VA Author Manuscript

VA Author Manuscript

VA Author Manuscript

Provider, Staff, and Patient Perspectives on medical Visits Using Clinical Video Telehealth: A Foundation for Educational Initiatives to Improve Medical Care in Telehealth

Ravi K. Gopal, MD[1,2], **Pooja Solanki, MPH**[3], **Barbara G. Bokhour, PhD**[4,5], **Natalia Skorohod, PhD**[3], **Deisy Anahí Hernandez Lujan, BS**[1], **WonJun Choi, BS**[3], **Howard S. Gordon, MD**[3,6]

[1.]Center of Innovation for Veteran-Centered & Value-Driven Care, Rocky Mountain Regional Veterans Affairs Medical Center, Aurora, CO

[2.]Department of Medicine, University of Colorado School of Medicine, Aurora, CO

[3.]Center of Innovation for Complex Chronic Healthcare, Jesse Brown Veterans Affairs Medical Center, Chicago, IL

[4.]Center for Healthcare Organization and Implementation Research, Edith Nourse Rogers Memorial Veterans Affairs Medical Center, Bedford, MA

[5.]Department of Health Law, Policy & Management, Boston University School of Public Health, Bedford, MA

[6.]Department of Medicine, University of Illinois College of Medicine, Chicago, IL

Abstract

Clinical Video Telehealth (CVT) use is increasing and allows geographically separated care; however, this separation may affect participants behaviors. Using semi-structured in-depth interviews, we asked CVT nurse practitioners (NP), staff and patients at a VA Medical Center about perspectives on how CVT effects communication and identified three themes. They remarked on the complexity of scheduling appointments, local barriers to care, and acutely ill patients. NPs discussed how CVT altered sensory collection during the physical exam and differences in building provider-patient relationships. Patients perceptions mirrored these themes. NPs identified how CVT requires different workflow, behaviors, and use of their senses. Patients expressed similar concerns with CVT.

Précis:

Corresponding author contact information: Ravi Gopal, MD, RMR VAMC, 1700 N. Wheeling St, Aurora, CO 80045, O: 720-857-5823 F:303-340-8045, Ravi.Gopal@va.gov.

CVT changes provider's workflow, behaviors, and use of senses to gather clinical data. Patients are aware of some the CVT's impact on care.

Keywords

ambulatory care; barriers to care; clinical video telehealth; communication; nurse practitioner

INTRODUCTION

Clinical video telehealth (CVT), one aspect of the spectrum of telehealth, is a real-time videoconferencing communication technology between two clinic locations that allows the delivery of health services when the patient and provider are geographically separated. CVT use is increasing, in part, to improve access to rural and underserved populations.[1,2,3,4] Telehealth has increased during the COVID-19 pandemic due to relaxed regulations and desire to provide care that does not endanger provider or patient. Nurse practitioners (NPs) are crucial to scaling up telehealth access during this unprecedented time.[5] The clinical experience of CVT may be different than the experience of in-person visits. The medical interaction in CVT is technology-mediated and limited to video and audio input. Compared with in-person visits, providers in CVT visits cannot touch or smell patients, and there are also visual and auditory differences. Because of these differences, providers and patients may need to alter their communication style, etiquette, and behavior.[6] Patients and providers may have more difficulty communicating and developing interpersonal relationships when they do not meet in person.[7] Though studies have found similarities in provider-patient communication between CVT and in-person visits, providers' experiences managing differences in the medical interaction in CVT is not well described.[8]

How providers manage the different sensory experience of CVT can influence the success of these medical encounters.[9] The sensory differences inherent to medical interactions in CVT may affect interpersonal communication. Understanding providers' perspectives about these differences may be critical to the efficacy and adoption of CVT.[10] Providers who understand the sensory limitations introduced with CVT must modify their "webside manner" to improve their own and the patient's experience.[11] Providers need to modify clinical behaviors, for example, in CVT parts of the physical exam are either not performed or are delegated to the patient or remote personnel.[12] Also, providers need to adapt to sensory differences in CVT because senses such as touch provide less information hence visual and auditory sensing gain more importance.

We sought to explore the experiences of providers using CVT to better understand the technical, social, and personal factors associated with using this technology in medical interactions with patients. We also sought to explore how patients' experiences communicating in a CVT visit compare and contrast to provider experiences. Gaining insight into provider experiences using CVT may provide a foundation for developing educational initiatives to improve medical care in CVT and other telehealth visits.

METHODS

Study Design

We conducted a qualitative interview study of providers, support staff, and patients experienced with CVT medical care to understand their perspective on CVT medical visits. This study is part of a larger study to design an intervention to improve patient-provider communication in CVT settings.[13] The study was approved by the VA Central Institutional Review Board (#14-22).

Participants and Setting

We identified and invited primary care and endocrinology providers and staff experienced in CVT at a single Veterans Affairs Medical Center to participate in the interviews. Provider and staff participants must have participated in at least one CVT visit with a patient with type 2 diabetes mellitus. The medical center is a large urban medical center serving a far-reaching rural community. We also conducted additional interviews with Veterans who resided in a rural area, had a diagnosis of Type 2 diabetes mellitus, HbA1c 7.0, were age 18 years or older, had at least one CVT visit, and participated in the larger study on physician-provider communication. We excluded those patients with drug induced diabetes, dementia, a terminal medical condition with life expectancy less than 6 months, those who lived in a skilled nursing facility, and those with inadequate telephone sound quality or severe hearing impairment preventing successful completion of a telephone interview. The semi-structured in-depth telephone interviews were conducted by research staff trained in qualitative interviewing (RG, DHL). Participants provided informed consent for the study prior to their interview.

Data Collection

We developed interview questions for providers, CVT staff, and patients to gain participants' perspectives on facilitators and barriers to communicating using CVT technology in comparison with in-person visits. Facilitators and barriers to communicating included internal and external influences on the medical interaction and the non-verbal and verbal communication of providers, staff and patients (Figure 1).[14] Interview questions were developed by an expert panel of physicians and scientists and from the review of the literature. The interview questions were revised after the group reviewed and discussed each of the first four interview transcripts. Providers were asked to recall their first experience conducting a CVT visit and what techniques they learned after conducting multiple CVT visits. Interview questions included the role of technology and how one accomplishes the physical exam in CVT (Supplemental Table 1). Patients were asked about their experience communicating with the provider in a CVT visit compared with an in-person visit. Interviews were audio-recorded and transcribed verbatim. Participants were recruited for interviews until we reached thematic saturation.

Data Analysis

Transcripts were coded using a grounded theory approach, in which open coding is used to identify key concepts emerging from the text.[15] All authors discussed the key

concepts, identified codes, and established a coding dictionary using the initial four provider transcripts. The authors separately read and coded each transcript and each researcher noted thematic categories throughout a particular transcript, especially in relation to the main research question of participants' perspectives on barriers and facilitators to communicating in CVT compared with in-person visits. All authors then discussed the initial four transcripts on a line-by-line basis and provisionally agreed on and defined each code. Subsequent transcripts were coded by two authors (PS and RG), and discrepancies were resolved through discussion among all authors. As additional interviews were coded all authors met regularly to decide whether to add codes and edit codes in the coding dictionary. Atlas.ti (version 7.5.16) was used to sort and organize codes. Using the constant comparison method codes were then condensed into distinct themes. Coherence, credibility, and strength of those interpretations were achieved with multidisciplinary triangulation among the authors. Interviews were conducted until thematic saturation was achieved.

RESULTS

We invited 26 CVT health care providers, 17 CVT personnel and 16 patients who completed a CVT visit to participate in interviews. We interviewed nine CVT providers (seven of the nine providers were nurse practitioners), eight CVT staff, and nine patients. From the provider interviews, we identified three themes regarding how CVT changes providers' work and evaluated patients' perspectives related to those themes. The first theme identified several logistical challenges arising from coordinating visits and communicating with staff and patients across two sites. The second theme identified how CVT changed the way sensory information was collected during the physical exam. The third theme identified how differences in the sensory experience of CVT providers changed their communication style and behaviors used to build the provider-patient relationship. Patient perceptions mirrored these themes. The three themes are described below and in corresponding tables.

Theme 1: CVT is more logistically challenging because of the coordination required between multiple locations.

CVT providers identified how logistical complexities in CVT due to differences in location influence medical interactions (Table 1). Providers reported that compared with an in-person visit, appointment scheduling in CVT visits was less flexible because it requires facilities to be available at two locations rather than one. These interlocking schedules limited a provider's ability to extend a clinic visit to match the complexity of medical problems and limited flexibility when there were delays. Providers developed work arounds to make visits more effective. They worked around the rigid scheduling by preparing the day before for visits. Perhaps because of providers preparation, patients did not feel rushed during the visit. Providers indicated there were challenges coordinating and communicating with staff at the remote site, noting concerns that the patient had to wait when there was a delay in connecting to rural clinics, but the patients did not believe the delays impacted their visit (Table 2). Other concerns were uniquely noted by providers. For example, having to work with several clinic sites, some CVT NPs reported needing contingencies to resolve issues for complicated and acutely ill patients, during and between visits (Table 1).

Theme 2: Providers changed how they collected sensory information from the physical exam.

Providers interviewed noted a different sensory experience with the physical exam in CVT and their reliance on technology and remote staff changed how they work compared with in-person visits (Table 1). Although providers and staff described equipment such as close-up cameras and stethoscopes which have capabilities (e.g. higher sensitivity and imaging resolution) not usually available in an in-person visit, providers also noted challenges in the medical interaction such as limited views and not being able to use all their senses to examine their patient. There were challenges relying on CVT staff to complete the physical exam due to varying skills and knowledge or ability to communicate the needed sensory information. Furthermore, providers who work in multiple CVT clinics may not know each CVT staff's qualifications. Patients were also concerned about providers' ability to fully conduct a physical exam for findings such as a rash (Table 3).

Though CVT does not allow tactile sensing when completing a physical exam, providers learned that barriers may be reduced with qualified staff. Providers described delegating the physical exam to CVT staff who "become the hands of the doctor." One NP provider described, "They're like my fingers." One patient was impressed with how the nurse was able to "carry out the wishes of the doctor" (Table 3). Some providers believed that patients received more attention during CVT visits compared to in-person visits, saying that patients could interact with both provider and the CVT staff and/or telehealth Clinical Technician (TCT) personnel. One TCT said, "they [patients] feel like it's real one-on-one attention." (Table 3)

Theme 3: Providers noted that CVT presented sensory challenges to building a relationship.

The CVT providers and staff in our study reported several challenges using their senses of sight, smell, hearing, and touch when communicating with patients via CVT. (Table 4). For example, the traditional greeting with a handshake that begins or continues a trusting relationship must be accomplished with verbal and non-verbal communication. Providers stated the physical distance made it difficult to develop a relationship, and patients said telehealth may not be personal enough to develop a relationship with the provider (Table 4). In addition, providers raised concern about missing patients' body language because the typical camera view includes only the upper body. This missed body language may alter the providers' impression of what the patient is trying to communicate. Providers noted a need to be more deliberate themselves, needing to pay more attention to their own communication behaviors than in traditional in-person visits. Providers felt that it was harder for them to maintain eye contact. Looking at the camera to make eye contact during CVT was not a natural skill. Because the camera location may be offset from the screen, the more natural behavior of looking "directly" at the patient on the screen has the effect from the patients' perspective of making the provider appear to be looking away from the patient. Patients explained they had to speak louder to get the provider's attention because the provider was looking away from the camera (Table 4). Another sensory challenge was not being able to readily assess if they are effectively communicating with their patients. For example, providers might miss body language indicating patients could not hear or see something.

Providers had to ask patients to let them know if the technology was not working (Table 1). Nonetheless, providers and staff also suggested that telehealth may facilitate communication because patients are less stressed from issues with travel to and parking at a large hospital outpatient clinic site.

Because CVT providers and staff perceived barriers providing education and demonstrating procedures to their telehealth patients, they developed alternative methods to educate their patients. In CVT, simply handing their patients educational handouts or an aftercare summary is not possible. Providers developed work-arounds to this challenge by sending CVT technicians the information to print locally or mailing the resources directly to the patient (Table 1). Communicating on CVT challenged usual teaching methods such as using touch and feel to demonstrate, for example, how to self-administer insulin, and patients with vision or hearing impairments sometimes struggled with communication during CVT particularly when they forgot their sensory aids. Not only does CVT impact providers' use of their senses in a medical visit, but also impacts the patients' sensory ability to get the most from their visit. Providers' and staff's comments highlighted how CVT changes the use of their senses compared to in-person visits and how these differences impose unique considerations in delivering care remotely.

DISCUSSION

In this qualitative study we interviewed telehealth providers, staff, and patients about experiences using CVT to describe the factors associated with using this technology. Our insights may provide a foundation for developing educational initiatives to improve medical care in CVT and other telehealth visits. We identified three themes based on providers experience that describe differences in the medical interaction between CVT and in-person visits. The first theme identified how CVT visits were more complex due to the decreased flexibility from the rigid scheduling and coordination between two clinical sites. The next two themes identified the impact of CVT on providers' sensory experiences. The second theme describes how CVT limits providers' use of their senses to conduct a physical exam compared with in-person visits. The third theme reflects providers' statements concerning the increased effort needed to build a provider-patient relationship due to CVT limiting their sensory experience. Our findings suggest that communicating on telehealth is not just learning how to use an innovative technology, but includes the added challenges of coordinating visits with a less flexible schedule, relearning how to collect information about physical findings, and recognizing how sensory differences in the technology-mediated medical interaction change providers' practices. Patients in our study also experienced parallel challenges using CVT technology and they highlighted concerns about the adequacy of the physical exam and developing trust.

Our study adds to the literature describing CVT by identifying provider's perceptions of the complexity caused by geographic separation of the provider and patient. Unlike a traditional clinic, CVT requires scheduling rooms at two sites, one HIPAA compliant CVT enabled office for the provider and one CVT enabled clinic room with examination tools. Patient examination rooms may be scheduled sequentially with different providers. These scheduling differences limit the flexibility of providers to extend visits for complicated or

late arriving patients. When there was difficulty communicating between sites, providers struggled to determine if patients were ready to be seen, resulting in late starts and shortened visits and struggled to get clinical assistance. Providers also reported increased complexity determining how to order tests for patients since each clinic's local resources vary. Though CVT has benefits such as improved access to care, external influences on the CVT visit create challenges for the medical interaction between patient, provider, and support staff (Figure). Certain challenges providers experience affect how they work, but may not impact the patient's CVT experience. For example, patients may not be bothered by technical delays. Patients did not express concern about the CVT personnel's varying skills but were impressed with their ability to answer questions and carry out the NPs' requests. However, certain challenges like lack of eye contact did impact the patient's CVT experience. Alerting patients when they have to look away from the camera would be one way providers could improve the patient experience.

Our study also adds to the literature examining communication in telehealth by highlighting how the sensory experience is crucial to medical interactions (Figure). Communication is not just verbal, but also involves sending and receiving nonverbal cues that are observed by sight (body language), hearing (paralanguage), touch (haptics), and even smell. Providers in our study identified the importance of monitoring their own body language (making eye contact via looking at the camera) and understanding that their own observations of patients' non-verbal communication are limited by the standard camera view of only the upper body of their patients. Providers also felt the technology created a barrier in educating their patients since they could not simply hand them written information or demonstrate using a hands-on approach. Providers with CVT experience reported changing their behaviors or creating work-arounds to overcome these challenges. For example, providers can prepare for visits beforehand to account for less time flexibility. Providers and staff also felt CVT may sometimes improve patients' communication because they did not have to travel long distances to the urban medical center, and as a result may be less tired or stressed. Both providers and patients found it helpful to have a technician or nurse in the room because they increased attention to the patient.

CVT also affects the sensory input available for a CVT provider to physically examine their patients. Providers are limited to only two of their senses and these may be further limited by the quality of the electronic transmission. They must rely on technology and the remote staff to assist in their formal physical exam. Further, the skills and training of the staff vary from clinic to clinic. Though the technology helps, it does not fully replace an in-person exam where providers get traditional sensory inputs (e.g., touch and smell) about their patients. The providers also report missing parts of the informal physical exam such as seeing the patient walk into the room, shaking their hand, and watching their mannerisms. Patients also had concerns about the adequacy of the physical exam. Guidelines are needed to assist providers for deciding on when and the urgency of referral for an in-person examination.

Though few studies have evaluated the provider's experience in the CVT setting, our findings are consistent with prior research that identified logistical barriers to CVT care including scheduling complexities, communication with staff at remote sites, and not

completing a physical exam or relying on staff to complete physical exams.[16–18] Studies have found that verbal communication can be significantly impacted by CVT. In a study comparing in-person to CVT visits, analysis of the recorded visits showed patients more frequently asked for physicians to repeat themselves suggesting difficulty with audio communication.[19] In our study, providers commented about the importance of encouraging patients to speak up about any technical difficulties, and providers also noted the importance of verbal communication because non-verbal communication may be missed over CVT. In an experimental study comparing communication in CVT vs. in-person visits, providers were less satisfied with CVT because they could not understand what was on the patients' mind and felt it was harder to connect with their patients and build a relationship.[20] Experienced CVT providers in our study further describe the importance of developing the unique skills to be effective in seeing patients at remote locations. The current literature looking at provider experiences with CVT shows that providers that have mastered the clinical situation are satisfied with this clinical setting.[21]

This study had several limitations. Most of the providers interviewed were nurse practitioners, thus, it is possible our results may have differed if we interviewed more physicians. Second, the providers are all focused in internal medicine related practice, limiting our evaluation of other specialties. However, all health care providers rely on the same ability to communicate and examine patients. Third, the interviewed participants are all employees of or patients affiliated with a single Veteran Affairs Medical Center so our results might not generalize to other VA providers, non-VA providers, or other patients. Finally, we focused on care in CVT and not telehealth directly with patients on the their own smart devices, which may have different challenges. Despite these limitations, the interviews are a notable strength of this study because they provide rich data from multiple perspectives on the barriers and facilitators of communicating via CVT and provides novel insights to how CVT influences providers' sensory experiences. Another notable strength is the perspectives our study provides on the CVT experience and its timeliness when telehealth is increasingly utilized due to the COVID-19 pandemic and will likely become a new paradigm particularly for nurse practitioners and the Veteran Affairs Health Care System.[22]

Our study data suggests how providers and health systems might make improvements in the quality of CVT patient-provider interactions. Logistical barriers may be reduced by improved communication and teamwork among staff at different sites. This might include occasional travel so staff could meet in person, train together, and learn specifics about distal sites. Barriers to providers providing patient education could be reduced with educational resources for patients that the provider could edit or mark-up and then print at the patient site. Providers, especially those new to CVT, could benefit from educational resources to teach best practices to navigate logistical complexities coordinating with a distant site and to develop communication styles conducive to building a relationship (e.g., "webside" manner).[23] Also, learning to compensate for the inherent limitations on their senses of conducting a CVT visit and performing a physical exam with the assistance of local staff and patients.[24] Furthermore, the data may help health care systems efforts to increase adoption of telehealth. Systems that prioritize reducing logistical barriers, work to improve communication between sites and respective staff, and ensure use of equipment that facilitates verbal (e.g., clear audio) and non-verbal communication (e.g., eye contact)

will improve provider and patient satisfaction and desire to use telemedicine technologies such as CVT or telemedicine direct to patients' homes. For example, health care systems might streamline ways to provide patients with written material, develop contingencies for acutely ill patients, and arrange and maintain equipment so that the provider can appear to maintain eye contact with the patient. As CVT is increasingly used to improve access for rural patients, reduce patients' travel times, allow for social distancing, and to open other opportunities for remote medical care delivery, more providers and patients will need the specific skills to be effective in this virtual environment.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgements:

REFERENCES:

1. Bashshur RL, Armstrong PA, and Youssef ZI eds. Telemedicine: Explorations in the Use of Telecommunications in Health Care. Springfield, IL: Charles C Thomas; 1975.

2. Field MJ eds. Telemedicine: A Guide to Assessing Telecommunications for Health Care. Washington, DC: National Academy Press; 1996.

3. Park J, Erikson C, Han X, Iyer P. Are State Telehealth Policies Associated with the Use Of Telehealth Services Among Underserved Populations?Health Aff. 2018;37(12):2060–2068.

4. Adams SV, Mader MJ, Bollinger MJ, et al.Utilization of Interactive Clinical Video Telemedicine by Rural and Urban Veterans in the Veterans Health Administration Health Care System. J Rural Health. 2019;35(3):308–318. [PubMed: 30600557]

5. Henderson K, Davis TC, Smith M, King M. Nurse Practitioners in Telehealth: Bridging the Gaps in Healthcare Delivery. J Nurs Pract. 2014; 10: 845–850.

6. Chua IS, Jackson V, Kamdar M. Webside Manner during the COVID-19 Pandemic: Maintaining Human Connection during Virtual Visits. J Palliat Med. 202023(11):1507–1509. [PubMed: 32525744]

7. Yudkowsky R, Valdes W, Raja S, Kiser R. Assessing residents' telehealth communication skills using standardized patients. Med Ed. 2011;45(11):155.

8. Dalley D, Rahman R, Ivaldi A. Health Care Professionals' and Patients' Management of the Interactional Practices in Telemedicine Videoconferencing: A Conversation Analytic and Discursive Systematic Review. Qual Health Res. 2020 doi: 10.1177/1049732320942346. Epub ahead of print.

9. Lupton D, Maslen S. Telemedicine and the senses: a review. Sociol Health Illn. 2017;39(8):1557–1571. [PubMed: 29071731]

10. Zanaboni P, Wootton R. Adoption of telemedicine: from pilot stage to routine delivery. BMC Med Inform Decis Mak. 2012;12(1):1–9. [PubMed: 22217121]

11. Gustin TS, Kott K, Rutledge C. Telehealth Etiquette Training: A Guideline for Preparing Interprofessional Teams for Successful Encounters. Nurse Educ. 2020; 45(2):88–92. [PubMed: 31022072]

12. Weinstein RS, Krupinski EA, Doarn CR. Clinical Examination Component of Telemedicine, Telehealth, mHealth, and Connected Health Medical Practices. Med Clin Noth Am. 2018;102(3):533–544.

13. Gordon HS, Solanki P, Bokhour BG, Gopal RK. "I'm Not Feeling Like I'm Part of the Conversation" Patients' Perspectives on Communicating in Clinical Video Telehealth Visits. JGIM. 2020; 35(6) 1751–58. [PubMed: 32016705]

14. Street RL. Communication in Medical Encounters: An Ecological Perspective. In Thompson TL, Dorsey AM, Miller KI, Parrott R eds., Handbook of Medical Communication. Mahwah, NJ: Lawrence Erlbaum Associates; 2003.

15. Chapman AL, Hadfield M, Chapman CJ. Qualitative research in healthcare: an introduction to grounded theory using thematic analysis. J R Coll Physicians Edinb2015;45(3):201–5. [PubMed: 26517098]

16. Fatehi F, Gray LC, Russell AW. Telemedicine for clinical management of diabetes - a process analysis of video consultations. J Telemed Telecare. 2013;19(7):379–82. [PubMed: 24218349]

17. Flodgren G, Rachas A, Farmer AJ, Inzitari M, Shepperd S. Interactive telemedicine: effects on professional practice and health care outcomes. Cochrane Database Syst Rev. 2015;7:1–555.

18. Martinez RN, Hogan TP, Balbale Set al.Sociotechnical Perspective on Implementing Clinical Video Telehealth for Veterans with Spinal Cord Injuries and Disorders. Telemed J E Health. 2017;23:567–576. [PubMed: 28067586]

19. Agha Z, Roter DL, Schapira RM. An Evaluation of Patient-Physician Communication Style During Telemedicine Consultations. J Med Internet Res. 2009;11: e36. [PubMed: 19793720]

20. Liu W, Saxon DR, McNair B, et al.Endocrinology Telehealth Consultation Improved Glycemic Control Similar to Face-to-Face Visits in Veterans. J Diabetes Sci Technol. 2016;10:1079–86. [PubMed: 27170633]

21. Becevic M, Boren S, Mutrux R, et al.User Satisfaction With Telehealth Study of Patients, Providers, and Coordinators. 2015;34:337–349.

22. Gardenier D, Ballard-Hernandez J, O'Donnell M. Is telehealth here to stay?J Nurs Pract202110.1016/j.nurpra.2020.12.0081555-4155/ epub ahead of print.

23. Rutledge CM, Kott K, Schweickert PA, et al.Telehealth and eHealth in nurse practitioner training: current perspectives. Adv Med Educ Pract. 2017;8:399–409. [PubMed: 28721113]

24. Benziger CP, Huffman MD, Sweis RN, Stone NJ. The Telehealth Ten: A Guide for a Patient-Assisted Virtual Physical Examination. Am J Med. 2020;134:48–51. [PubMed: 32687813]
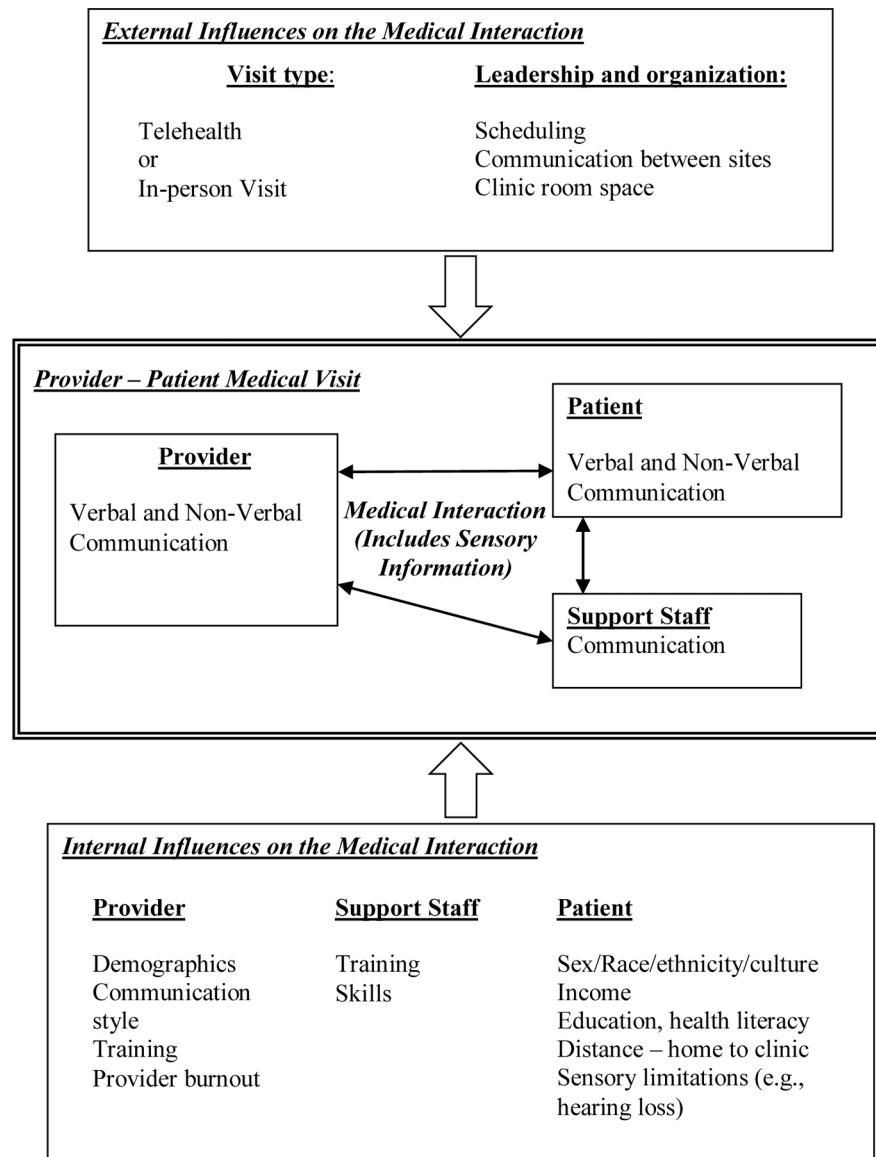
External Influences on the Medical Interaction

Visit type:

Telehealth
or
In-person Visit

Leadership and organization:

Scheduling
Communication between sites
Clinic room space

Provider – Patient Medical Visit

Provider

Verbal and Non-Verbal
Communication

Medical Interaction (Includes Sensory Information)

Patient

Verbal and Non-Verbal
Communication

Support Staff
Communication

Internal Influences on the Medical Interaction

Provider

Demographics
Communication style
Training
Provider burnout

Support Staff

Training
Skills

Patient

Sex/Race/ethnicity/culture
Income
Education, health literacy
Distance – home to clinic
Sensory limitations (e.g., hearing loss)

Figure.
External and Internal Influences on Medical Interactions.

Table 1.

Provider Quotes

THEME 1 – CVT IS MORE LOGISTICALLY CHALLENGING	
SUBTHEME	**Illustrative quote(s)**
Limited time flexibility during visits	*"When we're doing in person visits, [and] the patient shows up late I can say, okay I'll just stay a little bit later and see him. But if he shows up way too late [for the CVT visit], the TCT will say, …'we can't accommodate any more [patients].' "*
	(A05)
Providing care for acutely ill patients	*"If you have a patient have a seizure on the other end and nobody answers the phone at that site and when you're trying to get help because they went to the bathroom. So, it's important to kind of come up with Plan A and Plan B in those situations."*
	(A12)
THEME 2 - CHANGES TO COLLECTING SENSORY INFORMATION FROM THE PHYSICAL EXAM	
SUBTHEME	**Illustrative quote**
Reliance on remote staff	*"They're going to have to manipulate the light so we can see in their mouth. They're not always the most confident in what we're asking them to do."*
	(A05)
THEME 3 – SENSORY CHALLENGES IN CVT TO BUILD A PATIENT-PROVIDER RELATIONSHIP	
SUBTHEME	**Illustrative quote(s)**
Using same technology to communicate a problem	*"I know that at the beginning I need to tell them, if something should happen during this [telehealth visit], you have to speak up and not just sit there."*
	(A09)
Challenges educating patients	*"One thing that I found challenging with CVT is when I need to show somebody something like in person. For instance, … on how to administer insulin, and so it can be a little bit tricky if they don't have… the actual same thing on their end to practice with."*
	(A03)

Table 2.

Compare/Contrast Theme 1- CVT is logistically more challenging

Provider Quotes	Patient Quotes
Provider does not have a problem with audio quality.	**Patient does not have a problem with audio and visual quality.**
"I think 95% of the time the patient hears me fine or they are able to control the volume to hear adequately." (D01)	*"I say um, once it starts uh, it goes through good, you know the, visual and the audio part is uh, real comfortable to me, I don't have to squint or Um, ask again them to repeat"* (P089)
Patients may find CVT visits challenging because of sensory impairments such as difficulty hearing.	**Although patients may have hearing impairments, they did not have a problem with audio or visual quality.**
"If they have a hearing issue that may cause a problem with them really feeling comfortable with it." (A08)	*"I got to remember to put my hearing aids in when I go, and I hear better of course, … I'm fairly close to the screen, so I see them very well, and hear them very well."* (P089)

Table 3.

Compare/Contrast Theme 2- Providers changed how they collected sensory information from a physical exam

Provider quotes	Patient quotes
Provider is concerned about doing parts of the physical exam.	**Patient is concerned he or she cannot show the provider certain physical problems over CVT.**
"… I can't touch them, it's difficult to see fine details. I can't smell them. I mean, that may sound crazy but you use all your senses in a visit." (A04)	*"in person you can point at least or show, somebody, you know, a physical, like a rash or whatever, something like that and let them see it."* (P274)
Provider relies on CVT personnel to conduct physical exams.	**Patient is impressed with how CVT personnel help the provider conduct aspects of the physical exam.**
"I'll ask them to touch it. Does it feel hot, does it feel cold, does it feel mushy, that kind of thing. And … they're able to help out in that way. So, they're like my fingers." (A10)	*"Well that was what I was impressed the most with. … for the nurse to carry out the wishes of the doctor on the other end. I didn't realize the technology was there for her to…, listen to my heart and do all that stuff in real time. Uh, I was very surprised about that technology."* (P188)
TCT states CVT personnel are helpful and make the patient feel more comfortable with telehealth.	**Patient states the CVT personnel is helpful.**
"They like the interaction with the tele-presenter as well. So, they've got essentially the attention of both their provider and their tele-presenter with them in that room. …they feel like it's real one-on-one personal attention." (C04)	*"With the video assistant there, the video assistant can see and know what is going on as well too. It's really good because you can talk to them and they can answer your questions."* (P167)

Table 4.

Compare/Contrast Theme 3- Sensory challenges in CVT to build a patient-provider relationship

Provider quotes	Patient quotes
Provider thinks physical distance makes it harder to build a relationship. "*Reaching that warm hand and a smile saying 'Hi, how you doing today?' Those things matter and I think they create relationship.*" (A06)	**Patient does not think that telehealth is personal enough to express his/herself.** "*Well uh, to me it doesn't seem personal enough. You know you can't tell her, you know, the true, your gripe, because you can't explain a lot of things..*" (P190)
Provider needs to deliberately build a relationship with the patient. "*…telemedicine is not just turning on a screen and seeing somebody for 30 minutes and never thinking about them again. You've got a commitment to your patients.*" (D04)	**Patient explains the provider is open to listen to what is going on in the patient's life.** "*…in telling her what's going on outside of medical and also this, it's really good and it's really handy because they understand, and they know what you're going through in your lifestyle and also your family and your relationships.*" (P167)
Provider states making eye contact with the patient is important. "*Providers need to make eye contact through the camera – which is not always intuitive, and explain when they need to turn their head away for a minute.*" (A11)	**Patient explains the provider was not attentive and the patient had to speak up to be heard.** "I remember when I had my video conference the doctor was really focused on the screen and you really had to speak up and make your point so that she could hear you." (P248)