Virtual Care Room Design Toolkit

CALIFORNIA TELEHEALTH RESOURCE CENTER

Part of **OCHIN**

California Telehealth Resource Center

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ABOUT CTRC

The California Telehealth Resource Center (CTRC) offers no-cost, unbiased training, educational resources, and technical assistance to help California providers and patients get the most from telehealth. As the federally designated telehealth resource center for the region, we offer unbiased tools and services based upon proven telehealth practices. We create lasting change and improvement by focusing on implementation, sustainability, reimbursement and policy, integration, workflows, and patient/provider adoption.

As part of the National Consortium of Telehealth Resource Centers and the OCHIN family of companies, CTRC assists thousands of providers and patients annually. We have extensive experience supporting the health care safety net, rural and urban providers, and patients and families throughout California who would otherwise be unable to access quality health care due to geographic isolation, language/cultural barriers, lack of insurance, disability, homelessness, and more.

CTRC Virtual Care Room Design Toolkit

How to Use this Toolkit

Folios can be used sequentially or as free-standing references for various RPM topics.

To search each folio using keywords, press CONTROL + F on your keyboard (COMMAND + F for Mac).

Print out each folio and use pen and paper to make notes in the provided spaces or use free Adobe Acrobat Reader software to type directly into the document.

1 Click on "Fill & Sign."

2 Put cursor anywhere in the folio.

3 Start typing.

4 Click out of the text box. Edit anytime.
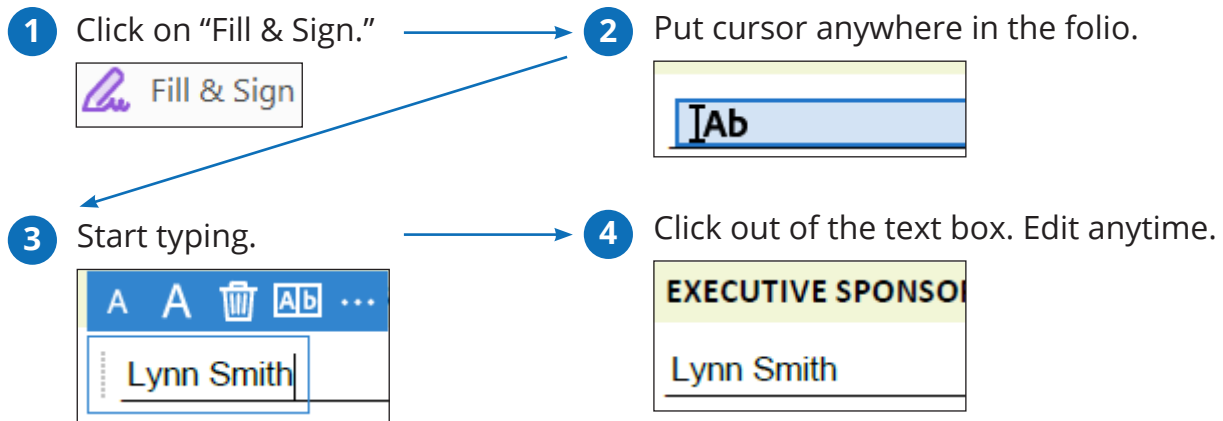
If you need assistance with any of the content presented in this toolkit, please click here.

VIRTUAL CARE ROOM DESIGN:
Design Considerations

Virtual Care Room Design Guide V4

Introduction

Room design impacts the quality of the virtual care encounter and should not be overlooked during the development of a telehealth program. Attention to detail to optimize (or humanize) the patient/provider interaction is an important factor in building trust. Good room design should incorporate environmental factors such as specific space needs in a home, exam room, mobile medical unit, kiosk, or private office.

This document provides practical information and advice on the major components that should be addressed in designing virtual care space.

Design Considerations

--Space/Room Location

--Room Size

--Organization/Layout

--Electrical and Telecommunications Connections

--Lighting

--Acoustics

--Privacy

--Ambiance and Background

--Cleanliness and Infection Control

--Patient Accessibility

--Heating, Ventilation, Air Conditioning

Space/Room Location

The Virtual Care Exam Room should be in a quiet location, minimizing exposure to sources of ancillary noise which can be picked up by sensitive microphones which can make it difficult to hear for both the patient and the remote consultant. The room location should be near clinical staff and resources.

Room Size

The optimal room size depends on the clinical service being provided and the type and size of the equipment in use.

Virtual Care Examination Rooms should be large enough to move around and work with patients comfortably. It should be large enough to accommodate an examination table, a couple of chairs, the telehealth equipment, the patient presenter, the patient and any assistive specialized equipment such as wheelchairs and walkers. There should be sufficient room for the patient presenter to easily navigate around the patient while using the peripherals. The camera should have pan, tilt, zoom (PTZ) controls for the remote provider to be able to have close-up views of the patient.

Remote Clinicians Private Office or Off-site location should have ample workspace including a desk with access to the technology. This room can be much smaller. Since the pandemic, many clinicians are finding small dedicated uncluttered quiet space in their home dwellings. These spaces should provide privacy from the rest of the home.

Clinical Education Rooms can be class-room style or when attended virtually no physical space is required. A well-designed classroom would incorporate workspace for attendees,

lecterns, white boards for the walls. From a video conferencing perspective, the room must have adequate audio feeds, camera coverage, and properly sized viewing monitor(s).

Organization/Layout

Once space is identified, it should be evaluated for placement of the telehealth equipment. The goal of placement is to optimize the camera's view of the patient, to allow staff to enter/exit without interrupting the visit. Additional seating should be available, should a family member be in attendance during the visit.   Attention should be made to reduce back-lighting from windows or other light sources, which degrade the quality of the image.

An uncluttered background optimizes camera function and improves the view at the remote sites. Wires, computer equipment, furniture, and personal items should be minimal and organized.

Position the Camera: Cameras need to be placed so that both participants are looking directly at each other during a video call. See Camera positioning below in Figure A:

Camera mounted too high

Camera properly placed at the same height of patient

Electrical and Telecom Outlets: Telecommunications and electrical outlets should be installed on the wall on the best location for the telehealth equipment to minimize trip hazards for clinical staff and patient. Generally, a standard 120v outlet with a surge protector is appropriate for the standard telehealth equipment set up. If the virtual care service is deemed an essential service in the organization's disaster plan, an uninterruptible power supply (UPS) outlet should be installed.

Lighting:

Lighting is perhaps the most critical factor in designing a virtual care room. Lighting impacts the clinician's ability to see the patient clearly with true color reproduction, which is critical for patient evaluation. The goal of lighting is to accurately reproduce colors, where images are not too dark too light, or have shadows. Neutral backgrounds and wall colors can improve image accuracy. Also, auxiliary lighting may be necessary for some types of examinations, such as dermatology.

Diffused, indirect lighting is considered optimal to depict colors accurately and represent natural skin tones.

Lighting Fundamentals

Natural Light is preferred.

Avoid LED or colored bulbs.

Use lamps/auxiliary lighting where needed.

Use diffused soft light or fill lighting to remove shadows from patient's face.

Avoid backing lighting (often from windows or other sources).

Consider full spectrum lighting.

Common Light Spectrums

Shade   6500 Kelvin

Sunlight   6000 Kelvin

Fluorescent   5500-4000 Kelvin

Twilight   4000 Kelvin

Incandescent   3500-3000 Kelvin

Light source coming from left side of room

Diffused, forward facing lighting, distracting background

Light source from behind patient

Proper light placement. Diffused, forward facing light source

Supplemental lighting is often required during certain types of examinations, such as dermatology or wound care.

Overhead fluorescent lighting

Natural skin tone using supplemental light source

Acoustics

Room acoustics is an important factor for consideration. Rooms that echo make conversation between the patient and remote clinician difficult. Installing additions such as carpeting, drapes, acoustic tiles or paint can improve acoustic quality.

It is important to consider the amount of outside noise when selecting a room. Heavy traffic areas within the health care facility tend to also be the noisiest.

Privacy

All telehealth spaces need to insure privacy for the patient at all times. This can be achieved by having good acoustics, a lockable door, or even a "do not enter consult in progress" sign outside the door alerting staff not to intrude.

Ambiance/Backgrounds

Calm, neutral wall colors can contribute to providing a relaxing atmosphere for the patient exam room. The wall the camera faces should be free of clutter and is ideally a solid neutral color. Bright white walls tend to provide too much contrast for the camera to pick up subtle facial expressions. Remote Clinicians should also have undistracting backgrounds and should refrain from having cluttered personal memorabilia in their respective backgrounds. Artificial or green screen backgrounds should be professional in nature.

Cleanliness and Infection Control

Protocols should be in place for regular disinfection on all telehealth equipment and surfaces in between each patient and the start and end of each day. Users should follow manufacturer's instructions on disinfection of specific equipment and medical devices.

Heating, Ventilation, Air Conditioning

Proper ventilation is required for maintenance of telehealth equipment and space. Computers and electronics generate heat gain when enclosed in small spaces. Auxiliary fans may also be helpful to keep equipment and users cool.

Folio 2: Virtual Care Room Assessment and Design Worksheet

- Type of Telemedicine Room
- Type of Clinical Service to be provided
- Room Location
- Room Size
- Equipment Placement
- Diagram Room dimensions and placement grid
- Lighting
- Room Color
- Acoustics
- Ambiance/Background

Room Assessment and Design Worksheet

Virtual Care Room Assessment and Design Worksheet

Type of Telemedicine Room:

__Clinical Exam

__Remote Clinician

__Education

__Other

Type of Clinical Service to be provided:

__Special space, lighting, equipment considerations related to the service:

__Physical Room Location and/or Name of room:

Room Location:

__ Quiet

__ADA Compliant

__Close to clinic operations

__BPS Required

Room Size: (Identify equipment that will be needed in this room.)

__Mobile Cart

__Wall Mount

__Desktop Tablet System/PC

__Desk/Chair

__Specialized Lighting (Please specify):

__Storage/Cabinet

__Medical Device(s): (Please specify)

__Phone

__Maximum capacity needs:

Equipment Placement:

Please identify:

__Camera location(s)

__Phone lines

__Electrical Outlets

__Ethernet

__Telehealth Equipment

Please diagram room dimensions and placement:

Lighting

__Lighting adequate

__Auxiliary lighting required

__Lighting mitigation required

__Change bulbs/color temperature

__Other

Room Color

__Neutral

__Flat

Acoustics

__Echo not present

__Room has minimal external noise and private

__HVAC and equipment noise levels are satisfactory

__Other:

Ambiance/Background

__Professional and uncluttered

__Green screen required

__Cleaning/Disinfecting schedule established

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