MAYO CLINIC

ORIGINAL ARTICLE

Beyond Convenience: Patients' Perceptions of Physician Interactional Skills and Compassion via Telemedicine

Tania Elliott, MD; Ian Tong, MD; Arwen Sheridan, MPH; and Beth A. Lown, MD

Abstract

Objectives: To understand the interpersonal and communication behaviors that are perceived positively by patients in a video encounter and whether patient-centered relationships can be established virtually.

Patients and Methods: A qualitative analysis of patient visit feedback was performed to build consensus around exemplary interpersonal and communication practices during a virtual urgent care visit. Voluntarily submitted patient comments associated with a 5-star review after a visit were randomly selected from more than 49,000 comments in an 11-month period, from January 1, 2016, through November 30, 2016. Researchers used a consensus-based, widely used health care communications framework as a sensitizing scaffold to develop a preliminary set of codes.

Results: More than 30% of the comments coded were classified as Building Rapport. The next most frequently assigned code was Shares Information/Provides Guidance. Among codable comments, the third most frequently assigned code was Elicits Information. Provided Treatment accounted for only 2% of comments.

Conclusion: These results suggest that patients who are satisfied with telemedicine encounters appreciate their relational experiences with the clinician and overall user experience, including access and convenience. Highly satisfied patients who interacted with providers on this platform commented on key aspects of medical communication, particularly skills that demonstrate patient-centered relationship building. This supports the notion that clinician-patient relationships can be established in a video-first model, without a previous in-person encounter, and that positive ratings do not seem to be focused solely on prescription receipt.

 ■ Mayo Clin Proc Inn Qual Out 2020;4(3):305-314

The global telehealth market has skyrocketed in recent years, and its value is expected to reach $130 billion by 2025.[1] Most respondents in 1 survey of large employers indicated that they are expanding access to virtual care among employees, and it is projected that by 2020 almost all large employers will be using telemedicine.[2,3] Telehealth—delivering care synchronously and remotely by using telecommunication systems,—has the potential to aid the pursuit of the "triple aim of health care": improving population health and patients' experiences of care while reducing costs. Researchers have begun to analyze the impact of telehealth on health outcomes, care access, and satisfaction, some of which we summarize later herein. Little is known, however, about the interpersonal communication aspects of telehealth that contribute to patients' experiences of care.

Emerging studies have demonstrated similar health outcomes for patients whether delivered in person or synchronously by a remote provider for various conditions. A 2015 Cochrane systematic review examined the impact of telehealth involving remote monitoring or videoconferencing compared with in-person or telephone visits for chronic conditions, including diabetes and congestive heart failure. This review found similar health outcomes for patients with these conditions. Similarly, studies that included participants with mental health and substance use issues reported no between-group differences for therapy delivered in-person compared with

From NYU Langone Health, New York, NY (T.E.); Department of Medicine, Stanford University School of Medicine, Stanford, CA (I.T.); Doctor On Demand, San Francisco, CA (A.S.); Department of Medicine, Harvard Medical School, Boston, MA (B.A.L.); Department of Faculty Development, Mount Auburn Hospital, Cambridge, MA (B.A.L.); and The Schwartz Center for Compassionate Healthcare, Boston, MA (B.A.L.).

videoconferencing.[4] In addition to noninferiority of health outcomes, telemedicine may be able to expand access to care, especially in nonmetropolitan areas.[5] In the United States, Medicare and Medicaid patients wait an average of 32 days for a new patient dermatology appointment, and more than half of US and Canadian adults report that they are unable to schedule a same- or next-day appointment with their primary care physician.[6,7] Average travel time to appointments totals 37 minutes, with an additional 64 minutes spent in the clinic not seeing a physician.[8]

Overall, patients report high levels of satisfaction with telemedicine encounters, especially as they relate to improved health outcomes.[9] In a study of synchronous video vs in-person encounters in an outpatient ambulatory care clinic setting, 95% of patients were very satisfied with the quality of the health care they received and rated telehealth as better than or just as good as a traditional visit.[10] Another study of more than 20,000 telemedicine encounters from a large direct-to-consumer telemedicine practice found that 85% of patients were satisfied with their encounter. Prescription receipt and coupon use (eg, "first visit free") were associated with the highest odds of patient satisfaction; however, the authors acknowledge only a small absolute difference in star rating.[11] This raises the issue of adherence to guideline-based practice, particularly antibiotic drug prescribing by direct-to-consumer telemedicine, but suggests that other factors, such as clinician-patient relationship, may also influence patient rating. Guidelines for clinical telemedicine encounters have been proposed by the American Telemedicine Association. They recommend that several quality review metrics be routinely assessed, including equipment or connectivity failures, number of attempted and completed visits, patient and provider satisfaction and complaints, measures of whether the visit was appropriate for a virtual encounter, and adherence to established standards of care, such as Healthcare Effectiveness and Data Information Set measures for antibiotic drug prescribing.[12]

Although cost savings, access, and convenience are important, these factors are not meant to supplant the importance of a clinician-patient relationship. A survey of a random sample of the adult US population showed a preference for telemedicine care delivery by physicians with whom they have an established relationship. Fifty percent of respondents were willing to see their own primary care provider via telemedicine, whereas only 17% reported willingness to see a provider from an unaffiliated health care organization. Of those survey respondents, only 3.5% reported having a telemedicine encounter.[13] Nevertheless, this highlights the perceived importance of the clinician-patient relationship in new forms of care delivery and the need for policy considerations to balance the benefits of telemedicine against any potential risks for patients.[14] Two large academic institutions offer a telemedicine training program, but it is largely focused on the administrative, information technology, and data collection aspects of telemedicine.[15] Furthermore, limited research exists to assess whether patient satisfaction with a telemedicine visit is correlated with specific interpersonal and communication skills of the clinician, key components of patient-centered care.[9] Essential elements of patient-centered health care communication have been widely discussed, and many skills are now assessed in the US Medical Licensing Examination.[16,17] Whether or how relationships can be established virtually in the moment or in treating clinical conditions over time is an area ripe for research.

This study describes a qualitative analysis of patient feedback on interpersonal communication skills displayed by the treating physician after video visits in a national telemedicine practice. This research is an important first step in unpacking which aspects of video-based interactions foster clinician-patient connection and satisfaction. Such research is essential in formulating educational curricula to ensure that synchronous video telemedicine visits preserve the core competencies required to build and preserve safe, high-value, effective, and compassionate care delivery.

METHODS

Type of Research

We performed a qualitative analysis of patient visit feedback with the purpose of building consensus around exemplary interpersonal and communication practices during a virtual

Mayo Clin Proc Inn Qual Out ■ June 2020;4(3):305-314 ■ https://doi.org/10.1016/j.mayocpiqo.2020.04.009
www.mcpiqojournal.org

urgent care visit from the patients' point of view. Researchers chose an appreciative inquiry approach, reviewing the feedback and comments of patients for the physicians whom patients consistently rated highest in terms of their satisfaction with a visit. This approach focused on individual strengths to enable the articulation of ideal practices and to later design methods to achieve them. Appreciative inquiry has been used by leaders, managers, and educators to optimize performance.[18] This study was approved by the Massachusetts General Hospital institutional review board.

Type of Visits

All visits were video only, via a proprietary platform available via smartphone, tablet, or computer. All encounters were on-demand (not scheduled) and initiated by the patient. The study did not filter for first-time or repeat users of the service. Clinicians were all board certified in family medicine, internal medicine, medicine-pediatrics, or pediatrics. Behavioral health encounters were excluded. Patients had never seen these clinicians outside of a video encounter.

Sampling Strategy

Sampling was conducted by randomly selecting comments left after a virtual urgent care visit with a physician as part of a national, commercial video-based telemedicine practice.[19] After a patient completed an encounter, he or she was prompted to select a star rating of 1 through 5 (1 = least satisfied; 5 = most satisfied) and to provide any additional comments about the visit in a free-text field. There were no word or character limits in the free-text field. The comments were submitted voluntarily and in English. Researchers compiled only comments associated with a 5-star–rated visit because these comments were most likely to correspond with a positive patient experience. The period of collection was from January 1, 2016, through November 30, 2016, resulting in 49,967 comments, approximating the target of 50,000 comments for review.

Data Collection Method

Comments submitted with 5-star visit ratings were randomly selected from Looker, a data-discovery application that interfaces with the telemedicine practice application, from January 2016 through November 2016. The practice security team filtered all comments and filtered out any personal health information. The comments were downloaded and further deidentified before review by running name recognition software to remove any proper names incidentally entered by the patient.

Data Analysis Methods

Researchers used a consensus-based, widely used health care communications framework as a sensitizing scaffold on which to develop a preliminary set of codes of interpersonal and communication skills.[16] A similar rubric is used by the US Medical Licensing Examination (Clinical Skills Step 2).[17] The codes were subsequently modified in an iterative manner as new concepts emerged from the qualitative data.

Researchers used the constant comparative method to code the data and to subsequently create a theory grounded in these data.[20] Open coding was performed first, enabling discussion of the comments to conceptualize and categorize concepts and build on the extant communication skills framework. The codes and comments were then repeatedly reviewed to identify new concepts and themes to ensure that all concepts were identified and coded appropriately.

Researchers were assigned a weekly set of comments to code independently. Each unique concept in a comment was coded, allowing for more than 1 code per sentence in a comment. Each week, 2 reviewers would be given the same 10 to 25 comments in their assigned set of comments to assess reviewer agreement. All coded comments were discussed by the larger research team. Disagreements about coding were resolved through discussion until team consensus was reached. Saturation of themes was noted after reviewing a total of 4572 comments from a random sample of 49,967 comments that were rated 5 of 5 stars by patients after their appointment.

Assessment of Trustworthiness

The research team used 3 methods to ensure the trustworthiness of this analysis. First, a widely accepted communication skills

framework was used on which to build additional concepts and themes. Second, two researchers per week were assigned the same set of comments to assess agreement. A total of 1248 comments were coded by 2 independent reviewers in this manner. Disagreements were resolved by consensus among the research team. Third, an independent qualitative researcher, unassociated with this study, was assigned 1150 randomly selected comments to code to assess agreement with the research team. These measures further ensured the trustworthiness of the codes assigned by the research team.

RESULTS

The researchers developed a final set of codes that included (1) Builds Rapport; (2) Patient Perspective; (3) Expectation and Agenda Setting; (4) Elicits Information; (5) Listens, Is Attentive; (6) Shares Information/Provides Guidance; (7) Shares Decision Making; (8) Spent Right Amount of Time; (9) User Experience; (10) Uncodable; and (11) Provided Treatment. A description of each code was provided to all researchers as a Coding Manual (Table 1). Based on the content of each comment, the comment was assigned 1 or more codes. Of the 4572 comments reviewed, 888 were uncodable and 127 were negative, resulting in a total of 3560, 5-star comments with corresponding positive reviews.

Table 2 shows a breakdown of the coded comments. More than 30% of the comments coded were classified as Building Rapport. The next most frequently assigned code was Shares Information/Provides Guidance. Among codable comments, the third most frequently assigned code was Elicits Information. Nineteen percent of comments were Uncodable. This code was used when comments were determined to be too nonspecific to assign to a category. Most of these comments consisted of 1- to 2-word answers (eg, "Great!" "Awesome!" "Good visit"), which the coders found to be too general to attribute to a code. Provided Treatment accounted for only 2% of comments. A total of 127 ratings were 5-star ratings that had a negative comment associated with it; 125 of these (98%) were due to a technical problem, such as a dropped audio or visual connection (eg, call dropped, doctor could not hear me). Two of these were due to not having enough time with the doctor. Table 2 shows a sampling of comments that represent each code.

Patients commented most frequently on the provider's ability to build rapport. For example: "… Dr […] is such a compassionate individual and made this such a relaxing experience when I expected this to be a cold and possibly callous experience." "I felt that he truly cared about my overall well-being and not only for the primary visit purpose."

Attentive listening (4.4% of coded comments), often signaled by head nods and utterances or nonverbal signals of encouragement (eg, smiling), contributed to the development of rapport. This is captured in comments such as: "Seeing someone listen, understand, and smile back at me is a huge relief. I appreciate that she did those things. I feel better already."

Patients appreciated providers who listened carefully and provided detailed information (coded as Shares Information/Provides Guidance): "She asked the right questions, took time to listen to answers, and explained proper treatment options."

Comments about the experience of using an app that brought the doctor into the patient's living space were extremely positive, ranging from grateful to delighted:

The future is here You feel terrible you crawl out of bed you go into a crowded waiting room you either contaminate other people or get contaminated and an hour later if you're lucky you'll spend a few minutes with the doctor. No more. You enter your information in the app in the comfort of your own home and you see a doctor convenient fast thorough. Why would anyone go to a doctor's office for first triage. Thank you!

DISCUSSION

Based on this analysis of comments and feedback made by highly satisfied users of an on-demand videoconferencing platform for urgent care visits, the authors propose a grounded theory about factors that engender this satisfaction, ie, that these fall into the 2 domains of interactions with the provider and interactions with the platform. Interactions with the provider are mediated by their interpersonal, relational, and communication skills. Highly satisfied patients who interact

Mayo Clin Proc Inn Qual Out ■ June 2020;4(3):305-314 ■ https://doi.org/10.1016/j.mayocpiqo.2020.04.009
www.mcpiqojournal.org

TABLE 1. Coding Manual

Code	Associated terms
1: Builds Rapport	• Affective connection/comments of appreciation (eg, "wish you were my doctor") • Polite, professional • Trust-building, reliability • Caring, concerned bedside manner • Used nonverbal gestures that show care and concern • Provided emotional support, doctor was understanding • Developed a partnership • Doctor was helpful, nice, friendly, easy to talk to
2: Patient Perspective	• Cultural competence • Understood patient situation and social circumstances (eg, social context, barriers to care) • Recognized/responded to patient psychosocial/contextual issues • Doctor did not judge, treated me with respect/respected my opinion
3: Expectation and Agenda Setting	• Explained what to expect in the visit • Set the stage for the visit
4: Elicits Information	• Doctor asked questions • Doctor was thorough
5: Listens, Is Attentive	• Demonstrated attentiveness • Patient felt heard • Doctor was focused on patient, listened
6: Shares Information/Provides Guidance	• Explained, helped me understand my condition and symptoms and what they mean, communicated diagnosis • Helped me understand what to do, thorough in explaining management/treatment recommendations • Doctor is knowledgeable • Informative, answered all of my questions • Gave advice, gave new recommendations patient hadn't heard elsewhere
7: Shares Decision Making	• Provided different treatment options, gave different ideas • Took into account patient preferences/situation • Asked me what I wanted to do/planned to do, worked with patient to come up with plan, mutuality
8: Spent Right Amount of Time	• Took time/not rushed • Took extra time with me • Fast, quick, efficient doctor • Doctor was patient
9: User Experience	• Simplicity, ease of use • On-demand/short wait time to see doctor • Convenience • Wow factor/novelty • Noninferiority to in-person doctor visit (eg, "Just as good as my regular doctor") • Accolades for "app/platform" better over doctor's office • Cost saving • Immediacy of prescription ready at pharmacy

Continued on next page

TABLE 1. Continued

Code	Associated terms
10: Uncodable	• Single words, no pronoun (eg, excellent, awesome, thank you, great) • "Thank you" or "Thank you for helping me" (this is different from the doctor being helpful) • Recommendations (eg, would tell a friend, refer a friend, recommend, will use again)
11: Provided Treatment	• Got treatment (specific to prescribing pharmaceuticals or over-the-counter medication)

with providers on this platform voluntarily commented on those aspects of medical communication that presumably are most important to them and, therefore, rose to the top of their mind. Establishing rapport was highly prominent, prompting numerous comments. Rapport, a sense of affective connection, is developed and communicated verbally and particularly nonverbally through facial expressions, gestures, and posture and by paralinguistic elements of speech such as pitch, pace, tone, and volume. Although some studies suggest that many patients feel that it is important to have an established relationship with a provider with whom they are interacting via a telehealth visit, this may not be the case when providers have strong relational and communication skills.[13]

Researchers have consistently found correlations between providers' nonverbal emotional expression and favorable patient ratings.[21] Although this study was not designed to clarify which aspects of verbal and nonverbal communication specifically and significantly contributed to the development of rapport, we hypothesize that among providers who are interpersonally attuned, or aware of these aspects of communication, the video platform may facilitate nonverbally mediated connection and a sense of patient-perceived clinician compassion.[21] For example, providers may rely more heavily on eye contact and observation of the patient because they lack the ability to modulate other aspects of nonverbal communication, such as proximity or touch. The visual setup (eg, clinician in center of screen, professional dress, nondistracting ambient environment) may also contribute to rapport building in a virtual encounter.

An as-yet unstudied but intriguing aspect of video-based clinical interactions is whether, because clinicians can see their own expressions on-screen in real-time, they may be able to quickly correct an off-putting facial expression or posture, something they would otherwise be unaware of during a traditional office-based encounter. Nonverbal synchrony of facial expression and movement, although usually unintentional, builds rapport and trust and contributes to collaboration in solving problems.[22] Analysis and measurement of nonverbal communication in video-based interactions would be an area of interest for future research because it contributes to patient satisfaction and understanding of health issues, which, in turn, mediate adherence and other health outcomes.[23,24] To this end, automated video analysis methods are now under development.[25]

Another aspect of communication that patients frequently commented on was clinicians' ability to share detailed information and provide practical guidance clearly and in ways the patient could understand. Patients vary considerably in how much information they want, which makes it difficult for providers to tailor information to their specific needs and circumstances. Regardless of the content, timing, or quantity of information sought, however, when information is shared by a health care professional, having a trusting, compassionate relationship remains paramount.[26] Interestingly, Provided Treatment accounted for only 2% of comments. Previous literature has suggested that prescription receipt was a major driver of satisfaction.[11]

Key drivers of highly positive ratings in this analysis of video-based clinician visits, based on the most frequently coded comments, seem to be rapport, information, and guidance. Convenience and delight with the app may interact with and augment patients'

Mayo Clin Proc Inn Qual Out ■ June 2020;4(3):305-314 ■ https://doi.org/10.1016/j.mayocpiqo.2020.04.009
www.mcpiqojournal.org

TABLE 2. Codes and Selected Comments

Code	Comments (No. [%]) (n=4572)	Examples
1: Builds Rapport	1384 (30.3)	• She was extremely helpful, professional, and knowledgeable of my situation. But the reason it was an awesome experience, she made me feel as if she cared about my concerns as a patient by detailing every question asked, creating an atmosphere of comfortability. • … A far more personable experience than I would have ever expected! Not only do you get the treatment you have sought after but a caring person who recognizes we are all just people at the end of the day! • Perfect demeanor. Wonderful instincts. Powerful insight. The perfect doctor visit. Summed me up, compassionately.
2: Patient Perspective	71 (1.6)	• Explained what was going on with my child in a language that I could understand. • Dr […] got right to the point and solved my problem. I get anxious before talking to doctors and most authority figures, in general. Seeing someone listen, understand, and smile back at me is a huge relief. I appreciate that she did those things. I feel better already. • I have to admit I was a tad leery about a video chat Dr visit, but he well exceeded my expectations. I felt that he truly cared about my overall well-being and not only for the primary visit purpose. • Understood what my concerns were and took care of us.
3: Expectation and Agenda Setting	25 (0.5)	• She was very clear on what I should take and when to visit again. • He made me feel comfortable by telling me what he was doing while talking to me and why he was doing it. • Asked if I was familiar and explained how Rx process worked. • Answered all my questions and advised me what to expect.
4: Elicits Information	397 (8.7)	• Doctor was very thorough when diagnosing my issue. • She asked questions and explained why they were important to ask. • She asked me a lot of questions to see exactly what was wrong with me.
5: Listens, Is Attentive	201 (4.4)	• Dr listened and addressed concerns. • Great patience in dealing with my son and me. Actually listens to what you're saying. • She listened to my problems and discomfort and didn't take long to help me. • Very good listener and gives great advice. • Very patient listening to my symptoms. • He listened, was helpful, and his diagnosis was right on.
6: Shares Information/Provides Guidance	709 (15.5)	• I liked how she explained everything and how she instructed me on how to test for various things, and how to keep monitoring him from home • Detailed with answering my questions about my son's respiratory illness. • Gave me great information that I will be able to use to improve my health. • She was great in explaining why she was prescribing the med and how to use it. Plus other little tips on how to help get some comfort.
7: Shares Decision Making	40 (0.9)	• Very competent doctor who was able to successfully work together with me in order to help evaluate and treat my 3-year-old daughter.

Continued on next page

TABLE 2. Continued

Code	Comments (No. [%]) (n=4572)	Examples
		• Asked all the right questions to move things along quickly, explained things clearly, and provided multiple treatment options. • Looked up the facts and made sure my concerns were taken care of. Also formed a plan of action with me. • Very informative of my options and how to proceed without going directly to antibiotics. • Dr […] was to the point and asked thorough questions. I liked him asking me my opinion of the diagnosis, as well as what medications I am comfortable with.
8: Spent Right Amount of Time	242 (5.3)	• Took time to explain recommendations. • Dr […] was extremely friendly, professional, and took the time to understand my symptoms and never made me feel rushed! • Took the time to go over alternatives to help with my symptoms. • Dr […] was fast, efficient, and answered all of my questions. • Think the doctor spent more time talking to me, and explaining options to relieve my symptoms, than I've had with in-office visit. • Makes it a point to take the time needed for the patient to understand symptoms, medications, and dosage. • Dr was efficient and friendly. Didn't waste our time together.
9: User Experience	395 (8.6)	• This app was so easy and convenient to use! In less than 10 minutes I was able to input my information, speak to a wonderful physician, and have a prescription ready at my pharmacy. • Love being able to see a doctor at my convenience without waiting or leaving my home. • I will most certainly use this app again and have already spread the word on how great this app is! : • Easy-to-use app and no travel with a toddler is wonderful. • This seems to be a great program. My first time using it since my new insurance has went into effect for 2016. This will be great to use instead of having to wait at my family doctor for hours and take time out of my day. Thanks!
10: Uncodable	888 (19.4)	• Great. • Awesome. • Thanks! • Best thing ever!
11: Provided Treatment	93 (2)	• He diagnosed my sinus infection quickly and prescribed the medication I needed. • Excellent service had 3 prescriptions called in would definitely use again. • Gave me the medicine I needed for nausea. • Was able to help me with my prescription medication. Now all I need to do is go to the pharmacy.
Negative comments	127 (2.7)	• Call dropped. • I could not hear the doctor. • Doctor could not hear me. • Not enough time (accounted for 0.04%).

perceptions of these behaviors and of the experience as a whole.

This study has limitations. Encounters were mostly for low-complexity issues, which may have affected satisfaction levels. In addition, comments were tied to an encounter and deidentified, so there was no way to distinguish whether the visits were first time or repeat, meaning frequent users could skew the results. This study, by design, looked only at 5-star ratings. Comments from 1- to 4-star ratings may have revealed different information. Additional information from comments reflecting lower-rated clinicians will be of interest. Last, physicians of this nationwide virtual medical practice have undergone extensive training and education in telemedicine. These results may not generalize to those who have not been similarly trained.

The present study demonstrates that patients are satisfied with telemedicine encounters for reasons beyond access and convenience. More research is needed in this field, especially as telemedicine moves beyond virtual urgent care and into primary care and chronic disease management. Behavioral health, in which relationship building and trust is critical, is another area that warrants further study. Telemedicine's video-based format offers an excellent platform to study the impact of nonverbal behavior on patients and self-monitoring by clinicians of their own facial expressions and body posture. This study also points to the importance of developing new methods to analyze video-based communication at scale and of the need for curricula and training in this modality so that clinicians can optimize the necessary skills required to have high-quality virtual visits.

CONCLUSION

The results of this study suggest that patients who are satisfied with telemedicine encounters appreciate their relational experiences with the clinician and their overall user experience, including access and convenience. Highly satisfied patients who interact with providers on this platform commented on key aspects of medical communication, particularly those skills that demonstrate patient-centered relationship building. This finding supports the notion that clinician-patient relationships can be established in a video-first model, without a previous in-person encounter, and that positive ratings do not seem to be focused solely on prescription receipt.

Potential Competing Interests: Dr Elliott is former medical director and a stockholder in Doctor on Demand. Dr Tong is employed as chief medical officer of Doctor on Demand and is a stockholder in the company. Ms Sheridan is an employee of Doctor on Demand. The other authors report no competing interests.

Correspondence: Address to Tania Elliott, MD, NYU Langone Health, 462 1st Ave Suite 1B, New York, NY 10016 (Tania.Elliott@nyulangone.org; Twitter: @drtaniaelliott).

ORCID

Tania Elliott: https://orcid.org/0000-0002-5638-7764; Arwen Sheridan: https://orcid.org/0000-0003-1570-3983

REFERENCES

1. Telemedicine market size by services, by type, by specialty, by delivery mode, industry analysis report, regional outlook, type potential, competitive market share & forecast, 2019 – 2025. Global Market Insights website. https://www.gminsights.com/industry-analysis/telemedicine-market. Accessed February 17, 2020.
2. Large employers double down on efforts to stem rising U.S. health benefit costs which are expected to top $15,000 per employee in 2020. Business Group on Health website. https://www.businessgrouphealth.org/who-we-are/newsroom/press-releases/large-employers-double-down-on-efforts-to-stem-rising-us. Accessed February 17, 2020.
3. Telehealth and virtual health benchmarking call summary. Business Group on Health website. https://www.businessgrouphealth.org/resources/telehealth-and-virtual-health-benchmarking-call-summary. Accessed February 17, 2020.
4. 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;(9):CD002098.
5. Yu J, Mink PJ, Huckfeldt PJ, Gildemeister S, Abraham JM. Population-level estimates of telemedicine service provision using an all-payer claims database. *Health Aff (Millwood)*. 2018;37(12):1931-1939.
6. Merritt Hawkins. 2017 Survey of physician appointment wait times and Medicare and Medicaid acceptance rates. https://www.merritthawkins.com/uploadedFiles/MerrittHawkins/Content/Pdf/mha2017waittimesurveyPDF.pdf. Accessed February 17, 2020.
7. Schoen C, Osborn R, Squires D, Doty MM. Access, affordability, and insurance complexity are often worse in the United States compared to ten other countries. *Health Aff (Millwood)*. 2013;32(12):2205-2215.
8. Ray KN, Chari AV, Engberg J, Bertolet M, Mehrotra A. Opportunity costs of ambulatory medical care in the United States. *Am J Manag Care*. 2015;21(8):567-574.
9. Kruse CS, Krowski N, Rodriguez B, Tran L, Vela J, Brooks M. Telehealth and patient satisfaction: a systematic review and narrative analysis. *BMJ Open*. 2017;7(8):e016242.
10. Polinski JM, Barker T, Gagliano N, Sussman A, Troyen AB, Shrank WH. Patients' satisfaction with and preference for telehealth visits. *J Gen Intern Med*. 2016;31(3):269-275.
11. Martinez KA, Rood M, Jhangiani N, Kou L, Boissy A, Rothberg MB. Patterns of use and correlates of patient

satisfaction with a large nationwide direct to consumer telemedicine service. *J Gen Intern Med*. 2018;33(10):1768-1773.
12. Gough F, Budhrani S, Cohn E, et al. ATA practice guidelines for live, on-demand primary and urgent care. *Telemed J E Health*. 2015;21(3):233-241.
13. Welch BM, Harvey J, O'Connell NS, McElligott JT. Patient preferences for direct-to-consumer telemedicine services: a nationwide survey. *BMC Health Serv Res*. 2017;17(1):784.
14. Daniel H, Sulmasy LS. Health and Public Policy Committee of the American College of Physicians. Policy recommendations to guide the use of telemedicine in primary care settings: an American College of Physicians position paper. *Ann Intern Med*. 2015;163(10):787-789.
15. Sweeney E. Teladoc teams up with Jefferson Health on telehealth fellowship. https://www.fiercehealthcare.com/tech/teladoc-teams-up-jefferson-health-first-ever-telehealth-fellowship. Published November 12, 2018. Accessed February 17, 2020.
16. Makoul G. Essential elements of communication in medical encounters: the Kalamazoo consensus statement. *Acad Med*. 2001;76(4):390-393.
17. United States Medical Licensing Examination. Content description and general information. https://usmle.org/pdfs/step-2-cs/cs-info-manual.pdf. Accessed February 17, 2020.
18. Appreciative Inquiry Commons website. https://appreciativeinquiry.champlain.edu/. Accessed February 17, 2020.
19. Doctor on Demand Inc website. https://www.doctorondemand.com/. Accessed February 17, 2020.
20. Strauss A, Corbin J. *Basics of Qualitative Research: Grounded Theory Procedures and Techniques*. Newbury Park, CA: Sage Publications; 1990.
21. Roter DL, Frankel RM, Hall JA, Sluyter D. The expression of emotion through nonverbal behavior in medical visits: mechanisms and outcomes. *J Gen Intern Med*. 2006;21(suppl 1):S28-S34.
22. Hamel LM, Moulder R, Albrecht TL, Boker S, Eggly S, Penner LA. Nonverbal synchrony as a behavioural marker of patient and physician race-related attitudes and a predictor of outcomes in oncology interactions: protocol for a secondary analysis of video-recorded cancer treatment discussions. *BMJ Open*. 2018;8(12):e023648.
23. Aruguete MS, Roberts CA. Participants' ratings of male physicians who vary in race and communication style. *Psychol Rep*. 2002;91(3pt 1):793-806.
24. Zolnierek KB, Dimatteo MR. Physician communication and patient adherence to treatment: a meta-analysis. *Med Care*. 2009;47(8):826-834.
25. Hart Y, Czerniak E, Karnieli-Miller O, et al. Automated video analysis of non-verbal communication in a medical setting. *Front Psychol*. 2016;7:1130.
26. Kynoch K, Ramis MA, Crowe L, Cabilan CJ, McArdle A. Information needs and information seeking behaviors of patients and families in acute healthcare settings: a scoping review. *JBI Database System Rev Implement Rep*. 2019;17(6):1130-1153.