

- Informed about how long the wait is going to be.
- Not everyone can be physically present to wait or able to wait.
- Better understanding how the queue system works.
- Make better use of waiting time.
- A way to be able to leave the queue and rejoin without penalty in certain cases.

2.1.2 Clarifying questions

- Is there sufficient information being communicated to those in the queue?
- Is there a way to deal with edge cases such as disconnections or someone having to leave the queue and coming back?

- Is there an alternative to having to physically wait?
- Is there a way to seek help while in the queue? For example, can individuals ask questions and receive timely responses?

2.1.3 Practices

- Communicate how the queue system works, especially if it is not a first-come-first-served process.
- While waiting in the queue, provide opportunities for individuals to seek other forms of help such as information on community support groups, or other self-serve resources.
- Announce wait times or any changes to wait times in multiple modalities.
- Check-in with those waiting in the queue to see if they have any needs and be proactive with information.
- Manage expectations for those waiting in the queue by providing queue information so they can make informed decisions. Such information can include:
 - Average wait times
 - Position in the queue
 - Number being served
- Provide alternatives to waiting such as call-back service, waiting by proxy, self-serve resources, connections to community groups, and alternate services like telehealth, walk-in clinics, other nearby hospitals.
- Provide a way to gracefully deal with disconnects. Sometimes the disconnect can be due to technology or someone leaving the queue and needing to rejoin. Providing a graceful way of managing disconnects can be accomplished by registering those waiting in queue and asking if they want to rejoin at their previous position.

2.1.4 Software approaches

- Queue system that indicates position or progress through the queue, estimating the time remaining to be served, or the average wait time.
- Messaging system to allow the health care practitioner and patient to send notes to each other as the patient is in the queue.
- Allow individuals to document or record information for the practitioner while in queue, such as any needs or preferences, or any other contextual information that might be relevant (other related guideline: *2.4 Enhancing intake process to personalize service delivery* below).
- Flexible wait queue that allows individuals to reconnect and resume their position in the queue or allowing someone to “step back” in the queue so others can go first. This can be useful if an individual needs to leave to take care of something and come back to the queue.

2.2 Pooling practitioner availability

Where appropriate, consider creating a wide pool of practitioners to be made available to help reduce referral wait times and increase better matching of practitioners to individuals. Reducing the time between a referral and the moment the individual is seen can be important to effectively observe a

condition and alleviate an individual's anxiety. In the process, an individual can also be given a choice that best suits their needs and context. For example, they might want a specialist that is closer to their home but is a longer wait, compared to a specialist that can see them sooner but is further away.

2.2.1 Functional needs

- Reduced waiting time to see a referred specialist.
- Getting diagnosis and test results promptly.
- Have a condition observed while it is still presenting.
- Autonomy and choice - finding the right practitioner who fits individual needs and preferences.

2.2.2 Clarifying questions

- Is there a choice of referral that best suits an individual's needs?
- Does the individual have enough information to make an informed choice about the referral?
- Is there urgency in the situation to take into account?
- Can the process be improved by pooling resources or leveraging interoperability to make referrals more efficient?

2.2.3 Practices

- Allow an individual to express their needs and preferences to enable better matching of available practitioners.
- Create larger pools of choice: for example, a pool of specialist practitioners to share availability for appointments. This will give greater opportunity of matching practitioners to needs of individuals such as convenient locations or times, or cultural sensitivities.
- Allow individuals to see referrals sooner if sooner appointments spots become available.
- Choices may be limited depending on the urgency of the condition. In these situations, the lack choice should be communicated to the individual.

2.2.4 Software approaches

- Interoperability between appointment systems on different platforms to allow transferring patient to another system if a practitioner becomes available.
- Search function or assessment that can recommend different healthcare options that may be able to help with a specific issue based on different search criteria. Optionally these preferences can be saved and become part of the individual's personal needs and preferences profile.
- Database of practitioners, specialists, therapists that contains information that can be matched to individual search criteria. This information can include – location, spoken languages, schedule, office accessibility, etc.
- Automatic notification by email, phone, or other methods if appointments with specialists are available that may be closer, or with sooner availability.

2.2.5 Other related guidelines:

- *2.4 Enhancing intake process to personalize service delivery*

2.3 Building and nurturing trust through feedback

It may be a challenge to build a trusting relationship, especially in a virtual visit setting. One way to build trust is to allow for individuals to give feedback about their healthcare experiences and for those experiences to lead to positive changes.

2.3.1 Functional needs

- Have a safe way of expressing healthcare experiences and have disclosed experiences lead to future improvements.
- Build a trusting relationship between an individual and the practitioner.

2.3.2 Clarifying questions

- Is there a way for individuals to give feedback on their virtual healthcare experience?
- Is there time and budget allowed for synthesizing feedback and formulating new approaches?
- Can the practitioner easily follow-up with individuals if needed?

2.3.3 Practices

- Provide options for different follow-up methods like a questionnaire or survey, or patient satisfaction email or phone call.
- Synthesize individual feedback – identify challenges, barriers, and positives. Discern where needs were not met and come up with new approaches and tools.
- Accept feedback as an opportunity to improve and build empathy by seeing situations from the another's perspective.

2.3.4 Software approaches

- An interface to allow individuals to submit feedback on their health care experience (such as a web form, email survey, etc.).
- If individual consents, have their feedback associated with their record as a way to improve and customize their care on subsequent visits.
- Have a repository or database of patient stories or feedback that can be reviewed and preserved for future use.

2.4 Enhancing intake process to personalize service delivery

If given the opportunity, some individuals will provide relevant information that can make virtual visits more efficient and effective. This information can be gathered during the patient intake process.

2.4.1 Functional needs

- Sufficient time provided to complete intake process such as completion of consent forms, intake forms, technology checklist, and any needed physical space setup (other related guideline: *1.2 Supports for using technology* above).
- Share personal needs, preferences, and relevant contextual information to help create individualized virtual health-care experience.
- Not feeling rushed and being able to specify the need for more time.
- Understanding how to use the virtual visit software to attend any meetings.

2.4.2 Clarifying questions

- Does the individual have an opportunity and sufficient time to complete any necessary forms or tasks to prepare for the virtual visit?
- Does the individual have an opportunity to communicate their condition, concerns, and any other relevant information?
- Is the practitioner able to review intake information in advance to make any necessary adjustments to delivery of care?

2.4.3 Practices

- Provide forms and other pre-appointments tasks well in advance of appointment to give individuals time to properly complete them, seek help or translation.
- Develop a list of questions that can help shape a virtual healthcare experience that can be shared in advance. This could be questions related to technology access, digital literacy, needed supports, and other information.
- Review intake information in advance so personalization of care delivery can be considered and administered.
- In situations where digital literacy or technology is a barrier, improve intake and onramp experience by seeking to partner with the broader community. For example, collaborate with regional telehealth network, pharmacies, or community groups to be an onramp for virtual healthcare by providing ways to book appointments, complete forms, and receive other virtual healthcare information.

2.4.4 Software approaches

- Allowing patient to specify preferences and background information ahead of time to optimize and personalize appointment time.
- Store an individual's needs, preferences, and other relevant information so that it can be referenced to provide personalized care.
- Provide different ways for intake forms and assessments to be completed. Such as using a web form, completing a PDF, using email, or over the telephone.

2.5 Avoiding assumptions

Each individual's situations, contexts, personal history, and backgrounds is unique to themselves. Making assumptions about an individual's needs, abilities, understanding, etc. may limit the practitioner's ability to best assess and assist the patient.

2.5.1 Functional needs

- Participants need to understand each other and be able to effectively communicate and understand all necessary information.
- Preferences such as language should not be assumed based on region, background, culture, etc. Rather these should be informed and facilitated in advance (other related guideline: 2.4 *Enhancing intake process to personalize service delivery* above).

2.5.2 Clarifying questions

- Does the individual have an opportunity to request any necessary accommodations?
- Is the practitioner and clinic aware of and prepared to accommodate the patient's particular needs and preferences?
- Has the practitioner understood and recorded all information correctly?
- Does the individual have sufficient understanding of all that was discussed and communicated?
- Is the individual able to make informed decisions and follow up with any next steps?
- Is there a process and means for the individual to review information and follow up with questions and/or corrections?

2.5.3 Practices

- Budget time for a discovery process where parties explore and understand each other's understanding, preferences, needs, and abilities.
- Have ways for parties to confirm information to achieve a mutual understanding.
- Provide a way for individuals to follow up, during and after visit, to confirm that information provided was understood correctly, and that the practitioner's notes and understanding are correct.
- Provide a means for individuals to express their preferences in advance to help practitioners gain insight prior to the appointment and be prepared to facilitate the patient's needs and preferences.
- Provide support for an assistant / interpreter / supporter to help with communication if necessary.

2.5.4 Software approaches

- Allow individuals to specify preferences and background information like preferred language, cultural preferences, etc. ahead of time like during booking or intake process.

- Allow individuals to submit journals, logs, and other information that may provide context and insight to the practitioner.
- Provide access clinical notes and reports and allow individuals to submit any errors, clarifications, or questions.
- Provide a glossary and automated links to additional information and resources for all key terms and treatments mentioned in the clinical notes and reports.

2.6 Improving service by storing and sharing complimentary information

There are many situations where recording and sharing information can improve healthcare services provided and increase continuity of care between parties and jurisdictions.

2.6.1 Functional needs

- Continuity of care when transitioning between different practices, platforms, clinics, jurisdictions, etc.
- Specialists doing virtual visits may need to rely on general practitioner’s examination or notes, which may require additional information.
- Understanding context, history, and other relevant information can provide valuable background information (other related guideline: *2.5 Avoiding assumptions* above).
- Ability for individual to track changes to health between appointments so different care providers can have better understanding.
- A way for individuals to make notes, annotate, and respond to items in their health history.

2.6.2 Clarifying questions

- Is the individual equipped with their own medical history (including evolving needs and preferences) to share with future medical situations and practitioners?
- Does the practitioner have time to review, understand, and apply the information from the individual’s record?

2.6.3 Practices

- Allow for individual and their circle of care to record or annotate their own medical history that can move with them. This can be in analog (e.g., printed) or digital (e.g., stored on a personal device) forms.
- A way for individual, their circle of care, and practitioners to track and share timely information.
- Use information in advance to help personalize delivery of care.
- Include any intake questionnaires with personal record to provide additional context.
- Comply with privacy and security regulations and policies regarding storing and transmission of patient health information. If compliance is not possible, provide alternatives or resources to individuals to be able to record their health information.

2.6.4 Software approaches

- Medical log / journal both medical practitioner and patient contribute to which includes notes, annotations, documentation of needs, preferences, or experiences.
- Provide a way for an individual to take their healthcare information offline to be used in other situations.
- Use a common supported interchange format and method to improve interoperability across platforms.

2.7 Addressing financial barriers

Not everyone has access to the financial supports to cover necessary and recommended healthcare. Individuals may not have access to or enough coverage from private health insurance, access to government health insurance, or even valid identification.

2.7.1 Functional needs

- Access to medical support/services not covered by provincial and/or private health insurance.
 - Does not qualify for health insurance.
 - Treatments/procedures not covered.
- Provided with clear communication of additional financial costs, alternatives, and risks of not receiving the medical attention.

2.7.2 Clarifying questions

- Does the patient have adequate support to meet their financial needs?
- Does the patient have access to the recommended treatment?
- Are there alternative approaches the patient could explore?

2.7.3 Practices

- Provide options for free consultation services.
- Provide research material for self-guided information and treatment if possible.
- Connect individuals with different community groups, organizations, or programs that may be able to help financially for treatments and tests, or provide other forms of support such as transportation, food, housing, etc.
- Provide comprehensive list of costs related to virtual healthcare. Make list available and communicated clearly as part of consent. For example, a possible list might include fees for prescription refills, letters for adoption agencies or employers, or referrals to alternative medications and treatments.

2.7.4 Software approaches

- Provide resources to help connect patients to community groups that can help financially or provide services.

- Provide a way for individuals to search for medical practitioners based on price and insurance coverage.

3 Healthcare technology

These guidelines deal with factors that relate to technology that enables virtual healthcare interactions.

3.1 Managing privacy in different contexts

3.1.1 Functional needs

- Strategies or ability for the patient to control or maintain privacy and confidentiality even when accompanied by another party or in a shared space.
- Safe and private spaces for virtual healthcare, especially for those that lack adequate housing.
- Access to virtual healthcare that is widely available and meets regulatory (e.g., PHIPA) requirements.
- Flexibility for the practitioner to use alternative software/tools to meet the patient's needs.
- Awareness of privacy rights and concerns.
- Alternative ways to register for virtual healthcare platforms that do not require an email address.

3.1.2 Clarifying questions

- Is the individual in control of their privacy needs, and how do they control their privacy?
- Is the individual aware of privacy limitations in their current location, and are they aware of alternatives that may enhance their privacy?
- Is the individual informed of their privacy rights and preferences?
- Has the patient given consent for any recordings or for anyone else who might be in the room?
- Is privacy changing during a session? Is there a possibility for others to enter the room?

3.1.3 Practices

- Inform individuals of the expectations for privacy in advance so they can make arrangements, if possible.
- If a participant is in a shared space, suggest more private modes of communication such as text, encourage use of headphones, etc.
- Provide guidance, explanation, and support to individuals about understanding privacy and ways to ensure their privacy during appointments.
 - Communicate reasonable expectation of privacy, especially when others are present.
 - Explain privacy risks as necessary and require informed consent to proceed.
- Update expressed consent if privacy context changes.
- For situations where individual lacks privacy (i.e., due to housing instability or other reasons), provide alternative meeting spaces in existing safe venues that have private rooms with internet

access. For example, pharmacies, food bank, shelters, libraries, clinics, places of worship, community centres, etc.)

- Make individuals aware of privacy controls and preferences. Inform them about privacy requirements in advance of appointments (other related guideline: *2.4 Enhancing intake process to personalize service delivery* above).
- If an ideal privacy situation is not possible, work out a mutually acceptable privacy arrangement if possible and provide a modified informed consent to reflect the new privacy situation.
- If a meeting cannot proceed due to privacy reasons, then the practitioner should explain the reason. This should not be a surprise to the individual as the expectations of privacy should be communicated in advance.
- Explaining in plain language how privacy is ensured in virtual health settings can help improve uptake on virtual services.

3.1.4 Software approaches

- Support multiple communication channels to ensure that the patient can pick the one that best suits their needs and context, while maintaining the required privacy requirements.
- Provide enhanced privacy controls to the patient:
 - Ability to control who can hear or see proceedings as a way to create temporary privacy.
 - Ability for side, private conversations. For example, if an individual wants to consult with a member from their circle of care privately.
 - Stop or prevent recordings.
 - A way to indicate if privacy has changed. For example, if someone entered the room who may not be expected or visible.
 - Ability to control who can see video streams.
 - Background blurring or replacement.
- Alternative ways to enter the healthcare system that uses anonymized sign-in requirements (e.g., individualized user code and password, verbal sign-in).
- Detect background audio that may indicate if in a shared space and recommend use of headphones.
- Provide different options or modes of communication for privacy reasons. For example, have non-verbal methods of communication, e.g., text based, sign language, etc. if audio is not private.

3.2 Maintaining security

Security is the mechanism(s) by which privacy is maintained. This includes all aspects of the system that data passes through, including applications, devices, networks, storage, etc.

3.2.1 Functional needs

- Secure data transmission, storage, and access to ensure privacy of all personal information.
- Understanding of best practices, policies, and procedures to maintain security.

3.2.2 Clarifying questions

- Are only secure communication protocols used for communication between the practitioner and recipient of care?
- Does the recipient of care have a variety of secure communication options to choose from?
- Are the identities of all participants verified when communication is established?
- Are all records stored securely with appropriate access restrictions?
- Are personal records safeguarded in the event of compromised hardware and software?

3.2.3 Practices

- Procedures in place to ensure that the correct recipient of care is contacted.
 - Pre-arrange an approved method of communication.
 - Remote conferences (web or phone) should have unique URLs and/or passwords
 - Upon connecting with the recipient of care, their identity should be verified
- Procedures in place to appropriately identify the practitioner with the recipient of care. The recipient of care should be confident that the practitioner is the one they are expecting.
 - e.g., arrange a specific video conference link and time for the call.
- Only communicate with recipients of care over secure communication channels.
- Limit access to patient records, with policies to ensure that authorization is not compromised.
- Procedures and policies for revoking access to patient records as needed.
- Routinely conduct security audits; including verification that all applications and tools used are following the required security guidelines.
- Provide information to the recipient of care about maintaining security if required, and explain the clinics security practices and policies.
- If insecure methods of communication are used, ensure that sensitive information is not shared. Sensitive information that is to be shared should be appropriately secured using identity and password verification.
- Balance security with usability – some security procedures may create additional barriers making accessing virtual healthcare more difficult.

3.2.4 Software approaches

- Use appropriate levels of encryption on all electronic communication systems to ensure data/communication (e.g., files, video calls, voice calls, etc.) is secure across transmissions.
 - Sensitive information should not be communicated across most e-mail and text applications (like SMS texts), which often lack the required encryption and access restrictions.
- Electronically sign (e.g., PGP) electronic messages and files, to confirm their origin and authenticity.
- Provide unique URLs for all virtual meetings to prevent accidental entry.
- Virtual appointments require a password, or other form of login, to limit entry.
- Unique meeting URLs should have an expiry after a single use or expire after the meeting time.

- Bookings and other access to the virtual healthcare platform should require authentication to access.
 - Provide multiple means for authenticating to address accessibility concerns. Notably captchas may not be accessible for someone with low / no vision.
- Records and other information stored on devices and servers should be encrypted on the device to prevent access if the physical device is compromised.
- 3rd party tools and software components should be scrutinized for any possible security and privacy concerns.
- All devices used by practitioners should be encrypted with access restrictions (e.g., passwords, authorization levels, etc.) in place.
- Allow the patient to send resources (images, notes, reports, etc.) directly to the practitioner to be added to their health record, without intermediate access by others at the clinic.
- These files must be verified to be safe, no virus, malware, etc., before executing. Have a plan for data redundancy and routine backups of critical systems. Also consider a contingency plan for service continuity if software systems are offline.

3.3 Interoperability with assistive technology

Individuals may require assistive technologies to operate their digital devices and software. Care should be taken to ensure that any virtual healthcare platforms work with them. There may be additional physical and digital limitations that require alternative solutions or assistance provided to the patient (see 1.2 *Supports for using technology* above).

3.3.1 Functional needs

- Individual requires assistive technology to control their computer or mobile device in order to engage in virtual health.

3.3.2 Clarifying questions

- Is the individual able to access the virtual healthcare platform? Is there a more accessible alternative that can be used instead?
- Does the individual require assistance during the virtual visit?
- Are there changes to the way services are provided to remove barriers or improve access?

3.3.3 Practices

- Applications should be interoperable with assistive technology.
- Applications and services should comply with relevant policies and regulations such as accessibility legislation (i.e., Accessible British Columbia Act, Accessible Canada Act, etc.).
- Applications and services should follow practices defined by existing accessibility guidelines and best practices such as W3C's Web Content Accessibility Guidelines (WCAG), and others that may be applicable (e.g., federal and provincial regulations for accessibility).

- The individual should be able to choose method of communication to meet their own needs and preferences, which includes different accessibility options.
- If additional support is required, for example moving a camera or a piece of equipment, this requirement should be arranged in advance if possible so the needed assistance is available (other related guideline: *2.4 Enhancing intake process to personalize service delivery* above and *1.2 Supports for using technology* above).
- Provide an opportunity for an individual to test the virtual healthcare platform, ahead of time, should be provided.

3.3.4 Software approaches

- All virtual healthcare applications should be implemented with assistive technologies in mind.
- Web applications should follow WCAG standards. For standalone applications, the same principles from WCAG are useful guidance. Keep in mind that WCAG compliance does not mean that the software is usable or a pleasant experience especially by people with varied needs and preferences.
- The platform should allow users to test/demo the virtual healthcare platform ahead of time.

3.3.5 Other related guidelines

- *1.2 Supports for using technology*
- *2.4 Enhancing intake process to personalize service delivery*

4 Healthcare systems

These guidelines deal with factors that relate to accessing and interacting with virtual healthcare systems.

4.1 Virtual meeting connectivity

A primary tenet of a virtual healthcare is the ability to remotely connect patients and practitioners. It is important that the connection is stable, reliable, and available; with fallbacks provided in the event that the primary connection cannot be established or maintained.

4.1.1 Functional needs

- Practitioners and participants require reliable and sufficient network capability to connect to the virtual healthcare platform and perform all required functions.
- All parties should have the ability to easily recover from a dropped connection.
- There should be multiple modes of connecting patients and practitioners, e.g., video call, telephone, text chat.

4.1.2 Clarifying questions

- Is the patient able to choose their preferred method for communication?
- Is there a defined process for handling dropped or unavailable connections?
- Is the patient aware of and able to access the fallback solution?

4.1.3 Practices

- Flexibility in connection methods (lower bandwidth applications, telephone, mix phone and video stream)
- Allow patient to choose their preferred method of communication, and preferred fallback options.
- Have an agreed upon reconnection plan with participants.

4.1.4 Software approaches

- Monitor network quality and suggest and automate actions to improve connectivity.
- In the case of a dropped connection, the fallback method can be communicated in the interface, or via other communication method (e.g., e-mail or text).
- Allow the patient to indicate their communication preferences. Have a way of recording preferences in patient intake (other related guideline: *2.4 Enhancing intake process to personalize service delivery* above).

4.2 Technology access

For an individual to engage in virtual healthcare there are technological requirements they need to satisfy. Communicating these requirements, providing different meeting options, and having flexible and robust systems can help minimize or remove technology barriers.

4.2.1 Functional needs

- The individual requires access to a device(s) with sufficient hardware and software capabilities. For example, a compatible computer, smartphone, camera, speakers, mic, telephone, functional connection/internet, etc.
- A variety of ways to access the virtual healthcare to accommodate different accessibility needs and preferences, which may change over time, vary depending on location, and be affected by other contexts.
- Flexibility in completing tasks using different or no technology. For example, being able to complete and submit a form in different ways.

4.2.2 Clarifying questions

- Are all necessary meeting features available to all individuals, regardless of the connecting technology? For example, does the mobile application have critical feature parity with the desktop version?
- Is the individual aware of technology requirements ahead of time?

- What options are available to individuals who do not have readily available access to required devices and software?
- Are there digital and analog ways of completing a task?

4.2.3 Practices

- Provide individuals with information about where devices can be borrowed or booked; such as a local library, community center, shelter, etc.
- Offer a spectrum of service options ranging from minimal / no-technology methods such as traditional telephone meetings, to meetings utilizing current consumer devices and virtual meeting applications.
- Provide multiple ways of completing tasks that use various levels of technology including no technology options. For example, a consent form can be completed using postal service, email attachment, web-form submission, or verbally at the appointment.

4.2.4 Software approaches

- Provide different ways of viewing and completing documents over the web, email, and printable copies.
- Where possible, automate or facilitate transmission of documentation to other healthcare providers on behalf of the individual such as prescriptions, referrals, requisitions, insurance claims etc. For example, prescriptions can automatically be submitted to their local pharmacy,

4.3 Technical literacy

Even with a suitable suite of hardware and software, there needs to be proper setup and usage to connect to the virtual healthcare platform. This may include technical knowledge to use devices and software, connect to the virtual healthcare platform, setup accessories (e.g., mic, speakers, camera, etc.), troubleshooting issues, and best practices for telecommunication. Issues may result in loss of connection, or an inability to communicate within the session.

4.3.1 Functional needs

- Be able to connect their supported devices or software to the virtual healthcare platform.
- Overcome any barriers or limitations that may arise connecting to or during the appointment.
- Sufficient knowledge or comfort with technology to be able to use the necessary the virtual healthcare platform.

4.3.2 Clarifying questions

- What connection is required to provide quality care? Are there alternatives if the connection fails?
- Is there support or information provided to the patient to guide on how to establish the connection to the virtual healthcare platform?

- Can information or resources be provided in advance that might help participants more comfortable or better prepared for the meeting?
- Is there someone available to support any issues that may arise?

4.3.3 Practices

- Inform clients of the technical requirements ahead of time and provide alternative methods or backup plans.
- Individuals may not be familiar with the device or technology have options to provide support as needed. This can be resources available that prepares participants in connecting to the virtual healthcare platform, as well as any configuration of software or hardware required.
- Provide guidance on improving audio quality if required. This may include steps to increase microphone gain, enabling echo cancellation, facing the microphone when speaking, or having participants use a headset and / or a high-quality mic. Audio quality may be hard to improving for some individuals depending on their ability, environment, or the tasks they are performing at the time.
- Advice should be given for the camera to frame the scene that is most important to the practitioner at the time. Predominantly this will be the faces of the participants to facilitate communication, lip reading, and facial expressions, but can be other subjects depending on what is to be observed. Moving the camera can be difficult for some individuals (other related guideline: *1.2 Supports for using technology* above).
- Provide guidance on how to optimize the connection, including suggesting settings to improve performance like closing other running applications, or different environments like closer to the WiFi access point or plugging directly to the network using a cable.

Software approaches

- An interactive guide that steps client through different software settings that can help improve their experience, in particular audio, video, and connection quality. For example, this guide could include a demonstration of the effects of speech direction, ambient noise, and echo on audio quality.
- A tool that detects / analyses capabilities and reports possible improvements. If there are issues that cannot be resolved, the tool can provide other methods of interaction and meeting options. This tool can also be used ahead of time to test capabilities so adjustments or alternatives can be done advance.

5 Healthcare empowerment

These guidelines deal with factors related to encouraging and empowering recipients of care to be active participants and advocates in their healthcare.

5.1 Understandable communication

Communication needs can vary for a variety of reasons, first language, hearing, fatigue, cognitive factors, AV equipment issues. Not understanding or comprehending what is being communicated can cause misunderstanding, make healthcare situations stressful, reduce effective and quality care, and escalate anxiety.

5.1.1 Functional needs

- Understand what is being communicated.
- Alleviate anxiety and stress.
- Balancing professionalism and empathy.
- Desire to be an equal partner in personal healthcare.
- Desire to understand personal medical journey

5.1.2 Clarifying questions

- Are interactions and other forms of communication available in other languages? Can communication be easily understood or translatable?
- Can non-verbal interactions be used to convey meaning?
- Is the individual able to understand the significance of what is being communicated?
- Can the patient specify their communication preference in advance?

5.1.3 Practices

- Establish communication needs ahead of time and make participants aware of the different options they can use to make their experience better.
- Use plain, easily understood language that can be easily translated by another person, translation service, or programmatically using translation software. This applies to intake materials, medical records, test results, and language used during consultations.
- Do not assume that the recipient of care is able to understand or interpret the significance of the test / lab results. Provide necessary context, resources, and information to enable an informed understanding.
- Make test results accessible and understandable (multi-modal, simplified language).
- Provide options for language preferences, tools for translation, translation service, or language-neutral communication.
- Non-verbal forms of communication (e.g. gestures, symbols, emoticons, communication boards, and sign language) can be an effective way of conveying meaning in situations where verbal communication is not possible.

5.1.4 Software approaches

- Allow individuals to select their preferred language which can apply to forms of communication and any software interfaces.

- Easy to use and understand software user interfaces that support the necessary features/functionalities for the patient and health care practitioners, including accessible technology (other related guideline: *3.3 Interoperability with assistive technology* above).
- Personalization features to allow the users to customize the user interface/experience to their own personal needs and preferences.
- Provide access to patient records, notes, and test results/artifacts.
- Include resources to help understand personal medical information, such as a glossary of medical terms, understanding test results and numbers.
- Use an annotation system for healthcare practitioners to draw attention to and explain results. Using the same system, allow patient to annotate, ask questions, and request feedback about test results / charts. (Other related guideline: *5.2 Provide extra opportunities for questions and feedback* below).
- Enable individual to be able to share portions of their records / information with people in their circle of care.
- Use digital interactive content that can be tracked by report practitioner instead of static content. For example, instead of a static image with 4 choices, use a web form with the 4 choices which the therapist can check the results.

5.1.5 Other related guidelines

- *2.5 Avoiding assumptions*
- *3.3 Interoperability with assistive technology*
- *5.2 Provide extra opportunities for questions and feedback*
- *5.3 Encourage self-documentation and personal data logging*

5.2 Provide extra opportunities for questions and feedback

It may be difficult for some individuals to understand the significance of what is being communicated to them. Providing ways for individuals and their circle of care to give feedback or ask questions is helpful in situations where extra time is needed to process or understand information such as test results. The same feedback system can be used as a method for improving care delivery.

5.2.1 Functional needs

- Be able to have questions answered or provide feedback to practitioner.
- Opportunity for practitioners to follow-up with individuals on their healthcare.
- Desire for individuals to improve experiences for others.

5.2.2 Clarifying questions

- Is there a way for individuals to easily ask questions or provide feedback to the practitioner?

5.2.3 Practices

- Provide opportunity for individuals to respond to or ask questions using self-documentation approaches like those under *2.6 Improving service by storing and sharing complimentary information above*.
- Provide resources to individuals to help them understand information like test results or treatment options.
- Proactively seek feedback and ask if there are any questions related to their previous appointment, test results, treatment options, etc.
- Treat feedback as an opportunity to support individuals during vulnerable moments.
- Periodic review of practices and processes and incorporate feedback.

5.2.4 **Software approaches**

- Note/annotation system to allow patient to leave notes on results for discussion at follow up appointments.
- Automated system to solicit feedback or questions from individuals.

5.2.5 **Other related guidelines**

- *2.6 Improving service by storing and sharing complimentary information*

5.3 Encourage self-documentation and personal data logging

Documenting personal healthcare journeys can help individuals understand their circumstances better and empower them to seek treatment or make positive changes. Self-documentation by recipient of care can also provide healthcare practitioners useful contextual information that can help personalize care delivery.

5.3.1 **Functional needs**

- Record healthcare journey details that might be forgotten or lost.
- Reflect, process, or understand healthcare situations in a personal way.
- Documentation for healthcare recovery or treatment.
- Provide useful additional or contextual information for healthcare team.

5.3.2 **Clarifying questions**

- Is there a way for patient to log, track, and reflect upon their healthcare journey?
- What tools are available that are appropriate to document this information?
- Is there a feedback loop that allows answering of questions or providing feedback to the healthcare team?

5.3.3 **Practices**

- Track progress and other items that may be useful for circle of care. This includes moods, emotion, symptoms, introspection, recognized personal patterns, etc. Practitioner should suggest what information might be helpful to track.
- Provide opportunity for individuals to respond to or ask questions based on their self-documentation.
- Individuals may need to be informed about storing and transmission of personal health information.
- If individuals are sending personal health information to healthcare team, the storage and transmission of that information may need to comply with privacy and security regulations and policies.
- Quantitative data paired with qualitative data can provide rich information. For example, a personal resting heart rate log is substantially more useful in context of a journal describing significant life events.

5.3.4 **Software approaches**

- Ability to create notes and annotations to allow patient to have further for discussions at follow up appointments.
- Curated list of consumer wearable devices, software, or services that may help facilitate tracking of personal data.
- Tools that help provide analysis of tracked data to improve understanding of personal data and help uncover new, or relevant information. For example, tracking blood sugar levels can reveal useful insight when visualized as a graph or animation.
- Where appropriate, consider ways for individuals to share information with their circle of care.

5.4 Understandable healthcare processes

How the healthcare system works, and the purpose of different healthcare entities and organizations (i.e., general practitioners, walk-in clinics, specialists, hospitals, emergency rooms, etc.) may be difficult to understand. For an individual, it also may not be clear what role they can play in their own healthcare, what reasonable expectations to have of the system, and the rights they have when engaging in the healthcare system.

5.4.1 **Functional needs**

- Big picture understanding of how the healthcare system works, and what it means for the individual.
- Understanding of the healthcare process they are currently engaged in.
- Communication of reasonable expectations of healthcare.
- Have enough understanding of the healthcare system to be able to navigate the system and advocate for their healthcare.

5.4.2 **Clarifying questions**

- Does the individual understand the healthcare system, and what to expect next on their healthcare journey?

5.4.3 Practices

- If it is possible ahead of time, provide an overview and explain the steps involved in the individual's healthcare journey.
- Equip individuals with tools and resources they might need for positive and productive healthcare engagements. This might include understanding their rights, learning to use the digital platform, terms, and vocabulary they might want to learn, and being able to specify any needs, preferences, and supports.
- During intake process, communicate any requirements or expectations in advance. Other related guideline: *2.4 Enhancing intake process to personalize service delivery* above.

5.4.4 Software approaches

- Reminders of upcoming appointments can also include resources for patients to increase their healthcare understanding and literacy.
- If the individual's healthcare journey is well understood and documented, their progress could be represented in different ways using combinations of visuals, text, and audio. This timeline can also include upcoming appointments, past test results, doctor, and patient notes to give a holistic view.

5.4.5 Other related guidelines

- *2.4 Enhancing intake process to personalize service delivery*
- *2.6 Improving service by storing and sharing complimentary information*
- *5.3 Encourage self-documentation and personal data logging*

5.5 Establishing and expanding the circle of care

Establishing or expanding one's circle of care can help improve an individual's ability to cope and improve their healthcare outcomes. For some individuals this can be a challenge due to geography, seasons of life, social connections, and other factors.

5.5.1 Functional needs

- Support for coping and recovery – including cultural, mental, emotional, and physical support.
- Establish support for individuals who have difficulty seeking help.

5.5.2 Clarifying questions

- Can the individual help themselves or do they require assistance into seeking appropriate support?

- Are the resources provided regularly curated and updated for accuracy and relevance?

5.5.3 Practices

- Provide resources to self-serve options for relevant wholistic support outside of primary care settings (i.e., transportation, meals, therapy, etc.).
- Provide resources and connections to appropriate community support groups as part of patient follow-up and feedback process (other related guideline: *5.2 Provide extra opportunities for questions and feedback* above).
- If individual has a circle of care, discover how they can be included in the treatment and / or recovery process.
- Proactively schedule follow-ups or check-ins with individuals.

5.5.4 Software approaches

- A collection of recommended support groups that can be searched and matched to an individual's context. Provide tools or metrics to help individuals judge relevance or match to personal needs.
- Tools to be able to edit, update, and add to the resources list.

5.5.5 Other related guidelines

- *5.2 Provide extra opportunities for questions and feedback*

5.6 Welcoming and supporting caregiver involvement

Including caregivers and members of an individual's circle of care can be beneficial to both the practitioner and the recipient of care. Accommodating multiple people in a meeting can create some logistical and technical challenges but can also create opportunities.

5.6.1 Functional needs

- Individual requires support from a trusted companion, family member, or friend.
- Include circle of care in the decision-making process or provide them with important information.

5.6.2 Clarifying questions

- Is there an opportunity for patients to express their support preferences?
- Are there different options to accommodate additional supports?
- Are people in roles of support properly equipped or resourced to carry out their role?

5.6.3 Practices

- For different reasons, individuals may not be able to express or articulate their need for a support. Proactively ask if support is desired.
- Depending on the circumstance, have a flexible schedule to be able to accommodate members of the circle of care.
- Special attention may be needed for privacy and security with multiple attendees. Provide in advance any privacy or security information, and consent forms required (other related guideline: *3.1 Managing privacy in different contexts*, above).
- Provide necessary information participants will need to connect and participate meaningfully. This is especially important if an attendee is to assist the recipient of care with support tasks (other related guideline: *1.2 Supports for using technology*, *3.3 Interoperability with assistive technology*, and *4.3 Technical literacy* above) or is accompanying children.
- Establish a protocol for meeting facilitation (i.e. signals for questions / request to talk etc.) and consider an appointed facilitator to help with tasks like translation and cultural sensitivity.
- If a member of the circle of care is unable or not permitted to accompany individual consider other methods to include them in the process, such as using a journal or log to help share information (other related guideline: *5.3 Encourage self-documentation and personal data logging* and *2.6 Improving service by storing and sharing complimentary information* above).
- Offer different ways to having group consultations. If using remote meetings, some connection methods like video conferencing is easier for conversations but require a higher technical requirement. Telephone conferencing is a lower barrier but may require facilitation to ensure appropriate and productive engagement.

5.6.4 Software approaches

- Use a virtual meeting tool that can accommodate more than one remote participant.
- In a group setting, the software may need more privacy controls and some of those controls made available to the recipient of care for their comfort and protection. For example, have the ability to create temporary privacy by creating separate rooms, or moving participants into a holding area.
- Scheduling / booking system that allow individuals to include members of their circle of care in the invitation and appointment notifications.
- Have different meeting controls that help facilitate control / moderation and discussion like reactions and non-verbal communication tools.