

# Overcoming Technological Challenges: Lessons Learned from a Telehealth Counseling Study

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## Abstract

**Background:** Telehealth methods, including video chat counseling, have been growing in popularity within the behavioral health counseling field for over a decade. While video-based counseling methods have been shown to be effective and convenient, they have unique challenges stemming from the technology they use. Technical challenges can negatively impact appointment flow, intervention effectiveness, and the satisfaction of both patients and clinicians. **Methodology:** The Y2TEC (Youth to Text or Telehealth for Engagement in HIV Care) study is a pilot randomized control trial examining the feasibility and acceptability of a video counseling series provided to young adults (ages 18–29) living with HIV. The study's clinicians provided about 500 video-based counseling sessions through the Zoom videoconferencing platform. The study team then developed recommendations for overcoming technical challenges through a review of the best practice literature, insights from the clinicians and study coordinator, engaging in consultations during supervision meetings, receiving verbal feedback from participants, and reviewing logs of technical challenges.

**Results:** Through our experience, we have found that quality of video-based counseling services can be greatly improved with minor intentional technological modifications in preparation and provision of services. We provide an overview of common challenges and corresponding recommendations to address them.

**Conclusion:** This article can help clinicians improve their quality of telehealth sessions by identifying several common technological challenges that can occur during video chat sessions, exploring the impact of these challenges on ses-

sion dynamics and providing concise, best practice-based recommendations to mitigate these issues that clinicians face.

**Keywords:** telehealth, telemental health, video-based counseling, behavioral telehealth, technological challenges, best practices, telemedicine

## Background

Telehealth tools for behavioral health counseling, including videoconferencing, text messaging, and virtual reality platforms, have been increasing in popularity for over a decade.<sup>1</sup> Videoconferencing programs like WebEx and Zoom are now used by many mental health clinicians to provide assessment and counseling services across distances. Telehealth counseling interventions conducted through videoconference have been shown to be as effective as in-person services for a range of conditions such as depression, post-traumatic stress disorder, and anger management.<sup>2</sup> In addition, video-based services have been found to be more satisfying to many clients due to increased convenience and client control over session logistics.<sup>3</sup>

However, the use of videoconferencing for counseling can also bring up unique challenges that can disrupt clinical services. For example, poor Wi-Fi or cell phone reception and difficulty maintaining connection over video chat are common occurrences in telehealth programs that can decrease acceptability of services.<sup>4</sup> Studies to date show that technological issues occurring within video sessions can negatively impact client and clinician rapport,<sup>4,5</sup> decrease client satisfaction, increase frustration,<sup>3</sup> and decrease enrollment and engagement in services.<sup>2</sup>

For video-based counseling services to be effective, it is essential that clinicians and clients have the ability to troubleshoot through these issues promptly and in real time.<sup>3</sup> Failure to troubleshoot technological issues can have a significant impact on the clinical encounter. However, there is evidence that troubleshooting quickly may result in little to no impact on either the provider or the client.<sup>6</sup> In fact, troubleshooting around common issues such as poor audio/visual

connectivity or dropped calls can improve and maintain a strong therapeutic alliance.<sup>7</sup>

While best practices for video-based services have been outlined by various professional organizations, including the National Association of Social Workers<sup>8</sup> and the American Telemedicine Association,<sup>9</sup> the guidelines provided by these organizations focus primarily on quality, cost, ethics, and regulations of conducting telehealth services. While useful, most of these guidelines lack specific and practical information on how to address real-time technological issues that can directly impact the efficacy and acceptability of telehealth services.<sup>5</sup> Therefore, there is a need for practical clinician-centered strategies for effectively troubleshooting and providing services in the face of challenges.<sup>2</sup>

In this study, we discuss common technological challenges that occur when conducting counseling sessions on videoconferencing platforms. We identify the potential impact of these issues on session flow, client and clinician rapport, and client satisfaction. Then, we provide recommendations for how clinicians can troubleshoot and resolve technological challenges during telehealth sessions. Our observations are informed by our research on the use of technology in providing a behavioral intervention to young adults (ages 18–29) living with HIV through the Y2TEC (Youth to Text or Telehealth for Engagement in HIV Care) study.<sup>10</sup>

This study is a pilot randomized controlled trial of a counseling intervention that consists of 12 brief (20–30 min) video-based mental health, substance use, and HIV care engagement counseling sessions conducted over Zoom. Zoom was the video platform of choice for the University of California, San Francisco and was selected for its security and accessibility. Accompanying text messaging was also sent through a HIPAA-compliant browser-based platform called Mosio. An alternative video-chat platform, WhatsApp, was used in instances when a participant’s cell phone could not support Zoom or if there were technical issues with Zoom.

Videoconferencing sessions were initiated by the counselor from their private office and the client called in from their own cell phone, often from their home (but occasionally from a community location such as a private room at work or their parked car). Each of the counseling sessions in the series used psychoeducation and health education, motivational interviewing, and problem solving to help clients identify and address barriers to HIV care engagement, achieving mental health stability and decreasing levels of substance use. Counselors (i.e., trained HIV-focused social worker and psychologist) carried a caseload of up to 30 clients who they met over videoconferencing on a weekly basis. Additional information on the intervention is available in the published treatment protocol.<sup>10</sup>

The insights and recommendations described here are derived from our work with 50 young adults living with HIV, totaling over 500 video-based counseling sessions. Through this process, we have identified common technological challenges that can negatively impact video-based counseling sessions. While some challenges may be difficult to resolve (e.g., participant’s access to technology), we have found that many are preventable with planning and troubleshooting. We have also developed several practical strategies for addressing these issues. These recommendations were developed through a review of the best practice literature, insights from the clinicians and study coordinator, engaging in consultations during supervision meetings, receiving verbal feedback from participants, and reviewing logs of technical challenges. Please see *Table 1* for summary of challenges with telehealth and recommendations for overcoming these technical challenges.

**Table 1. Summary of Challenges and Recommendations**

ITEM	CHALLENGE	RECOMMENDATION
1	Many videoconferencing platforms are available and choosing the right one can be difficult.	Carefully select the best technical platform for your specific service structure.
2	Device or connection issues experienced by the clinician.	Learn the platform extensively before providing any services.
3	Difficulty managing client expectations.	Coach clients for success and satisfaction.
4	Some clients may have incompatible devices or poor internet connections and be unable to log in or use video software.	Begin troubleshooting with clients early.
5	Client is unable to log in to session due to inadequate internet or cell phone reception in their location.	Ensure the client and clinician are in locations with stable internet access and a backup source is available.
6	Audio and video transmission and syncing issues mid-session.	Troubleshoot issues in real time using other modes of communication.
7	Unsteady or poorly framed video.	Coach the client through techniques to improve their use of the video feature.
8	Despite thorough troubleshooting, sometimes it will not be possible to start a session.	Know when it is time to switch to the backup plan.
9	Some clients repeatedly have difficulties using videoconferencing technology.	Prevent reoccurring issues through logging issues and follow-ups.

### Challenges and Recommendations

#### CHALLENGE 1: MANY VIDEOCONFERENCING PLATFORMS ARE AVAILABLE AND CHOOSING THE RIGHT ONE CAN BE DIFFICULT

When starting a telehealth practice from the ground up, one of the first tasks is researching and deciding on which videoconferencing program to use. Each platform has unique strengths and weaknesses, and there are many trade-offs to consider in terms of functionality, pricing, accessibility, and other factors. In addition, it is essential that the technology chosen meets the minimum legal standards for privacy and security established by the agencies that regulate the clinician (e.g., licensing boards), organization (state agencies, accreditation agencies), and any other bodies that oversee the clinician's work.

#### RECOMMENDATION 1: CAREFULLY SELECT THE BEST TECHNICAL PLATFORM FOR YOUR SPECIFIC SERVICE STRUCTURE

Take the time needed to research and pick a high-quality videoconferencing platform to minimize the likelihood of problems. Compare features carefully and select a platform that (1) may be already integrated into your organization; (2) has a high-level of data security; (3) has a virtual "waiting room" rather than automatic entry into the videoconference to prevent breaches of confidentiality; (4) has a simple and user-friendly interface that will be easy for clients to use; (5) has the ability to maintain call connection when there is a change in Wi-Fi or cellular networks; and (6) is well-suited to low bandwidth connections. In addition, ensure that the platform is acceptable to any third-party payors and professional or organizational regulating agencies involved, as there are specific regulations around licensure, medication prescribing, insurance reimbursement for services, and federal reimbursement when providing services through technological platforms.<sup>11</sup>

To learn more about options, clinicians and researchers can contact companies with videoconferencing or text-messaging platforms and request a free demo or a free trial or to receive specific information about the product's data security and other crucial features. See the California Telehealth Resource Center's "Telehealth Technology Tool Kit" for additional technical specifications to consider.<sup>12</sup>

#### CHALLENGE 2: DEVICE OR CONNECTION ISSUES EXPERIENCED BY THE CLINICIAN

The clinician may experience a range of unexpected technological issues, such as difficulty connecting to the videoconferencing platform, system wide program outages,

or an overloaded and slow computer. Especially when the clinician is providing telehealth services for the first time, there may be device compatibility issues and other unexpected barriers to initiating or completing videoconferencing sessions.

#### RECOMMENDATION 2: LEARN THE PLATFORM EXTENSIVELY BEFORE PROVIDING ANY SERVICES

Complete a series of test calls with colleagues and record some sessions to review before initiating services with clients. Attend trainings on how to use the platform. Practice troubleshooting through a range of simulated issues, including lack of client audio and/or video, disconnecting, and reconnecting, all while explaining the steps that a client may need to take. Clinician onboarding should include setting up these features and troubleshooting technical issues.<sup>13</sup>

#### CHALLENGE 3: DIFFICULTY MANAGING CLIENT EXPECTATIONS

Clients who choose to use videoconferencing for their sessions likely expect that this method will be easier and more convenient than in-office services. They may expect sessions to feel similar in tone and approach as traditional in-person sessions. However, regular clients are likely to experience at least one technical issue during their time receiving video-based services. This may be frustrating for those seeking a brief and straightforward care experience. Differences in the way that clinicians appear to the client over videoconferencing (e.g., tone, volume, and expression of emotion) may also negatively impact the way the client experiences sessions.

#### RECOMMENDATION 3: COACH CLIENTS FOR SUCCESS AND SATISFACTION

Before or during the first session, consider informing clients that technological issues will likely occur at least once during their time receiving services over the videoconferencing platform.<sup>14</sup> Work with the client to create a contingency plan with practical troubleshooting options to decrease the likelihood of future frustration.<sup>3</sup> If possible, establish a backup communication method (e.g., another video platform or a cell phone call) and a backup electronic device (e.g., a laptop, computer, or tablet) that can be used when facing challenges.<sup>13</sup> Encourage clients to reach out using these specific methods if they are unable to connect to a scheduled call.

In addition, set realistic expectations by informing clients that interactions may feel different over video than in person and encourage clients to let the clinician know if they need a different style of communication (e.g., louder or slower

speech). When reviewing the recorded clinician videos during training, notice how the video platform impacts the clinician's level of warmth, articulation, and empathy. Clinicians generally need to use an adjusted clinical style,<sup>2</sup> including exaggerating facial and verbal expressions to make sure they are visible.<sup>5</sup> They may need to talk more slowly and use more careful and deliberate communication strategies (e.g., taking turns to ensure equal participation in conversation) to prevent accidental interruptions during video sessions.<sup>15</sup>

**CHALLENGE 4: SOME CLIENTS MAY HAVE INCOMPATIBLE DEVICES OR POOR INTERNET CONNECTIONS AND BE UNABLE TO LOG IN OR USE VIDEO SOFTWARE**

Due to their electronic device(s), internet, or cell phone reception, the client might experience difficulty connecting to the video session. A client in this situation may appear to be failing to attend their scheduled appointment, despite their efforts to log in. This issue could affect attendance and session completion rates if not correctly identified as a log-in issue rather than a no-show to a scheduled session.

**RECOMMENDATION 4: BEGIN TROUBLESHOOTING WITH CLIENTS EARLY**

Before agreeing to provide video-based clinical services, assess whether telehealth is a fit for the participant's needs, skills, and resources. Prescreen for access to necessary electronic devices, noting whether phone models and operating system versions are compatible with the video platform. Consider downloading the platform and completing a test call with the client in person to ensure device compatibility and to assess the client's technological skills. In addition, provide clients with a written reference guide to the video platform and make it accessible through the clinician's website or other means, such as email. If a client does not have access to an adequate smartphone, they may benefit from a referral to free subsidized smartphones (e.g., Lifeline).<sup>8</sup>

**CHALLENGE 5: CLIENT IS UNABLE TO LOG IN TO SESSION DUE TO INADEQUATE INTERNET OR CELL PHONE RECEPTION IN THEIR LOCATION**

Clients need a steady Wi-Fi connection or adequate cell phone reception (to transmit data through the cell phone carrier) to participate in video sessions. Due to the flexibility of video-based appointments, some clients will elect to call in from a variety of different settings such as their car during their lunch break, a park bench before work, or other public locations. Often, these locations may not have consistently adequate access to Wi-Fi or cell phone reception.

**RECOMMENDATION 5: ENSURE THE CLIENT AND CLINICIAN ARE IN LOCATIONS WITH STABLE INTERNET ACCESS AND A BACKUP SOURCE**

Before or during the first session, it may be helpful to discuss where the client plans on logging in for sessions and then assess the connection quality in that location.<sup>3</sup> A bandwidth test, offered free online, can determine whether there is the minimum bandwidth of 384 kilobits per second (Kbps) recommended for videoconferencing services.<sup>13</sup> When possible, identify a backup internet source, such as an alternate network in the area or a cell phone that can be used as a personal hotspot in the event of issues with the primary source. When a client does not show up for a session, consider sending a text message or placing a phone call asking whether they are having any issues logging in to the videoconferencing platform to identify whether their location and internet access are preventing their attendance.

**CHALLENGE 6: AUDIO AND VIDEO TRANSMISSION AND SYNCHING ISSUES MID-SESSION**

Even if the client is able to log in to the session, they still may experience difficulty connecting and synching their video or audio, outages of either audio or video while the other continues normally, full disconnections, or illegible audio. This can lead to abruptly terminated or rescheduled sessions. These issues can be caused by factors, including poor bandwidth or cell phone signal, an overloaded computer system, or device and program incompatibility issues.

**RECOMMENDATION 6: TROUBLESHOOT ISSUES IN REAL TIME USING OTHER MODES OF COMMUNICATION**

If the client is able to log in but having issues connecting to the audio or video, verbally instruct them through the steps to resolve the issue in case they can hear you. In addition, send these instructions through text message or a built-in chat feature, if available. If the session disconnects completely, restart the session and similarly instruct the client verbally and/or through a message about how to reconnect.

If the video or audio quality is out of synch or one is frozen, consider turning off the video and completing the session with audio only to save bandwidth. If you have identified that the issue is due to poor Wi-Fi or cellular reception, consider contacting the participant through text, which can often be successfully sent, even in poor reception conditions. In addition, be aware that running several applications on the computer at the same time as the call can impact the system resources and increase the likelihood of bandwidth-related issues, so remember to close any unneeded websites before logging on to a call and consider asking the client to do the same if they are experiencing bandwidth-related issues.<sup>13</sup>

### CHALLENGE 7: UNSTEADY OR POORLY FRAMED VIDEO

Some clients may be using videoconferencing for the first time and lack experience maintaining a steady video camera. They may also struggle to keep the right angle throughout the session that allows the clinician to view their face. This can lead to difficulty seeing the client and perceiving essential visual clues during the conversation. In addition, the clinician may experience a feeling of dizziness during the session if the client is walking and has an unsteady background.

### RECOMMENDATION 7: COACH THE CLIENT THROUGH TECHNIQUES TO IMPROVE THEIR USE OF THE PLATFORM

Inform the client that you are having a hard time seeing them through video. If the client is positioned in a way where it is difficult to see them due to the surroundings, lighting, or excessive movement (e.g., walking while talking), consider specifically requesting the behavior change that would be helpful and state your rationale (e.g., “Would you mind sitting down and setting your phone on something to make it easier for me to see and hear you?”).<sup>13</sup> Changing the participant or clinician’s angle or distance from the camera by repositioning the electronic device can also improve the feeling of eye contact and connection over video calls.<sup>16</sup>

### CHALLENGE 8: DESPITE THOROUGH TROUBLESHOOTING, SOMETIMES IT WILL NOT BE POSSIBLE TO START A SESSION

There will be times where the client and/or clinician will be unable to adequately resolve technical issues, despite troubleshooting with several methods, including those described above. After using alternate methods to communicate about how to address the issue (e.g., sending a text message with clear instructions on how to initiate the audio connection), the issue may still persist and the session cannot be completed as planned.

### RECOMMENDATION 8: KNOW WHEN IT’S TIME TO SWITCH TO THE BACKUP PLAN

There will be times where a video-based session is not possible, even for the most technologically-savvy clients and clinicians. This may include times when the client decides to answer the video call in a community location (rather than their home) that is not ideal for completing a video session due to lack of privacy, internet access, or cellular reception. Alternately, the client may state that they are comfortable with the family members, friends, or other individuals who happen to be in the vicinity and can overhear or see the session and then later may regret this. To minimize client frustration and increase willingness to continue tele-

health services, be decisive and clear about your decision to end the video session and move to the backup plan and explain the purpose of ensuring a secure and audible call for both parties.<sup>3</sup> It may be helpful to verbally state, send a text message, and/or call to state that you will be ending the video call and will reach out in a few minutes using the backup method.

### CHALLENGE 9: SOME CLIENTS REPEATEDLY HAVE DIFFICULTIES USING VIDEOCONFERENCING TECHNOLOGY

While some clients may be able to easily complete video-based services, others may struggle with the same technical issues on multiple occasions. This may be due to their pre-existing level of technological competence, willingness to troubleshoot, access to internet or cellular reception, or other factors. When providing a series of sessions to the same client, it can be highly disruptive when similar technological issues occur during each session.

### RECOMMENDATION 9: PREVENT REOCCURRING ISSUES THROUGH LOGGING ISSUES AND FOLLOW-UPS

Consider creating a log of issues encountered on video calls, including the client’s location, known factors (e.g., lack of Wi-Fi), troubleshooting methods used, and the outcome of the session. Technical challenges are not unique to one individual, and effective troubleshooting strategies can be identified by reviewing this log. If a reoccurring issue is identified, it will likely be helpful to directly discuss this with the client and suggest ways that this can be avoided in the future (e.g., logging in from a different location or on Wi-Fi instead of cellular data). Keep these conversations friendly and constructive, as the client may be experiencing an anxiety-provoking learning curve with the technology.

## Discussion

Upon initiating the Y2TEC study, we reviewed academic publications and technical manuals to seek straightforward tips for addressing technical issues during video calls. We were unable to find a concise document to reference during our practice and while training new clinicians. Therefore, we initiated our own document by logging our experiences of disconnections, poor reception, malfunctioning phones, distracting background noises and lights, and other challenges to video-based services. Our time spent troubleshooting through these issues, along with completing a review of the current best practices’ literature on video-based telehealth, was instrumental in helping us find ways to mitigate challenges and continue to provide our research intervention. We have found



that quality of video-based counseling services can be greatly improved with minor intentional modifications in preparation and provision of services.

We have developed these recommendations in an attempt to transcend challenges related to specific contexts and software programs. However, these recommendations may be limited in their generalizability to other videoconferencing platforms, client populations, or geographic service areas. While the outlined challenges and recommendations require continued refinement by other clinicians and researchers, we believe that these recommendations may be helpful to those conducting video chat counseling in clinical practice and research settings.

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**REFERENCES**

1. Dinesen B, Nonnecke B, Lindeman D, et al. Personalized telehealth in the future: A global research agenda. *J Med Internet Res* **2016**;18:e53.
2. Jenkins-Guarnieri MA, Pruitt LD, Luxton DD, et al. Patient perceptions of telemental health: Systematic review of direct comparisons to in-person psychotherapeutic treatments. *Telemed J E Health* **2015**;21:652–660.
3. Luxton DD, Pruitt LD, Osenbach JE. Best practices for remote psychological assessment via telehealth technologies. *Prof Psychol Res Pract* **2014**;45:27–35.
4. Myers K, Turvey CL. *Telemental health: Clinical, technical and administrative foundations for evidence-based practice*. London: Elsevier, **2013**.
5. Henry BW, Block DE, Ciesla JR, et al. Clinician behaviors in telehealth care delivery: A systematic review. *Adv Heal Sci Educ* **2017**;22:869–888.
6. Jarvis-Selinger S, Chan E, Payne R, Plohman K, Ho K. Clinical telehealth across the disciplines: Lessons learned. *Telemed J E Health* **2008**;14:720–725.
7. Lozano BE, Birks AH, Kloezeman K, Cha N, Morland LA, Tuerk PW. Therapeutic alliance in clinical videoconferencing: Optimizing the communication context. In: Tuerk P, Shore P, eds. *Clinical videoconferencing in telehealth*. Cham: Springer, **2015**:221–251.

8. Lopez A. Social work, technology, and ethical practices: A review and evaluation of the National Association of Social Workers' Technology standards. *Soc Work Health Care* **2014**;53:815–833.
9. Shore JH, Yellowlees P, Caudill R, et al. Best practices in videoconferencing-based telemental health April 2018. *Telemed J E Health* **2018**;24:827–832.
10. Wootton A, Legnitto D, Gruber V, et al. A telehealth and texting intervention to improve HIV care engagement, mental health, and substance use outcomes in youth living with HIV: A pilot feasibility and acceptability study protocol. *BMJ Open* **2019**;9:e028522.
11. Mace S, Boccanelli A, Dormond M. The use of telehealth within behavioral health settings: Utilization, opportunities, and challenges. **2018**. Available at [www.behavioralhealthworkforce.org/wp-content/uploads/2018/05/Telehealth-Full-Paper\\_5.17.18-clean.pdf](http://www.behavioralhealthworkforce.org/wp-content/uploads/2018/05/Telehealth-Full-Paper_5.17.18-clean.pdf) (last accessed July 1, 2019).
12. California Telehealth Resource Center. The CTCRC Telehealth program developer kit: a roadmap for successful telehealth program development. **2014**. Available at <https://www.telehealthresourcecenter.org/wp-content/uploads/2018/09/Complete-Program-Developer-Kit-2014.pdf> (last accessed July 1, 2019).
13. American Telemedicine Association. Practice guidelines for video-based online mental health services. **2013**. Available at [https://www.integration.samhsa.gov/operations-administration/practice-guidelines-for-video-based-online-mental-health-services\\_ATA\\_5\\_29\\_13.pdf](https://www.integration.samhsa.gov/operations-administration/practice-guidelines-for-video-based-online-mental-health-services_ATA_5_29_13.pdf) (last accessed July 1, 2019).
14. Chang JE, Sequeira A, McCord CE, et al. Videoconference grief group counseling in rural Texas: Outcomes, challenges, and lessons learned. *J Spec Gr Work* **2016**;41:140–160.
15. Gros DF, Morland LA, Greene CJ, et al. Delivery of evidence-based psychotherapy via video telehealth. *J Psychopathol Behav Assess* **2013**;35:506–521.
16. Tam T, Cafazzo JA, Seto E, et al. Perception of eye contact in video teleconsultation. *J Telemed Telecare* **2007**;13:35–39.

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