Telehealth has given us back the traditional house call. Most clinicians rarely if ever make house calls, but back in the 1930s, house calls were common practice. Almost 40 percent of patient encounters occurred in the patient’s home.1 Clinicians gradually stopped making house calls because they became impractical. Time constraints arose as cities grew larger and more difficult to navigate. Many physicians needed access to more medical equipment and practice settings had to comply with increasingly rigid health, safety, and legal requirements. By 1980 only 1% of patient visits were house calls, and the numbers have decreased steadily since. Even when it’s a practical option, many clinicians avoid practicing house calls because of non-reimbursable transport time, personal safety concerns, or insufficient training.

Now with the click of a mouse or a swipe of your finger, you can be face to face with your trusted clinician. Telehealth home visits allow you to get the care you need in the comfort of your own home. Plus, when your clinician sees you in your home he or she learns more about who you are and what may be positively or negatively impacting your health. When done well, these telehealth home visits help you build a strong therapeutic relationships between yourself and your clinician that lead to better medical care.

This guidebook will help you master the basic technical and room setup guidelines you need to turn these telehealth sessions into authentic clinician-patient experiences. Welcome to the new ‘medical home’ — your home!
Staging the Session

- Room Selection
- Lighting
- Audio Equipment
- Camera Position
- Seating Arrangement
Room Selection

Having a great videoconference experience starts with great room selection. You can videoconference in any room, but choosing the best room can greatly improve the quality of the sessions.

Privacy

In exchange for receiving medical treatment in your home, you must make the environment suitable for the medical interaction and ensure that privacy and safety needs are met for both yourself and the clinician. Choose a setting in which only the appropriate people are part of the session and others can't hear what is going on during the session.

Depending on the nature of your condition and who you want to be part of the treatment team, you can choose to have a one-on-one session with your clinician or invite the whole extended family. If you've set up your videoconferencing site well, both you and your clinician will feel free to share important, private and sensitive information during the virtual home visit.

Personality

Where you choose to sit during the session gives you an opportunity to show the clinician who you are, and what you value. What you share with your clinician is entirely your choice, but keep in mind that holding the session in a small room with a blank wall behind you will restrict your clinician’s understanding of your home life and personality. From our experience treating patients...
through virtual home visits, we would encourage you to hold your videoconference in your living room or kitchen where the background showcases your values and personal style. This helps the clinician learn more about you as a person.

**Background Walls**

By selecting a room with an optimal color scheme you can improve the way we see each other. You’ll want to point the camera towards a wall that is painted in neutral color shades because these make your picture look better. These neutral colors include beige, tan, pale gray, or light blue. Vibrant colors can reflect light and cast pale hues onto your face.

The wall behind you should be fairly empty to minimize distractions. Try to avoid sitting in front of walls that are decorated with art that would be behind your head. Avoid walls that are decorated with intricate, or highly detailed patterns. Many cameras turn stripes and swirls into distorted video images that can appear to dance and move. Background patterns can also trick the camera into focusing on the background if you shift in the chair and move out of the camera's autofocus target.

**Power and Network**

Whatever device you are using for videoconferencing should be close to the Wi-Fi router. If you are using a computer, you should plug it into the router with an Ethernet cable. This will give you the best picture and sound because the internet signal will be strongest. All equipment should be on a single power surge protector. Both electrical and network connections should be close to where the system will be positioned to avoid lengthy cabling across the room.

**Pearl**

Make sure the room is close to your Wi-Fi router. Plug into it with an ethernet cable whenever possible!
Sound and Distractions

When choosing between different rooms, take a moment to listen to the sounds present in each room. Do your best to minimize the impact of the background noises. We often don't appreciate the intensity of background noises because we get used to the normal noises in our environment. How loud is the air conditioner or fan? Can you hear other people talking? Can you hear background music? Is there noisy machinery? Do the lights hum? Can you hear traffic or people outside the windows?

Try to choose the room with the fewest background noises. Once you have selected the quietest room, try to decrease the remaining background noise as much as possible. Close windows and doors, especially if they open to the street or a busy hallway. Turn down window air conditioners to the lowest setting or turn them off for a short session. Keep your loud or curious pets out of the room. Turn off all other electronics like radios and televisions. If you have to use a public room like a kitchen, ask the other people to stay out of it during the session.

Summary: When selecting your room, make sure...

1. Everyone feels comfortable.
2. Distractions are minimized.
3. Everyone is able to see each other.
4. Everyone is able to hear each other.
5. The room will remain private during the session.
Lighting

You won't have to do anything about your lighting if you are in a room filled with natural light that is shining towards you. You will have to adjust your lighting if you don't have a lot of natural light, or if the electric lights are casting colors or shadows on your face. The camera needs more light than your eyes to produce a clear image with accurate colors. If the room is insufficiently illuminated you clinician will be unable to see you clearly. This detracts from the therapeutic connection between you, and the clinician will have a harder time evaluating the physical signs and symptoms of your illness or condition.
**Turn on All Available Lights**

Cameras need more light than the human eye, so turn on more lights than you think you need. When the camera doesn't have enough light, it's automatic gain control makes your picture grainy and you become hard to see. During the daytime you may not need any additional room lights, but after sunset, turn on all the room lights so your clinician can see you well.
Direct and Indirect Lighting Options

Direct and Indirect Lighting Options

Light from the sun or a fixture that shines directly onto you without being reflected or diffused is called direct lighting. Direct lighting is the most energy efficient light you can use for your telehealth session, but it produces hard, unflattering facial shadows.

We recommend using indirect lighting instead of direct lighting. Indirect lighting is much softer and more flattering because the light is diffused or reflected before it shines on you. A torchere lamp (left) or ceiling fixture that aims up and bounces light off of a wall and/or the ceiling is an example of indirect lighting.
The Brightest Light Should Be in Front

The brightest light should be in front of you, illuminating your face. If you sit with the brightest light behind you it will make you look like a dark silhouette (right.) Think about the last time you tried to take a picture of someone in front of a sunset. Remember how dark they looked? If it is daytime, natural lighting sources should be in front of you as shown in the pictures below. If it is nighttime position any additional room lights in front of you or to your side, to prevent these shadows.

Controlling the Room’s Natural Lighting

Professional videoconferences are conducted in rooms with either a lot of natural or ample artificial lighting. If your room does have exterior windows, you either need to account for how that light will change throughout the session or block it out. If your session is during sunrise or sunset, have more lights available that you can turn on to compensate for the changing light.

If the light coming through windows shines on the camera acts like a flashlight pointed directly at the camera. Your clinician will not be able to see you well because the picture will be overexposed and you will be a shadow. If you cannot orient the camera away from the windows, or change where you will sit, close the window treatments (blinds and drapes.) Try to minimize any gaps between the drapes and/or blinds, because these gaps allow beams of bright light to enter the camera lens. You may need to cover the window treatments with a second layer of material, like a towel or bed-sheet to block the remaining light.
Audio Equipment

If you are the only patient in the telehealth session, and you are in a quiet, private room, you won’t have to worry about your microphone and speakers. Under most circumstances your computer, phone, or tablet’s built-in microphone and speakers are good enough for you and your clinician to clearly hear each other.

If you plan to include other people in your session, like a family therapy session, these devices may not be good enough. The best remedy is to use a larger device with a louder built-in speaker, like a desktop computer. The second best option is for you both to wear headphones, joined with a headphone splitter. You can share a single headphone set, but it is hard to focus on the clinician when you only hear them in one ear.

You should also consider using headphones if you would like more privacy. The combination headphone and microphone sold with smart phones work well in most circumstances. An alternative is the bluetooth hands-free earphone. Avoid sharing a single set of headphones when possible.

If your room is a bit noisy or you’re having trouble hearing the clinician, do not try to fix this problem by connecting external speakers. Plug-in and Bluetooth speakers will often induce delays, echoes, and feedback loops.

When you have a poor connection that makes it hard to hear each other, your clinician may need to call you on the phone to ensure you can hear each other well. Grainy and
jerky images can be tolerated for part of some telehealth sessions, but the audio portion must remain clear. Poor connections commonly occur when there is bad weather, or a lot of people are using the internet in your neighborhood. When this happens, the clinician will usually ask to call you on the telephone. Use your landline for this call if it has a good speakerphone. Otherwise, a cell phone with a good signal and a loud speakerphone setting will usually work well. You will continue to use the videoconferencing software to see each other for the remainder of the session. Once you can hear the clinician well on your phone, you need to mute your videoconferencing device’s microphone and speaker to avoid distracting echoes and irritating feedback.

If you have a poor connection, ask your clinician to call you on a phone. Then mute your device’s microphone and speaker.
Camera Position

Your camera should be pointing straight at you so you will be looking directly at the other participants. If you have a separate web-camera, place it on top of your computer or on a shelf so that it is positioned directly over the clinician's face on the screen.

Ensure your computer or other videoconferencing device is on a desk or table that won't move around. Stabilize it so it doesn't move and keeps you in the camera frame. When placed well you should be able to shift a bit in your seat without falling out the frame or jostling the camera. When the camera moves too much the other participants become sea-sick! Nobody can hold a tablet, phablet, or smartphone steady for an entire session. It also causes the camera to lose focus, rebalance the lighting, and displaying all this extra movement tends to pixilate your image because it requires more internet bandwidth and processor speed to render it clearly.

External USB cameras usually offer better picture and sound quality compared to the built-in equipment.

The 1/3 Rule

Position yourself and/or adjust the camera so your eyes appear to be about 1/3 down from the top of the screen. This will create the natural framing you see when watching television newscasters.

Eyes are 1/3 from top of screen
Seating Arrangements

Physical Seating Arrangements

Small Group Seating (1-3 People)
Arrange the tables and chairs in the room so all the participants can fit in the camera frame. If there is only one participant, he or she should sit close to the camera. The chair should be stationary but light enough for anyone to reposition it so that the seating can be easily rearranged if someone else needs to join the session.

A single participant should be sitting two to four feet away from the camera and screen. If you have more people in the room, move them back an additional two feet from the camera for each additional participant. So, if you have three people in the session, the participants should be sitting at least six feet back from the camera. If two to three people want to sit within four feet of the camera, they will have to sit shoulder to shoulder to fit in the camera’s frame.

Chairs with straight backs and no armrests work best when seating two to three people in the camera frame.

Large Group Seating (4+ People)
If you want to include four or more people in a session, you will want to arrange them in a
semicircular or horseshoe pattern so everyone can be seen by the camera and can see the clinician on the screen. A group of four or more will need to sit back at least eight feet from most web-cameras to fit everyone in the frame.

**Screen Arrangement & Eye Contact**

The way you size and position people’s images on your screen can have a significant impact on how real the session feels to you. You want to avoid placing the other participant’s image away from your camera. When the image and camera are separated you appear to be looking away from the other participant when you talk to their image. This artificially poor eye contact disrupts clinician-patient experience and it is an uncomfortable experience for your clinician to see you constantly looking away from them. You can create the appearance of good eye contact by placing the clinician’s image as close to your camera as possible. When you do this, you will appear to be looking at the clinician when you are looking at their picture on your screen.

Below, you’ll find information on virtual arrangement for two site, three site, and four site videoconference session scenarios. If several participants are joining the session from multiple sites, they will appear on your screen in separate windows. Clinicians will often host these multi-site visits when important participants have to join from different locations. This commonly occurs when a child’s parents are living in separate homes or one of the participants is still at work. If you and your family are joining the telehealth session from multiple locations, you’ll want to arrange everyone’s picture on your screen as demonstrated below, to create the most realistic experience possible for you.
When videoconferencing with one other site, you can create good eye contact by positioning the camera as close to your eye level as possible and positioning the picture of the clinician as close to the camera as possible. Alternatively, you can make the clinician's image “Full Screen”, and monitor yourself in the small self-monitor.

Place your image directly below the clinician's image. Make it smaller to help you stay focused on the clinician.

If the session involves people at three sites, enlarge both the clinician's picture and the other person's picture. Have the side of their pictures meet directly below your camera. In most situations, this will be in the middle of your monitor, directly below your device’s built-in camera. If you make them too large you may have trouble looking at both of them at the same time.

Again, place your smaller, self-monitor directly below their images. This will help you monitor yourself without looking away from them during the session.

If the session involves people at four sites, place the three other sites in a row at the top of the screen and put your image directly below the middle image. If you have trouble looking at everyone at the same time, squeeze the pictures closer together towards the camera (as indicated by arrows). You may need to overlap the pictures a little. Sit farther back if you are having trouble watching all the images at the same time without moving your eyes a lot.
Distracting Sounds & Movements

Trouble Shooting

A Step By Step Guide

• Before Your Session
• Setting Up Your Session
• Beginning Your Session
• Closing Your Session
Distracting Sounds & Movements

Distracting Sounds

Environmental Sounds
There are a variety of environmental sounds that can distract participants from the telehealth session. No matter how hard you try, there are almost always a few sounds that cannot be completely silenced or prevented. Most of these distractions can be eliminated by anticipatory preparation, good room selection, and soundproofing. Common unanticipated environmental sounds include dogs barking, traffic, trains, neighbors yelling, and nearby weed-whacking. But don't despair, you can use the mute button can save the day!

User Generated Sounds
Most people are unaware of the distracting sounds they make. Your microphone will easily detect sneezes, tapping toes, shuffling feet, drumming fingers, and keyboard clicks, and emphatically transmit them to the other participants. So do your best to keep your body quiet during the session.

Shuffling papers is one of the most common and loudest user-generated sounds. This noise usually seems insignificant to the guilty party, but it sounds very loud to the other participants! Most microphones seem to love sharing this noise with the world. Even quietly shuffled or sorted papers sound like a miniature thunderstorm to everyone else in the session.

The mute button can save the day! Use the mute button to save your participant’s ears from shuffling papers or unanticipated sounds.
Distracting Movements

Camera Disturbance
As we established above, restless legs cause distracting sounds. They also cause camera disturbance. This happens when the restless leg or foot touches the desk supporting the camera and when our arms are resting on the same surface as the camera. Because our restless legs are connected to our arms, the vibration is transferred from legs, to arms, to table, and to the camera. The restless person may not perceive this as a significant movement, but it will cause the camera to shake and the optics of the camera will amplify this disturbance. The other participants will see the restless person violently move up and down or side to side like they are in an earthquake!

Drifting Out of The Camera Frame
Try to stay in the camera frame for the whole session. Your clinician will usually prompt you to return if you drift away. This is a common problem because people usually move around and change positions while seated. Most software allows you to see your picture as a smaller window on the screen. Periodically check this self-monitoring image to see if you are completely in the camera frame.

Moving Objects
Keep moving objects such as curtains or fans out of the camera’s view because they are very distracting to the other participants. They also unnecessarily tax the computer’s processor and bandwidth which often causes the image to pixilate or become jerky.
Trouble-Shooting

If the Clinician Can’t See You
• Go to your software settings and make sure the right camera has been selected.
• Another common cause for no picture is that you may have accidentally paused your camera, which is a function imbedded in your picture window in most software.
• Make sure the camera isn’t covered by a finger or sticker.

If You Have Audio Problems
• If you have trouble hearing your clinician, make sure the right output device (speaker) is selected.
• If your clinician has trouble hearing you, make sure you have selected the right input device (microphone.)
• If this still doesn't work, the clinician should call you on your phone and just use the computer for video. Use the chat box to send this message. Alternatively, point to your ear and shake you're head, then hold up and point to your phone.
• If you are hearing echo, feedback, a whooshing noise, or garbled voices you have probably plugged in a speaker system to your computer, tablet, or phone. You may also be experiencing this problem with Bluetooth or Airplay connected speakers.
  • You need to disconnect these external speakers because they are interfering with your device’s ability to have the microphone ignore the sounds produced by these speakers.
  • This failure to ignore the external speaker's sounds causes the clinician to hear him or herself speaking in your room, which can be very disconcerting.
  • Sometimes a feedback loop develops. These feedback loops become progressively louder with higher frequency noises until they make conversation impossible. The only way to break the loop is for one of the sites to mute their microphone when they are not talking and quickly mute it when they have finished talking.

If You Have a Bad Connection
• If the signal is poor with pixilated video or garbled audio, tell the clinician you will disconnect. Then disconnect and reenter the conference. Use the chat function if you cannot hear each other at all to tell you clinician what you are doing.
• If the signal remains poor, consider restarting your internet modem and router. The system may take as long as five minutes to reboot, so let the clinician and any other participants know you are doing this.
Turn-taking

• If there's two or more participant sites we have to be more mindful of turn taking to insure that everyone has the chance to participate and the session is not dominated by the most talkative member.
  • One strategy is to pause after you've said something important to give people a chance to respond.
  • The second is to address someone specifically so they know when it's their turn to contribute.
• Turn-taking is also important when there are connection delays caused by poor bandwidth or old computers at one or more sites, it becomes difficult for the participants at that site to contribute. When the participant at a slow site tries to speak after a pause in the conversation, another person at a faster site will have already begun talking. The result is that two participants speak at the same time. Usually they both stop talking, or they talk over each other. The clinician wants to encourage dialogue, so in these situations, the slow site should signal that he or she wants to make a contribution by raising their hand before speaking.
A Step-By-Step Guide

Before Your Session

Virtual home visits reverse the rules of hospitality as compared to medical office visits. This will be a new experience for those of you who have only visited your clinician in their office. You can make your clinician feel welcomed by being ready for the session to start promptly. Be accommodating to any unanticipated delays. Your clinician may not be able to easily notify you that they need to spend some extra time with the patient before you on the schedule.

Before Your First Session

Practice with the clinician’s office staff at least one day in advance. This gives you time to fix any technological issues and get more comfortable being on camera. It also gives you time to modify room decorations, arrangement, and lighting to ensure the telehealth session feels like an authentic medical experience.

Every Time

- Login five minutes early to download and install software updates.
- Have the clinician’s office phone number available for technical support.
- Have your alternative telephone available if there are connectivity issues and make sure the clinic knows this number.

Setting Up Your Session

- Visually confirm all the devices are plugged into a surge protector or battery backup.
- Connect the Ethernet cable.
- Plug in microphones and headphones.
- Turn on the room lights, including ceiling lights, floor lamps, and table lamps. Position floor and table lamps to optimize the lighting on your face.
- Close drapes, blinds, doors, and windows to improve lighting and privacy and decrease distractions.
- Arrange chairs, tables, and other furniture to suit the videoconference. Remove any chairs or furniture that would block the camera from seeing the participants.
- Turn down or turn off loud air conditioners or fans.
- Cover shiny surfaces like polished tables or whiteboards that will be in the camera frame.
- Seat the participants in your room so they all face the camera and can see the display.
Beginning Your Session

• Log into the videoconference software.
• Accept the clinician's call from the software. Most software will play a ringtone and give you buttons to Accept or Reject the call. Accept the call.
• Once connected, confirm that the correct camera, microphone and speaker are selected in the settings.
• Confirm that you can hear the clinician by giving a thumbs up when they ask you for confirmation. Adjust the speaker volume to overcome any background noise.
• Optimize the camera frame by adjusting the camera's location, change the camera's zoom, and adjust the camera's tilt angle to fit everyone at your site in the camera frame. Let the other site(s) know if they are poorly framed or hard to see.
• Expand the clinician's video to full size. This makes the clinician seem more lifelike and your experience will feel more realistic.
• Let them know you are ready to begin by giving the thumbs up sign and nodding.

Closing Your Session

• Your clinician will start wrapping up the session a few minutes before it has to end. This gives you and any other participants a chance to say things that are still on your mind.
• The clinician will then likely move into a summary statement. This summarizes the session and what was achieved or discussed. He or she will then review the updated or current treatment plan and goals to accomplish before the next session.
• The clinician will then arrange the follow up session or instruct you to contact the office.
• The clinician will customarily say goodbye before leaving the call and ending your session.
• You can then exit your telehealth software.
• Disconnect the plugged in devices.
• Shut down the computer or device. Ensure it is charged and will be available for your next session.

Summary

Thanks for reading this guidebook. We hope you have enjoyed learning how to do telehealth well from your home. It is our sincere hope that with good preparation and staging you will experience authentic clinical interactions and develop lasting, and therapeutic clinician-patient relationships. We wish you good health and good telehealth care!
About the Authors

David Roth M.D., F.A.A.P., F.A.P.A. is a triple Board-Certified physician who has been practicing medicine in Hawaii for 18 years. Dr. Roth earned his Bachelors Degree from Northwestern University and his Medical Degree from the University of Louisville. He completed the prestigious Triple Board Residency Program at University of Hawaii where he trained in General Pediatrics, Child & Adolescent Psychiatry, and Adult Psychiatry & Neurology. He is a Fellow of both the American Academy of Pediatrics and the American Psychiatric Association. Dr. Roth serves on the American Academy of Child and Adolescent Psychiatry’s Telemedicine Committee and helped author the Academy’s 2016 Telemedicine Practice Parameter.

Dr. Roth has been a passionate telemedicine pioneer and advocate for 16 years. He has personally conducted over 4,000 telehealth sessions and under his leadership our clinic has conducted over 10,000 patient care and collaborative care sessions. He created one of the nation’s first self-sustainable private practice psychiatry and developmental pediatrics telemedicine clinics in 2009. He then launched one of the nation’s first sustainable school-based and home-based telepsychiatry programs in 2010 that has treated hundreds of moderately to severely mentally ill students. These psychiatric services are now delivered statewide to Hawaii public school students in both urban and rural areas. These youth are treated in their homes and schools in collaboration with their families, school-based mental health providers, and teachers.

The material in this book is distilled from presentations Dr. Roth and Mrs. Zeković-Roth have given at several national conferences including the Annual Conference on Advancing School Mental Health in 2013, the Annual Meeting of the American Academy of Child and Adolescent Psychiatry in 2014, and along with Mrs. Richardson and Mr. Yasutake the telehealth media skills workshop at the American Telemedicine Association’s Annual Meeting in 2015. Our team will also be conducting another telehealth provider media skills workshop at the 2016 American Telemedicine Association meeting on May 14th 2016.
**Mrs. Sofija Zeković -Roth D.OM.** has been practicing in Honolulu, Hawaii for 12 years as a Board Certified Oriental Medicine practitioner. As the Clinical Director of Mind & Body Works, Inc., she developed the clinical and administrative telemedicine models for home-based and school-based telepsychiatry services that have effectively delivered medical care to children, adolescents, and adults throughout the Hawaiian Islands and California. These innovative models have helped them sustain one of the oldest self-sufficient telemedicine private practices in the nation. Mrs. Zeković-Roth and Dr. Roth have conducted several telehealth workshops at national conferences since 2013. She will be co-presenting our upcoming telehealth provider media skills workshop at the 2016 American Telemedicine Association meeting on May 14th 2016.

Mrs. Zeković -Roth graduated summa cum laude from Spalding University in Louisville, Kentucky with Bachelor Degrees in both Chemistry and Biology. She then earned her Masters Degree in Acupuncture and Oriental Medicine from the World Medicine Institute in Honolulu, Hawaii. She is a master practitioner of both Pilates and yoga, who has developed and conducted training seminars across the Pacific Rim.

**Michael Yasutake B.A.** is an award winning producer, director of videography and editor based in Honolulu Hawaii. He has 26 years of experience in television and video production. He has received several Telly awards, several Emmy award nominations, and he won an Emmy award for Best Regional Sports Programming. He co-presented the telehealth media skills workshop Mind & Body Works, Inc. conducted at the American Telemedicine Association’s Annual Meeting in 2015. He will also be co-presenting our upcoming telehealth provider media skills workshop at the 2016 American Telemedicine Association meeting on May 14th 2016.

Mr. Yasutake has shot and edited television shows and sporting events for PGA Tour Entertainment, E! Entertainment, EXTRA!, NBC’s national news, The Golf Channel, TLC, Entertainment Tonight, ABC’s national news, MTV, HGTV, and The Discovery Channel. He received his Bachelor Degree in Telecommunications and Film from the University of Oregon.

**Mrs. Mahealani Richardson B.A.** was an anchor woman on Hawaii’s premier network news station for 12 years. During her 20 distinguished years as a journalist she won many awards including the prestigious Edward R. Murrow Award for her nationally televised documentary on the Iraq War. Mrs. Richardson perpetuates her distinguished family’s legacy of advocacy and community service by
hosting a popular community affairs television program on 'Olelo, Hawaii’s public broadcasting channel, and by moderating numerous political forums, and other special television events on Hawaii’s public and national affiliate television stations. After stepping away from the anchor desk in 2014, Mrs. Richardson joined Honolulu’s world-famous Shriners Hospital for Children as the Director of Public Relations. She co-presented the telehealth media skills workshop Mind & Body Works, Inc. conducted at the American Telemedicine Association’s Annual Meeting in 2015.

Ms. Kierdre Kalani Howard edited and helped design this guidebook.