

# Guide



## Teleconsultation Room Design



FIRST NATIONS OF QUEBEC  
AND LABRADOR HEALTH  
AND SOCIAL SERVICES  
COMMISSION

**TELEHEALTH:**  
*it's more than an option,*  
IT'S A SOLUTION!

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This document is also available in French.

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ISBN:

978-1-77315-034-5 (print)

978-1-77315-035-2 (pdf)

We would like to thank the Wendake community for allowing us to use their premises to take pictures.

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# Guide

During remote consultations by videoconferencing with healthcare professionals, concerted effort is made to recreate face-to-face meetings. Room design is key in making the teleconsultation experience as pleasant as possible and in eliminating any inconveniences related to the use of the technology.

During a teleconsultation, the objective is to attain a level of visual and auditory clarity as close to reality as possible, for two main reasons:

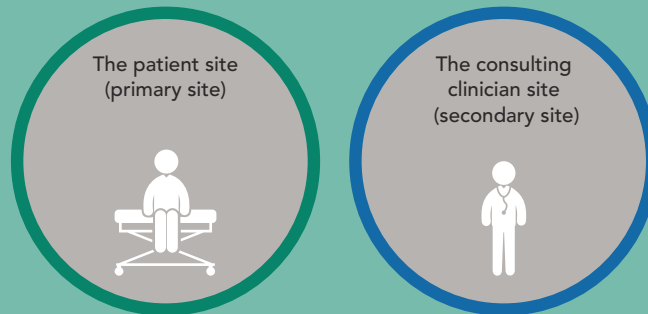
- Image and sound accuracy facilitates clinical examination and remote diagnosis.
- Image and sound quality helps establish a better connection between the patient and the clinician. The technology should be as discreet as possible, since the primary focus is on patient-clinician interaction, not the technology.

This guide provides practical information and advice on the main elements to consider in designing a room that will be used for remote clinical consultations. It will assist in selecting the best room for providing telehealth services and identifying any modifications that need to be made to optimize the selected room.

Certain elements should be considered when choosing and designing a room, such as location, size, connectivity, lighting, soundproofing and wall colour.



Unlike “face-to-face” consultations, remote consultations involve two distinct sites:



The design will not necessarily be the same for both sites and may vary according to the clinical service provided. When designing a teleconsultation room, it is also important to consider the image that will be projected onto the remote participants' screen.

This guide specifically addresses the provision of telemental health services involving face-to-face real-time interaction.

- For this type of service, the patient generally is alone in the room and interacts directly with the clinician, whereas for other types of remote services, the patient will be assisted by a nurse or other support staff.
- Confidentiality is a very important factor to consider and may influence the choice of room location and soundproofing.
- This type of consultation does not require the use of medical peripherals, such as electronic stethoscopes or other.
- No images are taken that would require faithful colour representation, as is required in dermatology, for example.



The following icon is used to identify the elements that are more specific to the provision of telemental health services.

## Elements for consideration

The following elements should be considered when choosing and designing a room that will be used for remote clinical consultations.



### LOCATION

Teleconsultation rooms should be set up in a **quiet location** to avoid exposure to noise. It is important to keep in mind that sound can be picked up by microphones, which can make it difficult for the remote participant to hear. Ideally, the room should be located away from noisy hallways, waiting rooms or restrooms. A location that is soundproof, or at least far from sources of noise such as air-conditioners, helps achieve better sound quality.

A **windowless room** might be a wiser choice to obtain better image quality and to ensure privacy. Rooms with windows should have curtains or blinds.



### ROOM SIZE

The size of the room **depends on the type of clinical service** being provided, the type of equipment required and the number of people the room will accommodate. The teleconsultation room should be large enough to allow for easy movement around the patient without disrupting the consultation. It is important to remove obstacles to allow for minimal circulation.



The size of the room affects the camera's field of view, since the distance between the walls determines the **proximity of the patient to the camera**. This distance may vary according to the type of clinical service being provided, as a full view of the patient, or other people present, such as nurses, may sometimes be required; at other times, the focus will instead be on the face. Consideration should always be given to what the clinician needs to view.

### Viewpoint



Full view of the room



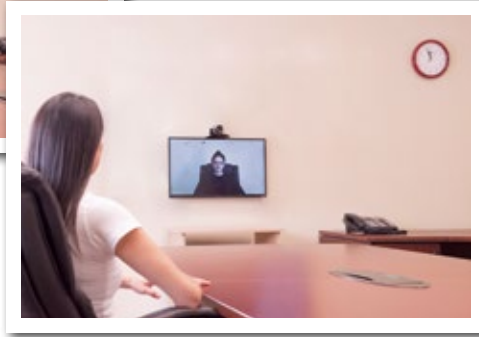
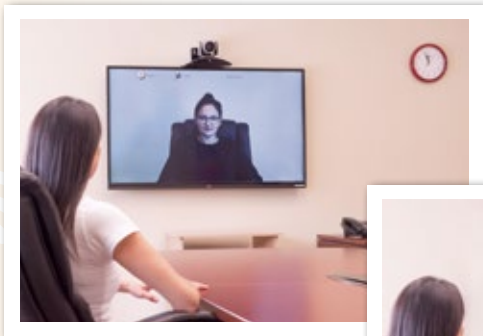
Focus on the face



In the case of telemental health, the clinician should be able to view the patient's entire upper body, including the arms and hands, to take non-verbal cues into account. A distance of approximately 2 metres between the patient and the camera is generally sufficient.

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## Screen size

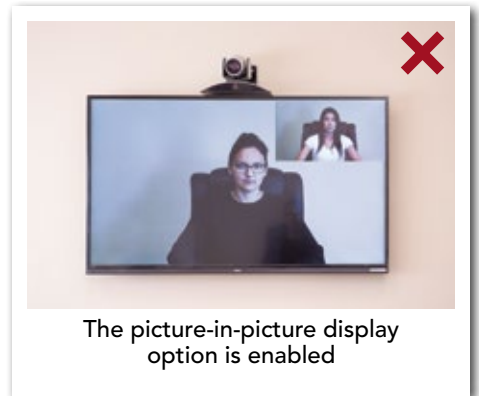
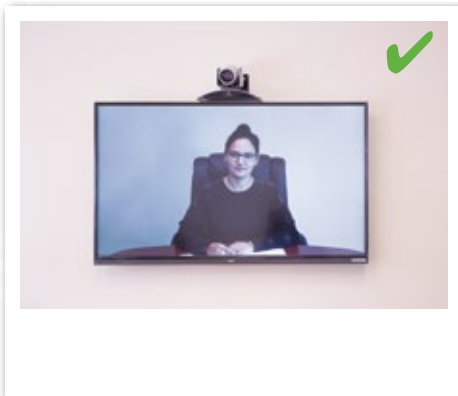


Screen size should be taken into consideration when trying to recreate the effect of an in-person meeting as closely as possible and to diminish the impression of distance. Smaller screens accentuate the effect of distance.

## Display mode



In telemental health, the picture-in-picture feature, which allows patients to view their projected image, should not be enabled.



The picture-in-picture display option is enabled



## ROOM DESIGN

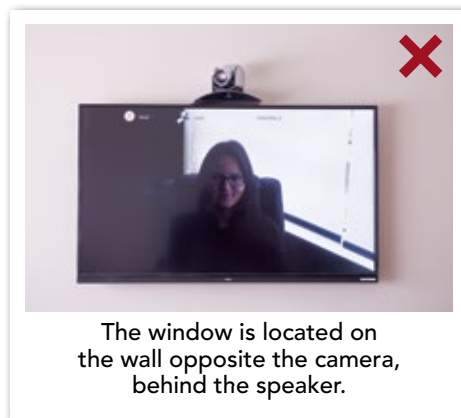
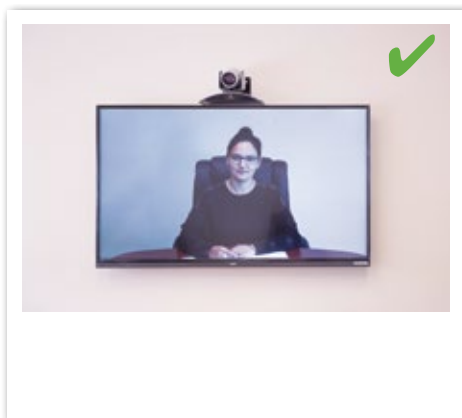
The room should be designed so as to allow the staff to easily enter and exit the room without disrupting the consultation. Depending on the type of clinical service being provided, it should also allow the use of medical peripherals, such as electronic stethoscopes or examination cameras.

The room should be outfitted to have the appearance of a clinical consultation room or a familiar clinical environment. A suitable temperature should be maintained in the room to ensure patient comfort.

A “troubleshooting” sheet should always be available and clearly displayed in the room, to indicate which actions to take or numbers to call in the event of a glitch or technical problems.

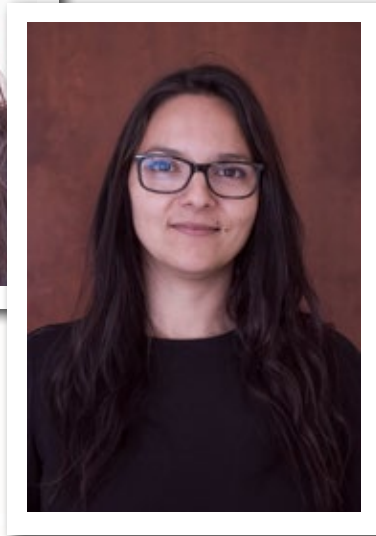
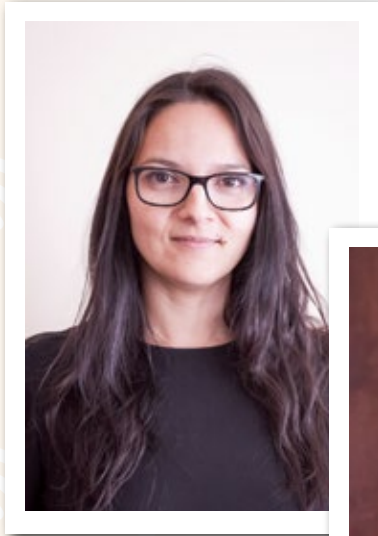
### Location of windows

The examination table or patient’s chair should not be placed in front of a window, as this causes backlighting and degrades image quality. Similarly, the remote clinician should not stand in front of a window. If there are no other options, curtains or opaque shades should be installed to reduce the backlighting effect.



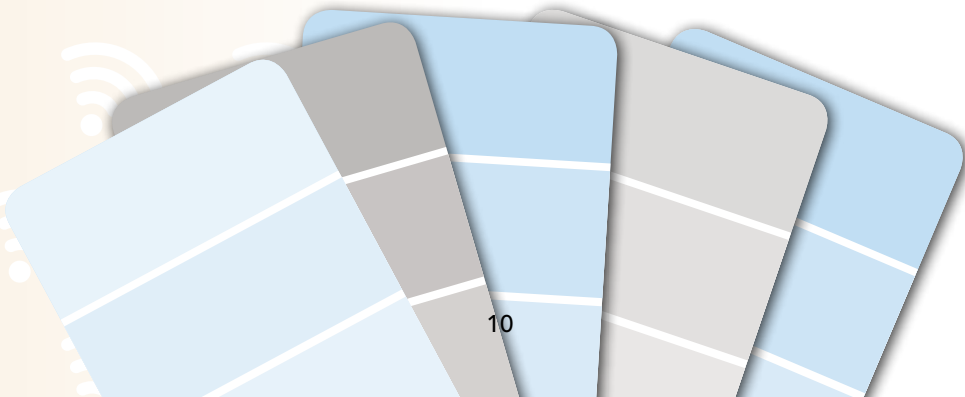
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## Wall colour



The walls should be a monochrome, flat colour to create good contrast between skin tone and room background and to reduce the impact of lighting.

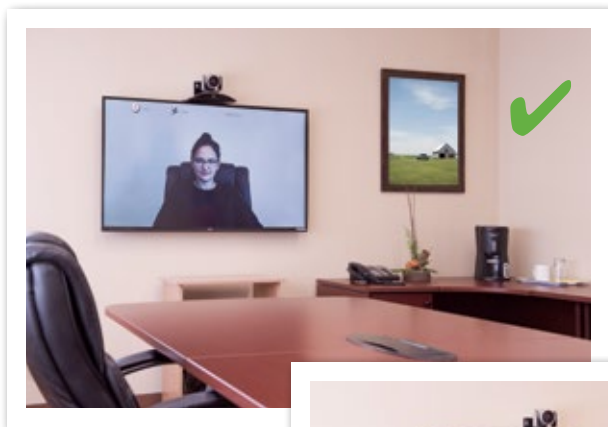
Light blue or light grey are usually recommended.



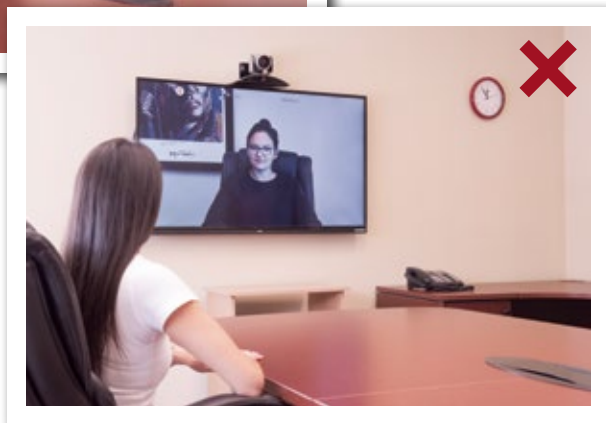
## Camera's field of view

As previously mentioned, it is important to keep in mind the image that will be projected onto the other person's screen. Any visual elements that may be distracting to the speaker should be removed.

Paintings could be added to give the room a more pleasant atmosphere, although it is preferable to place them on walls that will not be visible on screen, that is, outside the camera's field of view. The wall behind the speaker should be neutral.



Decorative elements are placed on the walls that are not visible on the screen



Avoid placing decorative elements on the wall opposite the camera, that is, behind the speaker.



## Choice of furniture

The choice of furniture is relevant when outfitting the room, as it can help create a pleasant atmosphere and foster a climate of trust, especially in a telemental health context, in which patients should feel comfortable confiding in the clinician.

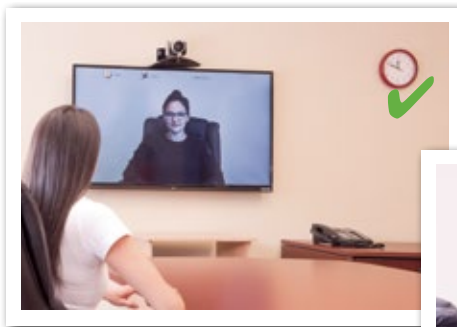
Although comfortable furniture might seem to be a good choice, the different possibilities and uses for the room should first be considered. For example, an armchair might be appropriate for telemental health consultations, but might not lend itself as well to “more medical” contexts.



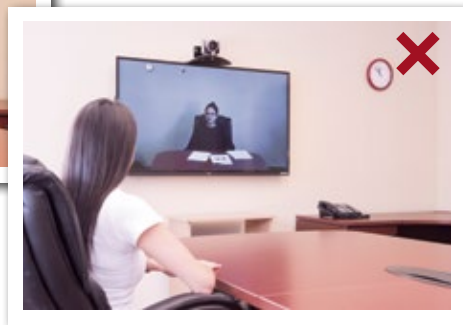
In the case of telemental health, some recommend that a table be placed in front of patients to help them feel more comfortable and to create a “buffer zone” between the patients and the videoconferencing material. However, others recommend against this, as it prevents the proper interpretation of body language and places an obstacle between the speakers. Opinions are divided on this issue.

A table should not be placed in front of the clinician, as it would give the teleconsultation an official and impersonal feel.

## Use of table



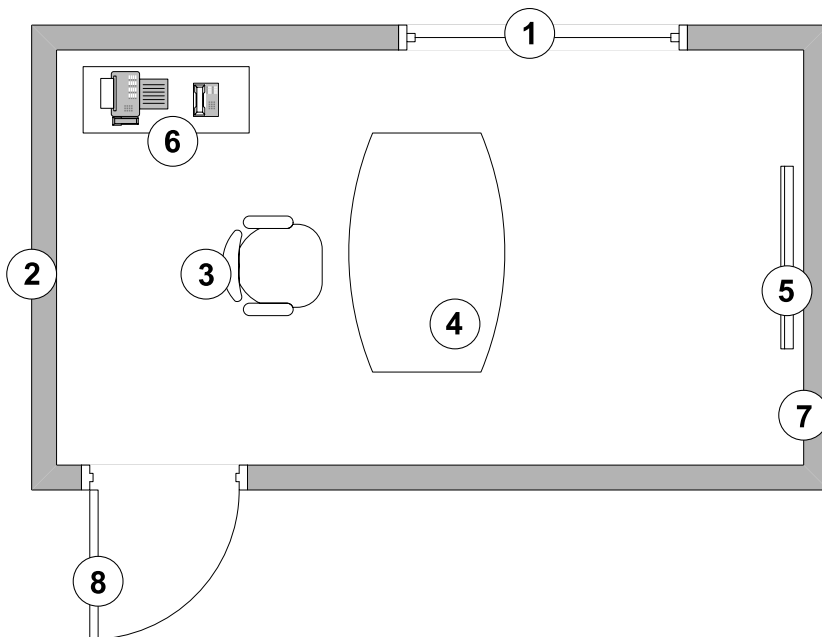
In telemental health, placing a table in front of the clinician is not recommended. Opinions are divided as to whether a table should be placed in front of patients.



## Example of room design



The following example for the design of telemental health rooms takes the previously mentioned elements into account.



1. Blinds or opaque curtains
2. Neutral-coloured wall
3. Comfortable chair
4. Optional table
5. Picture-in-picture feature disabled
6. Telephone and fax machine and the list of numbers to call in the event of technical problems
7. Clock
8. "Occupied" sign



## CONNECTIVITY

The room should be equipped with electrical outlets and an Internet connection. To optimize data transmission and obtain better image and sound quality, the use of a wired rather than wireless Internet connection is recommended. The location of the outlets will be assessed according to the room's design and the peripherals that will be used.



## POSITIONING OF THE CAMERA

The position of the camera is very important in enabling visual contact between the two people. The cameras should be positioned in a way that allows both individuals to look directly at each other.



The camera angle enables visual contact between the two individuals.



If the camera is too high, or if there is not enough distance between the person and the camera, the camera angle creates the impression that the speaker is looking down rather than directly at the remote participant.



The person is not centred on the screen.



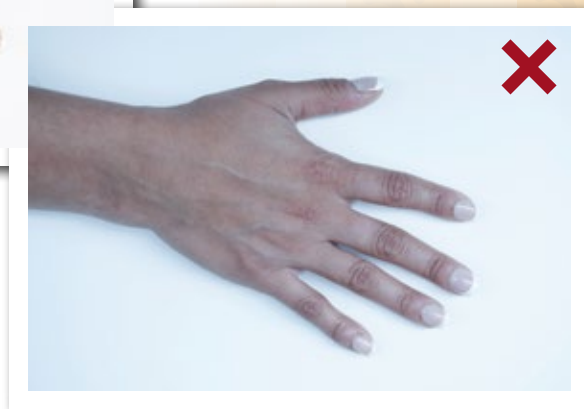
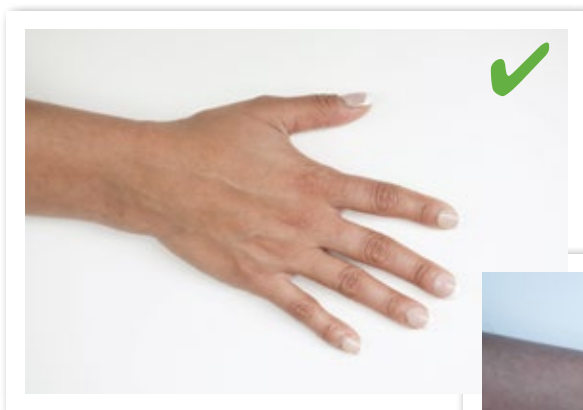


## LIGHTING

Optimal lighting is a diffused light source that does not create shadows and that displays colours accurately. The camera alone cannot correct lighting problems. Good lighting can considerably improve image quality, even with the use of low-quality cameras.

### Colour reproduction

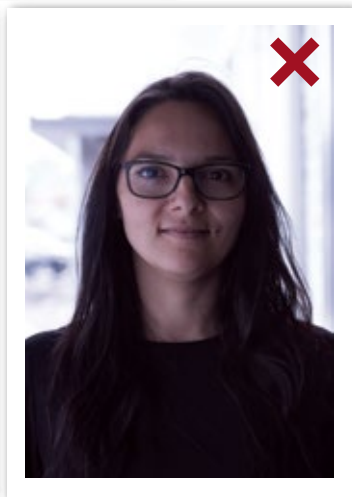
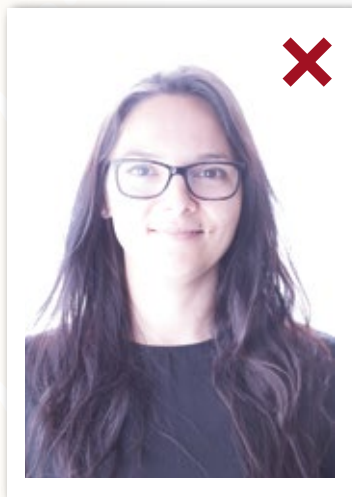
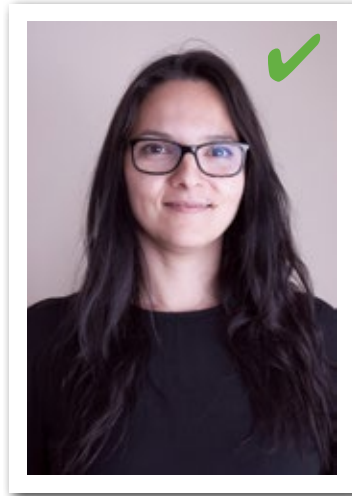
Lighting is an important element, since it has a direct impact on the clinician's ability to clearly see a patient through good colour reproduction, which can be critical in certain cases of patient assessment, as in dermatology, for example.



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## Impact of direct sunlight

The light source should be located above the videoconferencing unit and shine diagonally toward the patient. Direct sunlight on the speakers or cameras should be avoided, as it creates contrast problems.



Direct sunlight causes contrast problems.





## CONFIDENTIALITY

It is important to take the issue of privacy into account and to choose a room that ensures patient confidentiality. Only the individuals involved in the consultation should be authorized to see and listen to what takes place in the room.

The volume should be high enough to facilitate a conversation between patient and clinician, but not so loud that people outside the room can hear what is being said inside the room. Indeed, for certain cases, such as telemental health consultations, a headset may be used to obtain better sound quality and for confidentiality purposes.

To prevent unauthorized individuals from intruding on the consultation, a sign should be placed on the door to indicate that the room is occupied. A door hanger may be useful for this purpose. (See Appendix 2 for a FNQLHSSC model you can use.)



## EQUIPMENT



The type of equipment required varies according to the clinical services being provided. In the case of telemental health, we suggest the following:

### SCREEN



Screen size can vary according to the room. A 32-inch screen should be used for the patient site.

### COMPUTER



Videoconferencing software will be installed on a computer.

### WEBCAM



A webcam can be used to produce a better image.

### HEADSET



A headset can be used for better sound quality and greater privacy.



Other elements can be useful in the room:



Ideally, the clock should be placed on the same wall as the screen so that it can be seen at all times.



A telephone is useful in the event of technical problems. It provides a communication alternative.



A fax machine can be used to send documents of a confidential nature.

## References

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## Appendices

### APPENDIX 1 - ASSESSMENT CHECKLIST<sup>1</sup> - TELECONSULTATION ROOM

Type of room:  Site - patient     Site - remote clinician     Education/case discussion

Type of clinical service: \_\_\_\_\_

Are there any special considerations related to this type of clinical service?

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#### Room location

Yes    No

- Quiet
- Easily accessible
- Minimal exposure to outside noise
- Close to regular clinical operations



#### Room size

How many people does the room need to accommodate? \_\_\_\_\_

Identify the equipment that will be needed in this room:

- Videoconferencing cart – specify size: \_\_\_\_\_
- Exam table
- Patient chair
- Other chairs – number: \_\_\_\_\_
- Work table
- Desk
- Computer

<sup>1</sup> Adapted from CALIFORNIA TELEMEDICINE AND eHEALTH CENTER (CTEC), *Telemedicine Room Design, Program Guide*, 2011.

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- Screen – specify size: \_\_\_\_\_
- Specialized lighting – specify type:
- Medical peripheral equipment – specify the type and number: \_\_\_\_\_
- Telephone
- Fax machine

Yes No

- The room is large enough to accommodate the required equipment with adequate room to move around the patient if needed.



## Equipment placement

Yes No

- Placement of electrical outlets and lines will not interfere with movement or create hazard.
- Camera can be placed to provide full view of patient, if necessary.
- Camera can be placed to create visual contact.
- Medical peripheral equipment is easily accessible.
- Wall colour is appropriate for telehealth; paint finish is flat.
- Space behind the individual and that will be visible to the other speaker is free of any distracting visual elements.

Required modifications and estimated cost:

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## Lighting

Yes No

- Window(s) in the room.
- If the room has windows, can shades or blinds mitigate the impact of lighting?
- If the room has windows, can the exam table or the chair on which the person will be seated for the teleconsultation be placed to avoid backlighting?
- Lighting provides adequate direct and indirect lighting.
- Direct light source shines diagonally toward the patient.

Required modifications and estimated cost:

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## APPENDIX 2 - DOOR HANGER MODEL (AVAILABLE AT THE FNQLHSSC)



## APPENDIX 3 – EQUIPMENT RECOMMENDED FOR TELEMENTAL HEALTH

PATIENT SITE		
Type of equipment	Specifications	Average cost
Licence Reacts	Type Pro	\$120 annual
Screen	Size: 32 to 40 inches	\$500
Wall mount for screen	Pivoting	\$200
Computer	Type “mini desktop”	\$1 000
Cable	Type “Displayport to HDMI”	\$35
Keyboard and mouse	Wireless	\$55
Security cable	Type “ Kensington Locks”	\$55
Webcam	With privacy shutter	\$180
Table microphone with built-in speaker	Headset connection option	\$180
Headset	<ul style="list-style-type: none"> <li>• Comfortable</li> <li>• Materials resistant to disinfection</li> <li>• With connecting wire (to prevent it from being misplaced)</li> </ul>	\$85
Sanitary headphone covers	Disposable	\$20 (100 units)

CLINICIAN SITE		
Type of equipment	Specifications	Average cost
Portable computer		\$900
Webcam (optional)	With privacy shutter	\$180
Headset		\$85







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