**Supplemental Digital Content 1: Semi-structured interview guide for patients**

Has anything changed about how you get medical care during this time with the coronavirus pandemic? [Probe: getting medical appointments, contacting MD offices, getting medical questions answered, getting medication refills]

How has seeing your healthcare providers (doctor, physician assistant, nurse) changed during this time with the coronavirus pandemic? [Probe: which doctors/specialties, video visits, telephone visits]

What has been hardest for you about getting medical care during this time?

Did you do a video visit with your healthcare provider during this time? [If yes then ask the following]:

How was the video visit different for you compared to an in-person visit?

What worked well for you for the video visit? What did you like about it?

What didn’t work well for the video visit? What made it hard? [Probe: did you have any issues with using a patient portal?] [If interviewing in Spanish: Did you use a translator? If so, who helped translate? How was that experience?]

What was the process of getting checked into the visit like? Did you have any issues with being billed for this visit?

How engaged was your healthcare provider during this visit compared to an in-person visit?

Did you have anything to monitor yourself at home (like a blood pressure cuff or glucometer)? If so, was it helpful for your visit? If not, was it a problem?

Is there anything that could have been done differently to make the video visit better?

If you didn’t do a video visit with your healthcare provider, would you have wanted to do this? Why or why not?

Did anything prevent you from doing a video visit with your healthcare provider? [Probe: not an option for MD office, didn’t have proper technology/patient portal, issues with internet]

Did you do a telephone visit (without video) with your healthcare provider during this time?

What worked well for the telephone visit? What did you like about it?

What didn’t work well for the telephone visit? What made it hard?

Did you have to get checked in for this visit? Were you billed for this visit?

Is there anything that could have been done differently to make the visit better?

[Optional probe: If you did video visits and telephone visits, what were the biggest differences between the two types of visits? Which do you prefer? Why?]

After your visit with your healthcare provider, were there issues with follow up [probe: getting referrals to other providers, follow up of labs or other tests, medical refills]?

What are the benefits (good things) with getting your medical care through the video visits or telephone visits?

What are the problems with getting your medical care through the video visits or telephone visits?

Is there anything else you’d like to share with us about your experience getting medical care during this time?

How would you make telemedicine more helpful or easier for patients to use? What advice do you have for healthcare providers about how to best take care of patients during times like this when it may be harder for patients to come into the office?

**Supplemental Digital Content 2: Semi-structured interview guide for providers**

1) How has your practice changed in the way it delivered medical care during this period of time with the COVID-19 pandemic? [Probe: were in-person appointments available, were video visits available, issues with patient continuity, hours spent on clinical care compared to prior to the pandemic]

2) Tell us about the types of patient visits you’ve done in the past month (this can include in-person visits, video visits, telephone visits and/or remote monitoring)? Approximately what percentage of each? How does your practice decide which type of visit is scheduled?

3) If you did video visits, how did they compare to in-person visits?

a) What worked well for you for the video visits? What did you like about them?

b) What didn’t work well for the video visits? What made them hard? [Probe: were there any issues with checking the patient in? Any issues with billing?]

c) Did you include a third party (family member, translator, visiting nurse) during any of the video visits? How was that experience for you?

d) Did your patients have any monitoring devices (e.g., blood pressure cuff or glucometer)? If so, was it helpful for your visit? If not, was it a problem?

e) Is there anything that could have been done differently to make the video visits better or easier?

4) Were there certain patients for whom you wanted to do video visits but couldn’t? If so, what happened? Were there groups of patients who struggled with the telemedicine visits?

a) What were the barriers to doing video visits?

b) What would you have changed if you could?

5) Did you do telephone visits (without video)?

a) What worked well for the telephone visits? What did you like about them?

b) What didn’t work well for the telephone visits? What made them hard?

c) Is there anything that could have been done differently to make the visits better?

6) What is your sense of how your patients felt about the switch from in-person to telemedicine visits?

7) After your telemedicine visits, were there issues with follow up [probe: referrals to other providers, follow up of labs or other tests, medical refills]?

8) What advantages do you see with the increase in telemedicine use? What disadvantages do you see?

9) What are barriers to increasing telemedicine use in your institution/facility? What would it take to overcome these barriers?

10) Do you anticipate continuing to use telemedicine? What are the circumstances or types of visits in which you would ideally like to continue using telemedicine?

11) Have your views on telemedicine changed as a result of this pandemic? How?

12) How would you make telemedicine more helpful or easier for patients and providers to use? What advice do you have for other physicians or healthcare administration about implementing telemedicine in primary care?

**Supplemental Digital Content 3**: Subthemes and illustrative quotes for theme 1

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| **Theme 1: Impact of telemedicine on rapport building and patient-provider alliance** | |
| Subtheme | Illustrative Quotes |
| Telemedicine reduced the sense of connection | Patients:   1. “It’s not as personal because we’re not in the same shared space.” (21) 2. “It doesn’t really feel as real…[there is] something psychologically different about it than being at a doctor’s office.” (24) 3. “I definitely felt it was like they were going through the checklist.” (20) 4. “I like interacting with people in person and so I feel like that piece is missing when you do the video visit. It doesn’t feel as caring” (30) 5. “It’s a little bit harder to establish empathy that way” (6) 6. “Just because we’re a phone call, we’re still important.  Just like with the patients, they may be seen in the office.”  (25) 7. “It’s not eye-to-eye contact.” (4)   Providers:   1. “That patient is crying and needs a hug, you can’t do it electronically. And I’m one of those providers, you know, I sit knee to knee with my patients, and we talk before I do anything else.  So if I don’t have that ability to interact when they need me to, I feel like I’m not doing my job.”  (15) 2. “But I think for some lonely people, you know, they don’t have a lot of human contact. They come in every three months and get a hug” (5) 3. “I don’t know what it is, but there’s something about having a patient sitting there, especially during more intimate visits.” (17) 4. “But I am happy Telehealth was there, but it’s not a surrogate for being there—physically being there for your patient. I cannot beside that enough, you got to—you got to—there’s something about presence that is—it’s indefinable, it is necessary. I have no idea why. I like being alone. I’m a loner. And I want to see these people. I want to see these patients face to face, that makes me happy.” (8) 5. “So I think that lack of engagement, of you can’t be there physically for that patient, is extraordinarily difficult.  I struggled with that immensely.  I still struggle with that.” (8) 6. “I still am very staunch about the patient/doctor experience being more impacted by telemedicine.” (4) |
| Video visits were more personal than audio visits | Patients:   1. “I want to see who I’m talking to. Am I talking to a machine? I’m talking to—I hate talking to the machines” (43) 2. “it’s like, kind of hard to like, explain it to him over the phone, than me seeing him face to face.” (40)   Providers:   1. “I appreciate video because I think that there is an additional element of human contact” (20) |
| Unique opportunities for new connections | Providers:   1. “I had a woman who was dying and needed to have family meetings around end-of-life care, and I was able to loop in five different family members into one video, and one of them had a cell phone with another person on the cell phone holding it up.  It was a really beautiful family meeting virtually.” (16) |
| Developing and continuing relationships through the pandemic | Patients:   * 1. “My providers made sure that they stayed in contact with me, or there was a way to be in contact with them” (41)   2. “They made me feel like it's going to be okay.  I'm going to treat you the same way, it'll be different, and you're going to be okay.” (38)   3. “I have this one doctor that he knows. I’m always talking nonsense. He, “Look, cut it out. I know such and such,” he was the same way, even on the televisit. I couldn’t even get away with it and I appreciated that. They all act the same. They all asked the same series of questions. They treated me as if I was in front of them. tacitly, they couldn’t do anything, but their methods were the same and I appreciated that.” (39)   4. “we have a good relationship with our doctor, and I send him messages all the time” (36)   5. “it helps when you already had a strong relationship with them and, you know, being remote doesn't limit that” (8)   6. “Well, I can see future of telehealth where you would see—you would establish a relationship with the provider. And then if it's, you know, nothing major, you have telehealth visits, after you've established a relationship with your primary care” (12)   7. “I remembered him. If it hadn't been for that, it would have been me looking at somebody that I had never seen before.” (4)   8. “he’s my primary care doctor and I’ve seen him for a number of years, but I was still wondering how this was going to go. And then he was just as sweet and helpful” (34)   Providers:   1. “I think it's really hard to establish rapport with a brand new patient. It's just very different than being in a room with somebody.” (6) 2. “So that's the joy of knowing people, because you are more responsive to concerns. But if it's a new patient and you're not able to see them, it's a little bit harder. You don't see the facial expressions and body language and so forth. So I think it can be more challenging with new patients with kind of nuance concerns” (20) 3. “I've had patients who I've become their PCP by in-person visits in clinic and then I've seen them on the video. And they actually value the video connection 'cause they get to see my face and I've had like multiple patients be like, oh my gosh this is what you look like 'cause I've never seen you without a mask on. And like, you know, we build relationships and connections by like looking at people and recognizing faces and so I think for those patients it's great” (18) |

**Supplemental Digital Content 4**: Subthemes and illustrative quotes for theme 2

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| **Theme 2: Varying provider engagement during telemedicine visits** | |
| Subtheme | Illustrative Quotes |
| Decreased provider engagement | Patients:   * + - 1. “You don’t know if they’re checking their phone talking to you,” “I’m staring at her in her house and her cat’s walking by and every once in a while her eyes dart away.” (34)       2. “They have a kid running around. They’re just not giving you their undivided attention.” (11)       3. “But when I had an in-person visit, everything would be right there. The doctor would never move. He would sit there and talk and that was a big difference” (43)       4. “I thought she was a little bit distracted. I think she was trying to navigate using multiple things at the same time. She was using the web quite a lot for the Zoom, and then she was also typing into the computer, they usually do, for EPIC or something like that. Then having a conversation with me and trying--so, I thought she was a little distracted. Yeah, so I think maybe she was also trying to get used to do all of those things at the same time, versus just having the person there and doing what you need to get done.” (24) |
| Increased provider engagement | Patients:   1. “I thought there was more of a direct connection because they got no distractions.  It was just me them and the camera. So I really felt like they had no choice, but to actually hear me, especially, when I had questions.” (6) 2. “You ever go to the doctor's office in person and feel like that doctor's in a hurry to get you out of his way?  He's like, okay, whatever, okay, and he's just filling stuff out, and you're like, this dude's not even looking at me, he isn't paying attention to me.  And on telehealth everything is slow.  Like he's looking at your, you're making eye contact with him, he's reassuring you.” (27) 3. “Well, I felt like the doctor was looking at me more instead of at the computer screen entering data when I’m at the doctors’.  So it actually think it seemed more personal, because he had to look at me”. (10) 4. “She had a person she referred to who was typing every single thing that I was saying, so the doctor was paying more attention to me than typing, you know.” (5) 5. “I feel like it's even more personal, more connected, instead of being in the office because there's so many distractions and people in and out and whatnot.” (25) 6. “My primary care physician was definitely more engaged than the person that’s not my primary care physician” (30) |
| Increased physician availability | Patients:   * 1. “It's kind of nice that they were checking in on you and making sure you're okay, instead of you having to be the one to like to remember to go back and deal with all that. “We were zooming every day” (27)   2. “I have good communication with my doctors. They always respond to me very quickly” (22)   3. “I guess the, the interim, the communication I had with my physicians, mine, and my husband's, have been mostly through… MyChart facility, and you can, you can send a request and get information back, or send a request for a prescription refill or get information back” (36)   4. “I'm able to do blood pressure right now, and I just cut and pasted my last two or three weeks' worth of readings and send it to my primary, and he adjusted my medication by message to me.” (64)   5. “In the beginning, it was like real fast when I was sending messages through my chart, and I would get answered real fast.” (8)   Providers:   1. “Telehealth [takes] down the boundaries of when your clinic is. I have found that for my own internal pressure, not anyone’s external pressure, I add on a lot of virtual visits during my research time or administrative time or whatever it might be, because it's a really complex patient who I know well and I could send them to our urgent care, but I can handle it myself.” (16) 2. “It was really good because we were able to provide the care, communicate with the patients and allow them to have access to questions, refills, guidance, you know, whatever it was needed.” (11) 3. “I've had a few instances where patients have a harder time finding their after-visit summary. Though, for the most part I send it as a portal message. (18) 4. “I told the patients, once you've done the labs, please send me a message—please call me two days after to make sure that I've gotten the results.” (10) |

**Supplemental Digital Content 5**: Subthemes and illustrative quotes for theme 3

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| **Theme 3: Telemedicine increasing provider insight into patient lives** | |
| Subtheme | Illustrative Quotes |
| Unique view into patient’s homes and families | Providers:   * 1. “I got to see the inside of their household and get to know a lot of different people and what their roles in caregiving were.  She was in her late nineties and almost bedbound.  I think from an outpatient doc perspective, short of doing repeated home visits, it was as close as I was going to be able to get to that.  I really thought I was very meaningful.” (16)   2. “It also made me feel good that I could actually have a view of something personal to the patient.  And so, I think for patients that you had been taking care for, so long, connecting to something personal in their home, it does me for a good feeling.  And sometimes having the ability to actually even, like, meet family members that you've only heard of.  It's a good feeling.” (11)   3. “When I started to do video visits with them during the pandemic, I realized that they had hoarding.  I didn’t know it.  Seeing the household, I was flabbergasted.  I had no idea that it was that bad.  Again, that was just sort of a snapshot into the background.  We talked about it, and it became part of the conversation.  It wasn’t like it was anything they were hiding.  It’s just like you probably don’t come to your primary care doctor and say I’m hoarding.  You know it when you see it.  There have certainly been things like that that have been really impactful of understanding the persons home situation better.” (16)   4. “another one of the benefits was meeting, sometimes meeting family members I hadn't met. 'Cause they don't usually come. Or meeting pets. Seeing the home environment. That was helpful. And also people would say, "Oh, you know, my—here is my medication that I'm on." Oh, I'll go get my inhaler. I'm not sure which one it is." I'm like, "Well, go get it." Oh, and the other really cool thing. And this was especially with some post-COVID patients. We would go for a walk. I would say, "Are you short of breath?" And they'd say, "Yes, I walk a certain amount." "Well, how far can you walk before you're short of breath?" "I'm not sure." I'm like, "Well, let's go walk." And so we would walk. And, and some of them have pulse oximeters. And we'd see what their pulse oximeter was. : I see they're getting short of breath after a few steps or I could see their—they show me their pulse ox has dropped.” (5)   5. “And I did get a little bit of a sense of the social context in which people live by looking around, looking behind them. And so I've done house calls in the past which are helpful, and this is kind of a teeny house call. And also the review of medications can be improved when patients are home 'cause they can just, if they don't always bring their bottles, they can just go find them. So sometimes you have to wait while people go find their bottles. And I have some patients who can't read, so they would just show me the bottle. So that's helpful. That's better than telephone alone. So there were some advantages. Occasionally I would see a pet, which is nice, and occasionally a family member.” (20)   6. “It's been really great to see patients' living environments. And you can have them bring the phone over to their fridge and, like, show you what's in there or show you how their medications are organized at home or see their living space. And I think that also provides a totally different picture of the patient. I could really be beneficial for, like, holistic, thinking about caring for them as a person, and barriers and stuff. So I didn't really mention that before, but I think that's also another important thing that shouldn't be, like, underestimated.” (6)   Patients:   * 1. “If you have family members in separate places want to be involved in that, then you might have to have a larger, expanded ability to have people join you in the telemedicine” (36)   2. “My wife was part of it, because my wife was obviously my partner in all these treatments, she was very concerned, as I am, so I would involve her whenever possible, and two ears and eyes are always better than one anyway, so we had an extended video conference” (64)   3. “I was more comfortable showing my chest on camera than I was pulling my shirt up in a doctor's office” (27)   4. “I'm just thinking in terms of domestic violence situations, if the provide said turn your volume down; I'm going to ask you something. Or something along those lines. Be like are you in a safe place and you can nod your head or shake your head. Yeah, something along those lines just to kind of gauge, also so they know that maybe there's a work going on that you're not going to say. I think that telemedicine can be powerful in that way because you never know what's happening right outside the screen.  Or even utilizing it, I've never had provider-utilized chat functions or doing any chatting on virtual visits, but I think that would also be a really strong way to just gauge people's safety situations.” (20) |
| Privacy concerns | Providers:   * 1. “It's the sense that I feel like at times the patient is distracted as others walking into the room. So I can't control the risk of HIPAA violations. So those types of things I'm concerned about in terms of maintaining some confidentiality with them.” (13)   2. “There were also times there was unwanted intrusion and visits or you know just background noise or people walking, kind of, through the room things” (1)   Patients:   * 1. “you're talking about sensitive information and you might not want to be overheard by roommates or partners or whoever you may live with” (20) |

**Supplemental Digital Content 6**: Subthemes and illustrative quotes for theme 4

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| **Theme 4: Communication challenges as a result of telemedicine** | |
| Subtheme | Illustrative Quotes |
| Information sharing and shared decision-making | Providers:   * 1. “I'm doing a lot more history taking in terms of pulling the information out of the patient, I'm not using the physical skills that I'm trained to use as well to make sure that I'm coming to the right conclusion” (13)   2. “Its hard to convince someone when you’re not face-to-face” (8)   Patients:   * 1. “So there it goes back to you being your own advocate, and having to say, hey, wait a minute, that's not right.  That's incorrect.  You got this wrong.  This needs to be changed here.  I haven't taken that in six months.  Or you know, just things where you have to speak up and say wait a minute.” (4)   2. “I'm laughing because she asked me to book a procedure.  I'm like, she didn't ask me this face-to-face so I don't have to defend, so I just kind of--so, she went ahead and she referred me and she made--she had someone from the office--make the referral person make the appointment, and then I waited like two days and I canceled, so she knows that I canceled with the other provider” (24)   3. “if I had been a provider, I would have gone back and tried to get more meat and get more information, and I probably wouldn’t have left it as it was” (30)   4. “But in a telemedicine like this, I think it is important for a patient to write it down the questions and send it to the doctor, and the doctor think about it, and then communicate further” (63) |
| Use of interpreters | Providers:   * 1. “I had a patient that was suicidal on a video visit, and it was with—an interpreter was being used, and it was just really hard to be in that moment with that patient.  So I think there’s a little bit sometimes loss of intimacy, and that patient-physician relationship factor, although it’s much better in video than over the phone.” (17)   2. “So that's something that we're still struggling through is to how to still offer video visits to our patients with a different language and offer them the same kind of services. So that's a big, big challenge for us in terms of language and using telehealth.” (13)   3. “I did it with a deaf interpreter. That was really confusing. Because the interpreter had to be able to see both of us at once and I think she might have been on her phone. And sometimes on Zoom, it's harder to see more than one person.” (5)   4. “Interpreted, interpreted the visits are terrible. I have not had a good experience with interpreters and tele-health visits in general. (18)   5. “Certainly, definitely did interpreters, had interpreters. It was interesting because I feel like the biggest challenge was knowing the steps of the order of who do you contact first and who contacts who. Honestly, even though I did it quite a few times, I feel like every time I was like I don’t remember what I need to do. It was additional barrier. I’m very glad that our interpreters were able to do it and really engaged and I haven't done it in a while. We have a lot of Spanish speaking docs. A lot of patients prefer language concordant care, which makes sense so they see a lot more of the Spanish speaking patients. Spanish speaking is our largest non-English speaking population. I only have a few Spanish speaking patients and they right now are preferentially coming in in person and we’re using in person interpreters. During the height of things, I did do quite a few visits with that. Once the interpreter was on and they were on it was totally fine but just setting it up was, I honestly still don’t know what the process was.” (16)   Patients:   1. One Spanish speaking who did said that she didn’t have that issue, primarily because of an existing provider relationship: “No because when I call the doctor, they know that since I don't speak English, because I know them well, well I had an interpreter right there.” (1) |