

USER EXPERIENCE RESEARCH: IMPROVING THE TELEHEALTH EXPERIENCE FOR PROVIDERS

Undergraduate research performed on behalf of the UVU Department of Public &
Community Health and the UVU Department of Digital Media

Tressa Hopkinson, Courtney Montrose, Sarah Callison

TABLE OF CONTENTS

Introduction

[Definitions](#)

[Research Questions](#)

Methods

Results

[Survey](#)

[Interactive Infographic of Survey Results](#)

[Interviews](#)

Discussion

[Patient Onboarding](#)

[Searchability](#)

[Charting](#)

Next Steps

Appendices

[A. Review of Telehealth Literature](#)

[B. Review of Existing Medical Resource Apps](#)

[C. Review of User Experience Research Methodologies](#)

[D. Survey Questions](#)

[E. Interview Script and Questions](#)

[F. Interview Transcripts](#)

[G. Provider Personas](#)

[I. Components of Building a Voice Experience](#)

References

INTRODUCTION

The onset of the COVID-19 pandemic forced medical providers to rapidly adopt Telehealth in 2020. An expected three-year timeframe for remote Telehealth implementation was completed in an unprecedented three weeks. As the need to quarantine necessitated social distancing, remote digital healthcare solutions became a global priority.

Using these technologies to improve access to healthcare in rural areas such as Rurutu, French Polynesia, was the initial focus of this study, however, global travel restrictions associated with the pandemic prevented on-site research. Remote research about how to increase access to healthcare and improve the Telehealth experience without focusing on a specified location was a logical alternative.

Existing literature regarding Telehealth focuses on provider acceptance of the use of Telehealth in medical practice and reviews implementation strategies.¹⁻⁹ Exploratory research was needed to pinpoint the issues with the user experience of both the provider and the patient. Identifying the underlying cause of these issues can provide guidance for further research and illuminate possible solutions for improving the Telehealth user experience.

Definitions

1. *Digital Solutions*. Solutions that resolve problems without any physical efforts and which are present online.
2. *Telehealth*. In the context of this study, Telehealth includes, but is not limited to, the following provider-to-provider and provider-to-patient interactions:
 - Live Consultation - A virtual appointment with a physician and/or specialist. This is for minor, non-emergency care. Providers can prescribe medications.
 - Patient Portal - Patients can view personal health information and send secure messages such as questions for providers or requests for prescription refills.
 - Remote Monitoring - Patients can input data such as blood pressure and weight. They can store personal health records in Telehealth apps and get reminders to take medicine and track progress.
 - Provider-to-Provider Communication - Providers can easily contact specialists and communicate about patient needs.
3. *User Experience*. User experience (UX) is how a user interacts with a particular product or service, including the user's perception of ease of use and efficiency. The user experience encompasses these terms:

- User interface - The access points where users interact with computer systems. Two user interface formats will be discussed in this study.
 - Graphical user interface (GUIs) - Users interact with visual representations on digital control panels, such as a computer's desktop or a smartphone screen.
 - Voice-controlled interfaces (VUIs) - Users interact with a system using their voice. Most smart assistants—e.g., Siri on iPhone and Alexa on Amazon devices—are VUIs.^{[10](#)}

Research Questions

The following questions were used to guide and focus research tasks:

1. What does a provider need to comfortably take care of patients remotely?
2. How are current digital solutions meeting or not meeting provider needs?
3. What gaps in patient care need to be filled?

A focus on providers in this initial study serves to provide insight that will guide future research into how issues in the provider user experience impact patient outcomes.

One of the issues that was discussed in the early stages of this research is poor Internet connectivity. Developing a medical resource app that would be available offline was considered. In an audit of current medical resource technology, 16 apps with user reviews of four stars or higher were identified, seven of which are available offline. Research activities then focused on how to improve existing digital solutions.

METHODS

For a more accurate analysis of the data, quantitative and qualitative user research methods were utilized. To first identify, and then quantify user experience issues providers are experiencing, a 10-question, multiple choice survey was created in Qualtrics.^{[11](#)} This survey was designed to be taken by providers in approximately two minutes^{[12](#)}. Question topics included how digital solutions are used by providers in daily practice and what issues are encountered during digital solutions usage. See [Appendix C](#) for a review of user experience research methodologies and [Appendix D](#) for a list of survey questions used.

The survey link was sent to twenty healthcare clinics and a teletherapy organization, all located within the United States. Additionally, the survey was advertised on the personal social media channels of the researchers. No incentive was offered for completion of the survey.

User interviews were utilized to gather qualitative data.¹¹ The final question of the survey asked providers to share their email address if they would be willing to answer additional questions regarding their Telehealth user experience. The SignUp Genius platform was used to schedule interview time slots. Providers were invited in an email to sign up for a 30-minute remote interview which would take place on the Zoom platform. Interview invitations included a digital recording release form.

Interview questions were designed to probe for the underlying cause of Telehealth user experience issues without leading the interviewee to give expected answers. Providers were asked to identify which user experience issue had the greatest impact on their ability to provide medical care. Additional questions asked providers to describe the functionality of digital solutions given an ideal world. A script was used to standardize each interview and to avoid variations in interview questions that may have biased the responses.¹³ See [Appendix E](#) for the script and a list of interview questions used.

RESULTS

Survey

49 clinicians in 17 different medical professions completed the survey. Of the 49 respondents, 58.5 percent utilize a digital solution to find information regarding best practice at least once per day. 26.8 percent of the survey sample uses digital solutions for this purpose multiple times per day.

The frequency in use of digital solutions as a resource for medical information was not surprising. However, lack of Internet connectivity or a digital solution “not working” occurred within our sample population less frequently than was expected. Issues were experienced only several times per month by 43.9 percent of our sample. Another 43.9 percent never experienced these issues.

Although these issues were experienced relatively infrequently, 61 percent of our respondents indicated that their ability to provide care was impacted when their Internet or digital solution was not working. Additional issues were experienced as providers navigated the UI of their digital solution. 34 percent of our sample stated that their digital solution was difficult to use or navigate.

View an [interactive infographic](#) of the survey results.

Interview

One of the proponents of user experience research is that three to five percent of participants in a usability study identify 85 percent of the usability issues.¹¹ Of the 49 respondents, 88 percent were willing to participate in a user experience interview, however, only six providers responded to our interview invites. Interviews were conducted with each of the six providers who practice in

the following care areas: nursing and nurse education, speech therapy, psychology, and respiratory therapy, and certified nurse midwifery.

Although technical issues such as Internet connectivity were less frequent than expected, user experience issues were noted by each provider during their interview. Three of the user experience problems were identified by providers as having a significant impact on their ability to provide care: difficulty with patient onboarding to Telehealth technology, searchability or navigation of digital solutions, and issues with charting, such as a non-intuitive user interface in the charting platform. See [Appendix F](#) for transcripts of each interview.

DISCUSSION

Patient Onboarding

A common difficulty associated with the user experience issues identified by our sample is decreased time spent with the patient. As stated by our interview sample, healthcare facilities budget only a small window of time for providers to spend with each patient. One interviewee explained that as a Speech Language Pathologist (SLP), she is allotted as few as 20 minutes per student. When therapy takes place remotely, providers may need to spend part of the session troubleshooting issues such as a poor Internet connection. Additionally, Telehealth providers may need to assist the patient with learning the digital solution that is used in the virtual appointment, consuming time that could be spent caring for the patient.

The SLP provider indicated that she is well-trained in how to use Telehealth technology, but the patients rarely receive training before an initial visit. The idea of providing technology training to patients, or their representatives, raises the consideration of who is responsible for this training. In the SLP's case, training provided by the contracted school may be a logical solution. A more effective and universal solution, however, is technology that requires little to no training or provides necessary training within the UI—a digital solution that guides patients through their user experience.

Chatbots and/or voice-enabled chatbots is one viable solution. Chatbot technology allows a user to receive information from a computer, or digital assistant, in a natural and conversational way using text or voice.¹⁴ This technology uses artificial intelligence to guide patient interactions, such as assisting a patient with entering a virtual waiting room. For example, the digital assistant could ask the patient if they are ready to enter the waiting room. If the patient responded in the affirmative, the digital assistant would then enter the patient in the waiting room and provide confirmation of this action with a phrase such as “Entering you into the waiting room now.”

The SLP provider conceded that difficulty with the patient onboarding process is typically a temporary problem in a therapy setting. The patient meets with the provider repetitively and becomes more familiar with how to use any digital solutions used in the sessions over time. However, providing an optimal user experience in an initial visit takes on new importance in the

case of a one-time Telehealth appointment with a provider. Whether the patient meets once or many times with a given provider, improving the patient onboarding process can provide a more intuitive user experience.

Searchability

Approximately one third of our survey sample indicated that their digital solution was difficult to use or navigate. Issues with searching or navigating digital solutions was identified as a pain point by 50 percent of our interview sample. Although the incidence of a user experience issue does not determine significance, providers in our sample indicated that difficulty searching and navigating digital solutions have a significant impact on their ability to provide care. The following providers stated that navigating and/or searching has been an issue in their practice: Advanced Practice Registered Nurse, Certified Nurse Midwife (APRN, CNM), SLP, Health Care Assistant (HCA), School Psychologist (SP), and Nurse Educator (NE).

In her interview, the NE explained that the hospital which employs her switched to a new online medical resource database several years ago. When she was navigating to best practice procedures for cleaning a catheter, only neonatal procedures would populate. To work around this issue, staff are required to search with “the right” keywords to find needed information. A second issue with this process is having to leave the patient’s room, walk to a computer, login, and find information before returning to perform the procedure. The NE stated that this process “. . . takes away from the time with the patient, and critical minutes that we may need.”

The NE expressed that she has noted a tendency in some nurses to perform a procedure how they think is best without reviewing best practice documentation to avoid being perceived as incompetent: “I think the harder it is to find those solutions, the more likely someone is to just do it how they think it should be done or cut corners . . . that’s a detriment to patient care and to patient outcomes . . .”

When the NE was asked what searching for best practices would look like in an ideal world, she responded, “. . . saying what I want to find, and then it just popping up,” and having best practice procedures organized by body system. She provided an example: “If I need something to do with the bladder, I could click on ‘bladder’ and everything that has to do with bladder, or has the word bladder in it, would be found in that section. I think that would be beneficial . . . it’s a faster route to find what we need.” The NE also stated that integrating best practice resources into the patient charting system would be beneficial. For example, if a patient was diagnosed with heart failure, best practice procedures regarding heart failure would be linked in the diagnoses section of the patient’s chart.

The APRN, CNM stated that voice-activated search would be an ideal way for her to search digital solutions as well. This provider has dyslexia and uses Siri to provide the correct spelling for medical terms in order to search for them in the digital solution she uses. Additionally, she suggested creating a downloadable version of specific resources that would function offline and be searchable by voice when an Internet connection is not available.

The APRN, CNM utilizes four separate digital membership reference sets: UpToDate, American Gynecological Association references, the American Midwifery Association references, and Functional Medicine references. When asked what searching for best practices would look like in an ideal world, she replied “I think being able to just use my databases and be able to say, ‘Hey this is what I am looking for’. . . having something that integrates and searches all of those things for me instead of me having to go search individually would be really cool.”

It should be noted that incorporating voice activated search would not improve the search algorithms that are built into existing digital solutions.¹⁵ Additionally, providers would need access to a voice-enabled device in the patient/procedure room to receive a benefit. If such a device is available, adding voice capabilities may streamline the search process, improve the provider user experience, and in turn, improve patient care and patient outcomes.

Charting

The HCA stated that she experiences difficulty when navigating the digital solution used for charting in her facility. Computers that can be used for charting patient data are located in each of the patient rooms. The HCA explained that she is responsible for six patients per shift, and that she has difficulty getting the computers to “load” after logging in in half of the patient rooms on a daily basis. As a workaround, HCAs at this facility are given a smartphone at the beginning of each shift to use for charting patient data.

The HCA described the mobile charting app as being “really difficult to navigate and hard to use.” Examples of information that is difficult for the HCA to locate include the patient record number, different tabs or sections of the patient chart, and specific times when adding time stamps for patient events. She explained that she frequently resorts to writing down patient data on paper: “I feel like [charting in the mobile app] would be a much faster way for me if the computer [is] down—that I could just type it into my phone as a note . . . and have it be in the charting. But right now, for me, I never use [the smartphone] because I think it's just really not user friendly . . . I will write things down by hand and then type it into the computer later.”

The HCA stated that one of the purposes of charting patient data is to communicate “live” updates in the patient’s condition to the physician. When the HCA writes down patient data to be entered into the computer later, the patient’s chart is no longer live. If the patient data is concerning, she explained that she reports it to the nurse, however, it may not be added to the chart for several hours.

Routine data, such as the patient’s input and output over the course of a meal may not be entered into the chart at all. The HCA stated that there have been incidences where she and other HCAs have forgotten to enter meal intakes for the same patient for five consecutive days. Improving the virtual charting experience—making it easier for the HCAs to navigate the charting system—may increase the frequency of accurate and up-to-date charting.

In her interview, the SLP identified charting as a frustration from a “time standpoint.” The digital solution used by her employer includes all of the charting and billing functionality that she needs in one platform. Since she contracts with schools in multiple states, however, the SLP frequently inputs the same chart notes for the same student into multiple platforms. Additionally, notes for different students typically incorporate similar elements and progress goals. A database or a “bank” with common goals was proposed by the SLP as a solution to streamline the charting process. The SLP made the distinction between “cut and paste” charting and modifying existing components for individual students.

NEXT STEPS

This study explored user experience issues experienced by medical providers. This research did not focus on the patient user experience or how issues experienced by providers impact patient outcomes. Research that explores the patient user experience and patient outcomes is essential to prioritize the significance of user experience issues and to guide future research and design decisions. Direct observation of user behavior in a field study may be useful in avoiding response biases.^{[16,17](#)}

Four provider personas—fictitious, yet realistic profiles which represent a user population—were created as a tool for future researchers.^{[18](#)} After exploratory research based on the patient user experience is completed, patient personas should be utilized to guide the design process. Proposed solutions of a chatbot and/or voicebot, and voice-enabled search and charting will need to be re-evaluated based on the results of patient user research. See [Appendix G](#) for provider personas and [Appendix H](#) for research regarding voice experience design.

Once research is completed, the design process should include testing of both low- and high-fidelity prototypes before building the design. User testing of prototypes is essential to evaluate the validity of design decisions. After the design is built, the final step in the design process should include user testing to identify any user experience issues.

The user experience design process should be cyclical. As technology and user needs evolve, additional research and user testing is needed. With a multitude of tools and resources available, designers are well-equipped to keep pace with the rapidly changing Telehealth industry.

APPENDICES

A. Review of Telehealth Literature

- Pros of Telehealth
 - Convenience
 - Increases specialist access in rural areas
 - Increases patient engagement
 - Fewer hospital admissions
- Cons of Telehealth
 - Technology and Internet restrictions
 - May not be covered by insurance
 - Gaps in care when patients visit with different physicians
 - All physicians must have technical training

- Telehealth Challenges

- Licensure

The physician licensing process makes it difficult for physicians to extend their practices to rural areas. Physicians are required to be licensed in each state. The IMLC (Interstate Medical Licensure Compact) is an interstate compact which includes 30 US states, Guam, and the District of Columbia. This compact makes it faster for physicians to become licensed in multiple states. More interstate compacts and specific licenses for Telehealth would be beneficial for physicians.

- Broadband

The Federal Communications Commission set a minimum download speed requirement for service providers at 25 Mbps and an upload speed requirement of 3 Mbps. As of 2017, only 73.6 percent of individuals living in rural America had Broadband that met the minimum requirements. This disparity can be problematic during live video consultations between physicians and patients, as well as other aspects of Telehealth.

- Reimbursement

The Medicaid guidelines for Telehealth reimbursement vary from state to state. The Center for Connected Health Policy (CCHP) has created interactive maps to show each state's policies regarding Telehealth. Another issue with reimbursement is that some insurance companies don't provide reimbursements for Telehealth services.

The CCHP identified these problems with the Medicare reimbursement model:

- Geographic and originating site restrictions
- Provider restrictions
- Service restrictions

Sources: [19-23](#)

B. Review of Existing Medical Resource Apps

In a review of existing medical resource apps, 16 apps designed for providers were identified. Seven of the apps are available to use offline in the case of a lack of Internet access. An * indicates that the app is available offline.



MDCalc
4.9 stars



Quick Medical
Dx & Rx*
4.2 stars



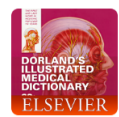
Skyscape
Medical Library
4.3 stars



CURRENT
Medical Dx & Tx
4.6 stars



Diseases
Dictionary*
4.6 stars



Dorland's Illustrated
Medical Dictionary*
4.5 stars



WikiMed
4.7 stars



Medical Terminology
Dictionary*
4.4 stars



Clinical
Sense*
4.7 stars



Figure 1 –
Medical Images
4.7 stars



MedSchool
4.6 stars



Medical Dictionary
By Farlex*
4.5 stars



STATworkUP
Ddx Clinic
4.7 stars



UpToDate
4.2 stars



Medical
Dictionary*
4.3 stars



Prognosis
4.7 stars

Apps reviewed on Google Play and App Store on 9/17/2020.

C. Review of User Experience Research Methodologies

In a review of the literature regarding design research methodologies, two concepts were emphasized repeatedly by UX researchers: the importance of variety in obtaining valid results and the use of research as a tool to fuel the design process.

Instead of designing a perfect quantitative study with a large N, researching a diverse set of circumstances can save time, be cost-effective, and deliver useful insights. Sample size is important; however, a large sample of very similar participants may produce results that are not representative of the target audience as a whole. For results that are externally valid, a diverse set of users and conditions should be tested.²⁴

Since time is frequently a limitation, designing a perfect study may not be feasible. Researchers from the Nielsen Norman Group, a premier resource in UX research and design, state that it is most important to start somewhere and keep learning. Research activities should be planned and executed to inform the next step in the design process.¹¹

D. Survey Questions

1. What are the current digital solutions you use in your practice? *Check all that apply.*

- Medical resource database (ex: MedlinePlus)
- Academic medical journals
- Industry forums
- Other, please specify:

2. How frequently do you rely on digital solutions to find additional knowledge regarding best practices?

- Multiple times per day
- At least once per day
- Several times per week
- Several times per month
- Never

3. How often does your Internet or digital solution not work?

- Multiple times per day
- At least once per day
- Several times per week
- Several times per month
- Never

4. When your Internet or digital solution is not working, does it impact your ability to provide care?

- Yes
- No

5. What do you need to feel comfortable to provide care if you don't have access to your digital solutions? *Check all that apply.*

- Offline digital medical encyclopedia
 - (If yes, trigger) Please specify:
- Medical resource books
- Phone interaction with external resource
- Other, please specify:

6. What obstacles are associated with the digital solutions you have access to? *Check all that apply.*

- Inefficient
- Difficult to use/navigate
- Lack of medical information
- No obstacles
- Other, please specify:

7. Would you be willing to answer more questions in the future?

- Yes
- No

The following questions are for demographic purposes.

(Fill in the blank)

1. What is your clinical position?

2. What is your care area?

3. How many years have you been in practice?

E. Interview Script and Questions

Thank you for being willing to be interviewed today. I will be asking you 13 open-ended questions. As a healthcare worker, you have a unique perspective and insight that can help us achieve our goals. I will be using the term 'digital solutions' in my questions, so

I'd like to define that before we begin. Digital solutions are solutions that resolve problems without any physical efforts and which are present online. In this interview, questions regarding digital solutions do not include any solution that deals with or contains any form of patient health information. We are interested in how you find information to treat a patient if you are unsure of the best solution instinctively. Let me know if you need clarification on any of the questions, and feel free to include anything that you feel is relevant.

Do I have your permission to record the interview?

Great, let's begin.

1. What does your organization do and how does your role fit in there?
2. How do you use digital solutions in a typical day as a [answer from 1]?
3. Which devices do you typically use to perform these tasks? Why?
4. When there isn't a reliable Internet connection, how does this impact your ability to provide care?
5. How often does this happen?
6. What workarounds do you utilize to solve this problem?
7. Why do you take that approach?
8. What are some of the other issues you encounter frequently as you use digital solutions in your workplace?
9. Which of these issues is the most impactful on your ability to deliver care? Why?
10. When [issue participant states in 8 and 9] occurs, what would you expect to happen instead in a perfect world?
11. Is there anything you often look for in the digital solutions you use that is missing or hard to find?
12. Is there any way the digital solutions you currently use aren't supporting your needs?
13. What haven't we asked you today that you think would be valuable for us to know?

Thank you for your time.

F. Interview Transcripts

1. Interview with Respiratory Therapist - 11/18/20

Tressa Hopkinson:

What does your organization do and how does your role fit in there?

Interviewee:

I work at a specialty long-term care hospital as a respiratory therapist. I have worked at several major Hospitals and in the ERs.

Tressa Hopkinson:

How do you use digital solutions in a typical day as a respiratory therapist?

Interviewee:

I use digital solutions when I need to find information on procedures, dosages, charting and conditions I am unfamiliar with.

Tressa Hopkinson:

Which devices do you typically use to perform these tasks and why?

Interviewee:

90% of the time I use my personal cell phone. When I worked at the city hospitals, they provided a company phone with encryption. I do my charting bedside, if at all possible. If not, I may have to wait for one of the computers at the nurses' stations. There are not enough computers. There are only about 20 for the shift and over 30 people need to use them.

Tressa Hopkinson:

When there isn't a reliable Internet connection, how does this impact your ability to provide care?

Interviewee:

Most of the challenges I encounter are more related to the intra-net versus the Internet. Our Intra-net goes down all of the time. They do daily updates at night which can take two to three hours where the system is down. When the system is down, we have to do paper charting. Someone else collects our paper charting and then enters it into the system when it comes back up. There are dead spots in the hospital. I mean, specific rooms where you know the scanner to scan patient wristbands is not going to work. If something isn't working that will affect my patient care, I will just override the system.

Tressa Hopkinson:
How often does this happen?

Interviewee:
The intra-net has an update daily usually on night shift.

Tressa Hopkinson:
What workarounds do you utilize to solve this problem?

Interviewee:
I use paper charting which is collected by someone and then entered into the system by someone else. When the system goes down, I contact IT and they fix it. I call the IT hotline. IT is usually pretty good about fixing it. In the meantime, I use my cellular data to connect.

Tressa Hopkinson:
Why do you take that approach?

Interviewee:
Paper charting is the easiest solution to track everything when the system is down. My patient care always comes first which is why I end up utilizing my personal cell phone so much.

This interview was abbreviated due to technical difficulties.

2. Interview with Speech Pathologist - 11/19/20

Interviewee:
So, yeah, so thank you. I'm here.

Courtney Montrose:
Hi, [name of Interviewee].

Interviewee:
Oh, hi, Courtney. Hi, Tressa. Oh my gosh, I was an hour late. I thought it was at seven. So -

Tressa Hopkinson:
You're fine. I was in Houston this week, visiting my folks. Well, for like, two weeks, and I made an appointment for a job interview. And I was in Houston when I set the appointment. So, my computer had it at one time, and I was like, "Okay, I'll be back off the plane by that point. I can do this."

Interviewee:

I get it.

Tressa Hopkinson:

Yeah, I got off the plane and it was like your interview was an hour ago. And I'm like, "Oh, well, there you go."

Interviewee:

It happens. It happens. Well, good. I'm glad we're all here. Thank you.

Courtney Montrose:

We'll just go ahead and get into it, if that's fine with you.

Interviewee:

Sure! So, we're recording now, starting now?

Courtney Montrose:

Yes, as long as that is fine with you.

Interviewee:

It's completely fine.

Courtney Montrose:

We record it, just so we can refer back to it. And make sure to get good notes. And so, we'll be asking you some open-ended questions just so we can hear your perspective on some things. Because as a healthcare worker, you have much more of a unique and insightful perspective than any of us do, because we don't know what you're working with and dealing with every day. And so, did you take the survey that we did?

Interviewee:

I did not get that no.

Courtney Montrose:

Okay, that's totally fine. We will pretty much cover everything in that here, anyway. So that's just fine. But I'll use the term digital solutions. And this is something that was talked about in the survey. So, by that, we just mean solutions - here, I'll read the definition that we wrote. They're solutions that resolve problems without any physical efforts, and which are present online. And so, questions regarding digital solutions aren't talking about anything that contains any form of patient health information, nothing like that. Just interested in specifically understanding how you find information to treat a patient.

Interviewee:

Okay. Like therapy materials.

Courtney Montrose:

Mmhmm. So yeah. If you're unsure of the best solution instinctively, yeah, just anything like that. And so, if you need clarification on any of the questions, just let us know. And then feel free to add anything in addition to what we asked you that you feel is relevant and helpful. That's all. We'll go ahead and get started. Okay, so what does your organization do? And how does your role fit in there?

Interviewee:

Okay, so I work for [Name of Interviewee's employer]. Um, we have, we're like private contractors. So, we contract with [Name of Interviewee's employer]. I'm a speech pathologist, but I've been a therapist for 25 years - a long time. And I've also been doing teletherapy. That means on the computer like this for seven years, so I've worked on my own before. So, I've had my own LLC, my own company, where I've got my own contracts. I've worked for other companies, but presently I work for [Name of Interviewee's employer], which is amazing. They're just, they really are a great company. They provide so much for us.

Courtney Montrose:

That is so awesome. Yes, I've heard great things. And just from Sarah, our other team member, just talking about [Name of organization]. It sounds like a really awesome organization.

Interviewee:

Yeah. Great, great organization. Correct.

Courtney Montrose:

Okay, and tell us how you use digital solutions in your work.

Interviewee:

Okay, so because I've been doing this for many years, the good news is, is I have a lot of materials. I—okay. When you say digital solutions, you're talking about therapy materials, correct? I mean, can I say that's the same . . . ?

Tressa Hopkinson:

We're discussing the concept of how you access information. So, if you're accessing it on a tablet, on a phone, on a desktop on a laptop, so it's digital in nature. It could be the therapies you're looking for. Specifically, we're looking at how are you finding information? Especially now that we're in this, we're in this completely Telehealth kind of an environment with COVID now, and that so many more things are moving online. What kind of digital things are you using to help yourself?

Interviewee:

Thank you, Tressa. Yes, um, so I do feel like I've had a little bit of a jumpstart on this because I've been doing this for seven years. So, I feel like I just keep adding on. And because this has happened with COVID, I was able to get a ton of free things that I normally was paying for. So as far as how I get my materials, I do a lot of different things. I get it, I google, and I go just straight on online. I get it on the computer. I download apps a lot. And I have an iPad right here. And it's helpful for therapy, because there's a lot, especially working with the younger children like the preschool, there's a lot of apps that are on here, and then we mirror it. I mirror it onto my computer. So that's how I use my apps on the iPad. I also rely on, like, lots of different sources. Like one of them is called Teacher Pay Teachers. It's a site where teachers—you know what it is? Yes. So, teachers can put on, yeah, just a ton of different materials. And we can just Google it, or not Google, but search under Teacher Pay Teachers like speech therapy, and whatever diagnosis or disorder we're looking at. So, I get a lot from Teacher Pay Teachers. I Google—just the Internet. Pinterest. I haven't used Pinterest for just—I have a speech therapy site on my own Pinterest account, and I pull things from there all the time. I'm trying to think where else to get my materials. That's probably the bulk of it. Oh, Boom. Boom learning cards is a big thing for speech therapists. This year, I've done a lot more with Boom cards. It's just the same kind of thing. It's really interactive and dynamic. You can have, the kids can do the controls on their side. And they can use the, you know, use the control so that they're interacting. But almost everything I do that kids can interact; I can give through Zoom. I can give them controls. The only one they can't is when I'm on my iPad. It doesn't. And, or, if they have a Chromebook on the other side, they cannot, we cannot give the controls to them.

Courtney Montrose:

Okay, perfect. This is already so much information.

Interviewee:

Did I give you too much?

Courtney Montrose:

No, no. As much as you give us. It's you know, the more the better.

Interviewee:

Okay, great.

Courtney Montrose:

Who knows what will be, like, something that we can really go off of, you know?

Interviewee:

You bet.

Courtney Montrose:

So, when it comes to Internet connection, obviously, that's something that impacts people's ability to go online and find these solutions and access these materials. So, is reliable Internet connection a problem for you?

Interviewee:

That is such a great question. Because in the past, it was. Right now, with [Name of Interviewee's employer], it's not. But in the past, it has been because we tend to work in rural areas. And when I worked more for smaller companies, or if I worked for myself, I didn't have, like, the support or the help I needed if the connection was poor. And there's so many reasons why. It could be the weather on their end, or it could be just, who knows? Maybe there's a glitch in the system. Or maybe there's too many people online at that time. Um, there's lots of reasons. Maybe even they're in a closet doing therapy, and they're, they're not close to their modem. So, I had a lot of problems when I didn't have the support. But now I have support through [Name of Interviewee's employer] where we literally have a tech support on staff where we can call them at. And they answer, I think it's eight minutes or no, maybe it's even less than that—four minutes. They call us right back and we can troubleshoot while we're online. And some of them, if we're lucky, some of the schools have a tech support for us as well. And so, we, right now I utilize both of them. I utilize [Name of Interviewee's employer]'s tech support and theirs. And so, this year, I have not, and last year, I have not had any problems at all with the Internet service, which is shocking with COVID, thinking so many people are on. I have not had that. Well, when I say not, I probably have had one out of my whole caseload that's been really an issue. The issues come when we see, as you know, we're seeing some kids at home, and we're seeing some at school. At school, it's a lot easier with the Internet because we have so many people involved with trying to make it work. You know, we have, you know, whoever, administration assistance, but in the home, it's difficult because we just have a parent and myself. But like I said, I do have support, you know, through [Name of Interviewee's employer]. So yeah.

Courtney Montrose:

That is very nice that you guys have access to that.

Interviewee:

Wonderful. And not everybody has that.

Courtney Montrose:

I know that that isn't really an issue for you now, currently. But in the past when that has happened, like, that definitely, I'm sure, impacts your ability to provide

care. And so, at those times, when that would happen, what workarounds did you utilize to solve the problem?

Interviewee:

Well, I had to do a lot of troubleshooting in my mind. So, for instance, I'll give you some examples. If there, if I would pull up something like, let's say, I pulled up something on my iPad, which is mirrored, I know that that can create a bog down, like there's too much going on. So, I would have to say, "Oh, I guess I can't do this today or right at this moment," so I'd have to troubleshoot in my head. So, I'd scrap that. So then, I tried to pull up something on the computer. Well, maybe I'm still having a problem. So, then I would resort to traditional. Like, I'm like, okay, I would pull up my tablet and say here, and you know, do it that way—more traditional. Now, let's say, I couldn't hear them. This is interesting. Um, sometimes we literally, like let's say, I could see them, but I couldn't hear them. I would say, okay, I would have the aide call on the cell phone. And then I would have my cell phone, we'd have their cell phone, and we would just have the volume or the audio through our phones. And then we'd be able to see each other on screen. And it got tricky. Sometimes there were times where I couldn't even see on the screen at all. And if I couldn't hear them or see them, well, then the therapy session had to scratch, and we were done. But it was tricky, and especially in a rural area, where connection was poor. So, I'd say the answer, the short answer, to that is that I just had to troubleshoot all day like, you know, like, how can I make this work and still make the session a go with what we have? So.

Courtney Montrose:

So nice that that isn't as much of an issue now for you that it was. My goodness, I can't even imagine.

Interviewee:

Well, and at the time, I just didn't know any different. Like, I just thought, "Oh, gosh, is teletherapy always like this?" Now I realize that no, it does not have to be that way. It can be successful; you just have to set yourself up for success.

Courtney Montrose:

For sure. So, let's see. Are there some other issues in regard to digital solutions and all this, like aside from Internet connection, that you encounter frequently as you use your digital solutions?

Interviewee:

Well, does this relate? Like when, just making sure that like, the people on the other side of me—we're well trained, because I've been doing this—but just to make sure that there's training on the other side. Like, we're continually training. This is new to so many people that just, I don't know, if it's a problem. I guess you could say it as a problem, because people don't always know and that's

okay. Everybody starts out from the beginning, but people don't always know simple things, like how do you share your screen? How do you turn on your volume? How do you just whatever? So that, you know, that's a challenge because, like, you know, I just know what to do, and I've been doing this, but we're continually training somebody on the other side as to how to do this and that. Even something simple, like the background. You know, we know that you can't have light. If you have light coming in the background, all you're gonna see is a silhouette of your face. If you have extraneous noises, and you have, like, kids, and you know, people around working - which is hard with COVID, because there's so many family members home at a time - you're not gonna be able to hear very well.

Tressa Hopkinson:

So, let me ask you a follow up question to that. Do you do your therapy through Zoom? Or do you have a video connection through [Name of Interviewee's employer]?

Interviewee:

Well, I do it through Zoom, but they have Zoom linked through [Name of Interviewee's employer]. So, when I first started, I didn't know I was going right through Zoom, the app, but um, we actually have it linked through our website through [Name of Interviewee's employer]. So [Name of Interviewee's employer] gives them the password, all that information. So, it actually goes through Zoom through [Name of Interviewee's employer]. That's important though, because I've had people that just say, okay, we're doing Zoom, so they download the—I'm sorry, they don't have it downloaded—the app, Zoom. They just google Zoom, and they can't figure out why they can't connect with me. And I think what I'm gathering the problem is because they need to have the app, Zoom, and then also have it through us. Not so sure, but I feel like I've had that a few times where they're like, "Oh, we just can't connect, we can't connect." And I'm thinking that they have to have it downloaded on an app onto their computer, you can't just google Zoom.

Tressa Hopkinson:

So, what I'm hearing you say is that there is an onboarding, on the patient side, issue that needs to be addressed, possibly?

Interviewee:

Yes. Yes. Yeah. Thank you for, for putting it that way. Yes.

Courtney Montrose:

Did you want to ask any other questions, Tressa, in regard to that in the onboarding?

Tressa Hopkinson:

I think that what Linda has said is that there are some specific things that you're seeing issues with, like the lighting, the sound, how to access it and sign into it, in particular, are specific issues that the patients are having trouble with? Is that correct?

Interviewee:

Correct.

Tressa Hopkinson:

Are there any other issues that you can think of that patients are having in getting on and connected with you?

Interviewee:

No, I can't think of any right now. But if they come up, I will let you know.

Tressa Hopkinson:

Okay, thank you.

Interviewee:

Yeah, you're welcome.

Courtney Montrose:

Okay, and, I mean, I don't know if you'll be able to think of anything more. I know you've already given us a lot, but is there anything else in your digital solutions that you feel like is missing, hard to find, or something that's not supporting your needs in regard to that? Or your therapy materials or anything like that?

Interviewee:

I'm not, well okay, as a therapist—I don't know if this is really answering your question—but as a therapist, we have so many possibilities for therapy, digital solutions, right now that I need a better organizational system. Like, I have so much. Like I have Teacher Pay Teachers—it's all—I have so much on there. And Boom cards. Just even the Internet. I have my own files. I have the iPad. So, what happens is, when I'm picking out, let's say I have a five-year-old that's working on articulation. You know, I have five different spots to find things. And it does get a little complicated when I'm—the good thing is, is I know that I have a lot out there. And I can think on my feet a lot. But there's times where I wish I had something better for organization so that, like, when a student's there, that I can just say, "Okay, here's all my articulation materials." So, I don't know, I guess that's sort of a dream of mine that from a digital solution standpoint to have better organization, organizational tool?

Courtney Montrose:

I, no, that is super, super helpful. This is the kind of stuff we're looking for. For sure.

Tressa Hopkinson:

Let me ask a follow up question to that.

Interviewee:

Sure.

Tressa Hopkinson:

I've spoken with several other people. Do you have issues with your digital solutions for your charting and your tracking of information that is a challenge?

Interviewee:

Thank you for bringing that up. Sometimes I think what we do—and this is notorious in special ed—is we put the same kind of information in multiple sites because multiple people need that. When I work for [Name of Interviewee's employer], I have contracts in, like, different states, different schools, different types. Like some of them are, like, related service management, which is very different from a brick-and-mortar school. So, we need to put in information that's similar, like our daily notes or whatever, but we put it in different spaces. So, from a time standpoint, it's not real streamlined. I shouldn't say—it is, but I just think it could be better. It could be better streamlined because I feel like we spend an awful lot of time putting in the same kind of information in different spots. And yeah, I'm just trying to think even with our billing. I mean, I am fortunate this year, on a positive note, I mean, [Name of Interviewee's employer] does have everything in one spot. So, like we do our billing, we do our notes, we do that all in one spot. But doing daily notes and doing like maybe Medicare billing, things like that, it does get very time consuming. Um, maybe you could help with this. One time, a few years back, there was an IEP site that had, like, those tags, what do you call them? Like tag words or something that . . . ?

Tressa Hopkinson:

Yeah, keywords and tags?

Interviewee:

A lot of times we write our daily notes, and I write the same kind of things. We write different accuracies, and we write different activities, but generally, and it was just a lot more time consuming. I don't want to say that we're going to cut and paste all day. But if we had like, just kind of like a bank, maybe that would help. Like a goal bank where we could—

Tressa Hopkinson:
A database?

Interviewee:
A note bank, yeah, like a database—you're using terms that I probably don't know—that you could just put that information in, it would streamline the process, and make it not so time consuming for us to write notes, you know? Yeah.

Interviewee:
Yeah, one—I'm sorry, I was just going to say—one year, I had it where the IEP system had goal banks, where we could just move— Now, and I'm not saying it's like a one size fits all, but we could get them generally and then we could, you know, change it as we go to what we needed.

Courtney Montrose:
Okay. So that is the majority of our questions. The last thing that we have to ask you is just if there's anything else that is related to what we've talked about that has come to mind, that you think would be helpful for us or relevant?

Interviewee:
I can't think of anything right off the top of my head.

Courtney Montrose:
Tressa, did you have any further questions?

Tressa Hopkinson:
I'm just gonna ask, in a perfect world, how would your digital solutions function for you? Like if your digital solutions were just perfect, everything worked exactly how you wanted it to, what would that look like?

Interviewee:
Well, I think a common theme here for me is probably streamline and organize. So, like, if things were just, like, so much easier to access for me. You know, getting online is not, and I've done this for so many years, like, getting online isn't really such a big thing anymore. And training on the other side, it's not such a big deal, because they, you know, people get that, but it's just the organization of being able to— For time management reasons, I think that it would be amazing to have my stuff organized so that I could just pull it out when I needed it.

Tressa Hopkinson:
That's actually a common feeling amongst the medical professionals I've talked with.

Interviewee:

Well, because we have—it's not that we don't have the information—but you have to think on your feet. And that's the one thing I've learned with teletherapy is you have to think, you always have to think on your feet. Because if something's not going right, you know, with the student, you know, you have to adapt and change according to whatever's going on. But if you're organized and you have it there, you know where it is. And I think you could be more efficient with your time.

Tressa Hopkinson:

Yes, I agree with that.

Interviewee:

Because we have only such a small—sometimes, you know, I see a kid for 20 - 30 minutes. Well, that's such a small time that you want to make sure you have, or that I have, stuff ready to go, so that we are using our time wisely.

Tressa Hopkinson:

Absolutely.

Interviewee:

Yeah. I guess that's all I have.

Courtney Montrose:

This was super helpful. Thank you so much again for being willing to do this. You're so incredible. Really appreciate you talking to us.

Tressa Hopkinson:

I appreciate your taking the time to talk with us.

Interviewee:

I love it. And I'm really interested to see what you do with this, um, you know, the information and how you can utilize this, so keep me updated.

Tressa Hopkinson:

We will.

Interviewee:

Awesome.

Courtney Montrose:

Perfect. Well, thank you so much again. You have a great night.

Interviewee:

Thanks ladies. Bye.

Tressa Hopkinson:

Bye.

3. Interview with School Psychologist - 11/20/20

Sarah Callison:

Okay, so, I'm familiar with this a little bit, but tell me more about what [Name of Interviewee's employer] does and how your role fits in there.

Interviewee:

Okay. So, I'm a school psychologist, and so I work online and what I do is mostly evaluations for special education in schools. Um, so my license goes from three years old until 21, but so right now my assignment is a fifth and sixth grade school, which is, I guess, an elementary, but, you know, they kind of combine it. So, yeah. And it's mostly since the kids are so old already, it's mostly a reevaluation. So, it's kind of an easier task because it's not an initial evaluation where you have to actually look for what's going on, but it's still like a lot of work in terms of, um, you know, making it work. There's a lot of other pieces of the puzzle that work together to, to make that happen.

Sarah Callison:

Right. So, do you follow up on like past interventions, things like that?

Interviewee:

What's that? Can you repeat it?

Sarah Callison:

Oh, do you follow up on past interventions? See how they're responding to those?

Interviewee:

Yeah, definitely. So, it's, um, the way it works is we have, so we have consultations with the teachers, and we have the previous evaluation reports from three years ago and we see if the strategies that the teachers are doing have worked. And so, we kind of, it would be like measuring the new levels of the kids. Um, and seeing sometimes, you know, in spite of having a disability, you can actually exit those special education services based on your effort and you know, all the things. And sometimes, you know, they have students who stay there kind of like, you know, a lifelong, but it depends on the type of disability it is, so.

Sarah Callison:

So how long have you worked for [Name of Interviewee's employer]?

Interviewee:

[Name of Interviewee's employer], I'm starting my second year now.

Sarah Callison:

Second year, cool.

Interviewee:

Yeah. Second year. Yeah. And before that I had, I was working for another, um, also for another agency, um, that was less, let's say stable. So it was, like contracts, you know, monthly contracts here and there. Um, yeah. And I also work for a, um, it's a company for, so I do like, um, I write, no—I do the assessments or the evaluations for the readers. So that's a totally different topic, but yeah, it's like the whole psychometric field.

Sarah Callison:

Well, [Name of Interviewee's coworker] was really complimentary of you, so you must be doing a good job.

Interviewee:

Okay. Thanks. That's very nice.

Sarah Callison:

Yeah. We actually went to high school together, so that's how I know her.

Interviewee:

Oh, you guys did. Okay. Yeah. She's really cool. And she's awesome. Yeah. Very helpful too.

Sarah Callison:

Yeah. Super friendly. Okay. So how do you use digital solutions in a typical day as a psychologist in your practice?

Interviewee:

Well, you know, I think that's, it's, everything is digital solutions. So, um, you know, if I need to research new strategies, um, depending on the kid's disability or if I need to find resources for the community. If I need to check for instance, uh, there's sometimes, you know, like the criteria—not so much criteria—but like the way, you know, the procedures, they vary from one state to the next. And so, you just, you know, check that you're not doing anything wrong in terms of illegal stuff, right? So, yeah, for all of that.

Sarah Callison:

So, when you're having, um, if there's no Internet connection or it's a weak connection, how do you find that information?

Interviewee:

Well, with my good old books. Yeah. And, um, actually, you know, our company is really cool, so they have, most of our assessments are online, but some of them are also, um, you know, we have the physical books that we need and so on. And so, you know, you can always fall back and get one of those good fellas, so.

Sarah Callison:

Yeah. That's awesome. And so which device do you typically use on a daily basis? Is it a laptop, a phone?

Interviewee:

Laptop, phone. And, um, I have a small tablet too. Yeah. All three of them.

Sarah Callison:

Okay. And do you feel like, so you do have your books, but do you feel like when the Internet's out, does that impact your ability to provide care?

Interviewee:

No. Well, it depends like if I have an evaluation coming up, obviously, you know, when I have the student on the other side, then it does. Um, but if not, you know, as long as I have, let's say if I use it before, because we have software. And so, I basically get, if I get all the results, like some of my days are just, I can take a few hours. And I, the only thing I do is I put in all the information for each one of the students. So, I get the, basically the, you know, the summary of the results for each of them. And then I kind of organize it and then, you know, if Internet doesn't work, it doesn't matter because I already have the information. And so, I start writing my reports.

Sarah Callison:

So, do you take notes by hand or on your computer?

Interviewee:

I'm kind of old fashioned, you know, I mean, notes, yeah. I try, you know, I try so hard to do all these beautiful spreadsheets and stuff and, and then I go back to my books and, you know, my good old, you know, little, whatever (shows sticky notes), and it works.

Sarah Callison:

Yeah. I do a lot of stuff handwritten too. We're just curious to see what you do.

Interviewee:

Okay. It's kind of embarrassing. Cause nowadays, nobody uses something like that, you know, but I'm like the sticky note girl everywhere and I have an iPhone and my laptop is up to date. It's like only like two years old, but I don't know. I liked like, you know, like having something to touch to be like, "Oh, let me open this." And that's when I have my appointment, all these alarms, you know, I, I find it to me, it's like this, you know, this technology is just too loud. So, you have, you can, for instance, you can customize, you know, the, the ringtones to the different people, right? And yeah, that's kind of good, but then, you know, it did things differently. And so, it's, you know, I, I think that, I would say, I don't know if it's like something that comes with a profession in itself, but sometimes I feel like I have like an overload of like sensory stimulation and that contributes to like feeling the weight on your brain kind of.

Sarah Callison:

Yeah. Sometimes it helps me write out everything and then I can go back to my computer and keep going. Yeah. So, what are some of the other issues that you experience regarding digital solutions on a daily basis?

Interviewee:

Hmm. Well that you get a lot of, um, not correct information. Let's put it this way - it's a lot of trash. So you kind of like, you really need to spend a lot of time to research and see if, you know, whatever you're reading has, the right information, is up-to-date, is ethical, is legal, is right. You know? Um, yeah. So.

Sarah Callison:

So, you feel like, as you're researching, you might come across something that's incorrect. Is that right? Or—

Interviewee:

Yeah, either incorrect or not up to date, you know? And, and, um, I think that the visual part of how some things are presented are very attractive. Um, but then, you know, and that, that you engage in that because it's like the first impulse. You're, let's say you're looking for strategies for a kid who's like, has like a specific visual impairment, right. And then you go in, you know, you finally find it, you know, after reading a lot and only because it's appealing to you and it has the correct words and maybe, you know, the font is great. You start reading it, then you're like, yes, I got it. But then you find out it's from 1995 and no, not doing that.

Sarah Callison:

So, there's not one central kind of resource that you go to get your information. You're looking at a lot of different places?

Interviewee:

Yeah. Basically, I have like probably five or six, um, you know, sources that I always go back to. Um, and then obviously like the school sites, website, that's like the most accurate, but then it's all very, you know, I wouldn't say that it has a lot of everything. Like I like to look at, um, you know, also like the medical side of things. Cause like I did, I did my first bachelor's was in like biology. So, my family they're all like doctors and stuff. And so, you know, having that background of biology, it's like, it makes me look more at the other medical issues as well. And so, I tried to combine it. Um, and then I find that some resources are too, they're just too specific for psychology, which is also my job, but yeah, it might go beyond, you know, beyond what to you see, so.

Sarah Callison:

Okay. Alright. Let me just take another look at my questions here.

Interviewee:

Sure. And if I talk too much, just tell me.

Sarah Callison:

No, this is great. Okay. So, which of these issues that you experienced in using your digital solutions do you feel is the most impactful on your ability to provide care?

Interviewee:

Oh, that's a hard one. Okay. Um—

Sarah Callison:

Take all the time that you need to think about it.

Interviewee:

Um, what would it be? Maybe the thing with, you know, like the fact that not everything like, I would say like that the sources that come up first don't—they don't mean that they're the more, the more accurate ones or the more updated ones.

Sarah Callison:

Yeah. If they're at the top of the list, it doesn't necessarily mean it's the best.

Interviewee:

Exactly.

Sarah Callison:

Okay.

Interviewee:

So, I would like it to be like more organized, so I save time.

Sarah Callison:

Yeah. So, I guess in a perfect world, what would researching that information look like to you? How would it work?

Interviewee:

Well, there would be no trash, you know, nothing that should not be there. Um, yeah. And then, and then updated, like going from the most updated research to, you know, the least one and maybe, I mean, some other things are really, they are old because they just are. Like some of our assessments, you know, like they changed DSM-IV to whatever it is, every, I think every 15 years. Um, so some of those things that are like, you know, like the, the, um, the basic, like the foundation stones, they have to be there, no matter how old they are, you know? Uh, but I guess on, I don't know, I like to color code things. So maybe, you know, let's say that the, you know, like the, those stones that I'm telling you about, if they will be like, color-coded with like, I don't know, like green font or whatever, then you would know. Okay, so, this is allowed to be old, but then my strategies need to be like up to date.

Sarah Callison:

Gotcha. So, what would, I guess, the process look like for you in an ideal world? Would you go to one kind of app or website that has it all in one place? Or tell me more about what that would look like—the actual process of finding information?

Interviewee:

Well, to be honest, I think that, you know, researching stuff in a laptop or, you know, just like going to a website or just going to like Google, you know, and then looking for something. Um, even if it's, you know, if you go to PubMed, and then you research that just, how should I say it? I know it sounds kind of crazy, but just the act of like typing and reading and scrolling, it's like so old, right. Um, so I think, like, the coolest thing would be to, you know, to just have an app with, let's say, um, you know, like, I guess you would also have those resources, like the sources there like, let's say PubMed and National Association for School sites and stuff like that. But I guess more in, in like, you know, like, some sort of like a touch screen and then where things would unfold, you know? So, you would go

PubMed and then go to psych and then go like cerebral palsy and then you'll be like strategies for three-year olds, you know, and stuff like that.

Sarah Callison:

Yeah. That does sound like it would be a lot easier.

Interviewee:

Yeah. That'd be great.

Sarah Callison:

Okay. So how often do you experience, um, issues researching or issues with Internet connectivity? How often do those things occur?

Interviewee:

Um, well actually it was all good until Corona hit. Um, and I think that honestly, I mean, I have a great connection here, but it was crazy from the minute it started. Um, like sometimes I could not even call the US and my phone is also like have a, you know, like a regular phone. My cell phone is a [Name of Interviewee's residence] cell phone, but inside of it, I have an application that simulates like an American phone, so it needs Internet, right. And I could not even call from that. So that was, yeah.

Sarah Callison:

Okay. So, it's on a daily basis now, then?

Interviewee:

No. Now, now it's getting better about, I mean, you know, there's three months where it was really hard. Like over here we had, we could not even go on the street. Like you could go grocery shopping and come back, but most people were just locked in their houses and working from there.

Sarah Callison:

Glad that part is over.

Interviewee:

Yeah.

Sarah Callison:

So, I wanted to ask another question about how you research. Are you, how often does it occur that you can't find the information that you need? Are you always able to find that or turn to a resource?

Interviewee:

No, I would say like, I'm always able to, um, I mean, I mean, worst case scenario, if I can't find it myself, you know, sometimes it just gets overwhelming to write then write then look, you know? I get a little lazy and then I go on forums, you know, for psychs. And I go like, okay, I got this problem and then you get a link from somebody else. Yeah.

Sarah Callison:

Okay. One more peek at my questions. Okay. Is there any way the digital solutions you currently use aren't supporting any of your needs?

Interviewee:

No, no. That would be scary. You know, don't say that (laughs).

Sarah Callison:

Is there anything that you often look for in the digital solutions you use that is missing or takes a long time to find? You know, this could be, we've kind of talked about research, but this could be in your charting system.

Interviewee:

I have to think about that. What was your question again? If there's anything I'm missing right? I'm like, what? Sorry, it's like, it's almost like midnight here.

Sarah Callison:

Oh no.

Interviewee:

No, it's fine. I'm just, like, tired. Yeah.

Sarah Callison:

A lot of these questions are pretty similar. So basically, what we're asking is, is there anything that you use often, but it's hard to get to, or it's hard to find, kind of like clunky—the process to get there?

Interviewee:

Hmm. Well, I don't know. I have—maybe it's just because I'm used to it—but when I have meetings, um, I like to use Zoom more than those Google Hangouts.

Sarah Callison:

Yeah.

Interviewee:

Um, it feels more, you know, just like now it feels more real. And, um, I think the connection is also better sometimes in Google Hangouts, like, you see the, I

don't know the pixels or something. People have connectivity issues. And then one of the four, six people that are in the chat are, you know, they can't connect, or they hear me, but I don't hear them, you know, those kinds of issues. But I would say that that's basically it.

Sarah Callison:

Okay. And what software do you use at [Name of Interviewee's employer]? Do you guys have a platform specifically designed for you?

Interviewee:

Yeah.

Sarah Callison:

Cool. And what's the name of that platform?

Interviewee:

[Name of digital platform]. I'm like what is it? Yeah, yeah, we have everything there. So, we have some, um, some resources we can use if we have, um, like lessons, you know, mental health, uh, groups or individual counseling sessions, or, you know, it's not that many, but you know, you have a few and then you have everything in there. And like, um, if you went to ask for time off or you have your calendar to just put in your hours and so on and it's all in one.

Sarah Callison:

And is that where you do your assessments as well?

Interviewee:

Uh, no, actually we use Zoom.

Sarah Callison:

Oh yeah. Where do you input the data from your assessments? Is that in [Name of digital platform]?

Interviewee:

Uh, no, we have, uh, so we have like real paper protocols, believe it or not, like, this is kind of weird, but yeah. So that's what we have. And then, you know, then we put that information into, into the system, which is another software for, depending on the, on the assessment where we're providing the student. But yeah, no, that would be cool. And actually, the way it works is like, there's somebody else on the other side, helping the student, like, get set up and, you know, if they're fidgety, or they are runners or they, whatever other impairment they have, then the adult on the other side, um, helps with the whole piece of the testing and stuff.

Sarah Callison:

That is cool. Okay. Any other issues that you want to bring up or things that would be nice to have a certain way regarding digital solutions? I'm sure there's a lot.

Interviewee:

I can't think of anything. Like, I guess, you know, in my work, one of the biggest pieces, but you can't fix it or any, any machine can't fix it. Um, it's just like the, the human factor and yeah, people ghosting you and you need communication. So, if you can fix that, please let me know (laughs).

Sarah Callison:

Okay. Let's see. What haven't we asked you today that you think would be beneficial for us to know?

Interviewee:

Hmm. That sounds like a, an interview to a PhD. Um . . .

Sarah Callison:

If you can't think of anything, that's fine.

Interviewee:

No, I don't know, honestly, but if I come up with something, I'll definitely let you know, just send you a quick link.

Sarah Callison:

Yeah. For sure. Well, thank you so much, [Name of Interviewee]. It was good to meet you and learn a little bit about your work.

Interviewee:

Okay. Nice meeting you too. I hope I could help you with your research.

Sarah Callison:

You did. Thank you.

Interviewee:

Okay. All right. Take care. Bye-bye.

Sarah Callison:

Bye.

4. Nurse Educator Interview - 2/17/21

Tressa Hopkinson:

Welcome [Name of Interviewee]

Interviewee:

Hi, I'm so sorry, I couldn't get my Zoom to work. I apologize.

Tressa Hopkinson:

No, we were just discussing that last semester, we, when we were doing these initial interviews last semester, we sent out Teams invites, and nobody could get into Teams and couldn't get people connected. And so, we've had malfunctions with this. So, we're used to that.

Interviewee:

Well, my link on the email wouldn't pull through. It said that it wasn't a valid link anymore. What in the world? What's going on? So took me a couple seconds. I apologize for being a little late.

Tressa Hopkinson:

No, you are just great. So, I'm Tressa Hopkinson, and this is Kalista Rice. And she's going to be doing the actual interview.

Tressa Hopkinson:

I'm the product manager on this project. So, I'm gonna read a little thing to you that we do just so you understand what we're doing and definitions. So, um, first, I want to thank you for being here and interviewing with us today. But we're going to be asking you some open-ended questions. And as a healthcare worker, you have a unique perspective and insight that can help us achieve our goals. I'll be using the term—we will be using the term—digital solutions in our questions. So, I want to define that before we begin. Digital solutions are solutions that resolve problems without any physical effort, and which are present online. So, in this interview, questions regarding digital solutions do not include solutions that deal with or contain any form of patient health information. We're interested specifically in understanding how you find information to treat a patient if you're unsure of the best solutions instinctively. Do you have any questions or clarifications on what I've said?

Interviewee:

No, that sounds good.

Tressa Hopkinson:

And I sent a thing but, you know, a verbal of affirmation is okay for us to record this. For our history.

Interviewee:

Yes, I, I have that. Um, I apologize. I didn't realize I needed to actually sign something. I printed it out. I just need to sign it and then I'll email it back to you.

Tressa Hopkinson:

No, that's no problem. As long as I get a verbal affirmation that it's okay, we're good. So, I'm going to let Kalista ask you some questions now. And I'm going to take notes.

Interviewee:

Perfect.

Kalista Rice:

Yay, perfect. Thanks so much for doing this.

Interviewee:

You bet.

Kalista Rice:

So, my first question is, what does your organization do? And how does your role fit in there?

Interviewee:

Okay, so if we're unsure of procedures or information that we need, our main source of information is called [Name of digital platform]. And there's an icon on every computer, and it's easily accessible. So, you can click on [Name of digital platform] and it will take you to many different options like nursing, respiratory therapy, you know, all the different sections. And then you can look in a search query, I guess you could say, for what you're looking for, and best practice that our company uses will be listed there. And then it will tell you step by step how to, you know, do the thing. So, if you're wondering, how am I going to change a central line dressing, you could look on there. It would then tell you step by step on what you need to use, what supplies you need to gather, and then you can go forward with that. My role in that as a nurse on the floor would be, you know, if I have any sort of question, or I, you know, can't really think of what to do next, it's always to stop, and to review what I'm doing and then look on that for a resource. I also am a nurse educator, here on the floor. And so, mine would be to also teach to that and teach the staff that that is their responsibility and also a great resource to have because you don't know everything. You're never going to know everything and if you think you do, then we've got we've got some teaching to do.

Tressa Hopkinson:

Okay, so let me ask a follow up question. So, do you work in a hospital or do you work in a teaching school or where do you work?

Interviewee:

So, I work in a hospital.

Tressa Hopkinson:

In the hospital, okay. And your job in the hospital? You are a floor nurse, but you're also the nurse educator. Is that correct?

Interviewee:

Correct.

Tressa Hopkinson:

Okay. Perfect.

Kalista Rice:

Great. So, my next question is how do you use digital solutions in a typical day as a nurse educator or as a nurse?

Interviewee:

In a typical day, let's think. Throughout the day, we do a lot of medication administration. And there are specific medications that are very in-depth and in detail on how to give them. And so, a lot of the times, we would use that in our practice, and it is best practice to look and make sure you're formulating the medication, right. Or sometimes they'll come in a powder form, and you have to mix it with sterile water or normal saline, things like that. We can find that information on there as well. That's one aspect of it. Or central line dressing changes or Foley catheter insertion. Those are the things that on a day-to-day basis, if you are unsure, you need help with those, those would be where we would look. As a nurse educator, those are the, the skills that I want my staff to have. So, we would go over those skills using the best practice through our [Name of digital platform], and then train to those and make sure that questions are answered through - like I said, best practice portions and portals.

Kalista Rice:

Great. I have a follow up question. You said it's [Name of digital platform], correct? Yes. Okay. And does the hospital all have access to that, like every staff has access to it?

Interviewee:

Correct.

Kalista Rice:

Okay, great.

Interviewee:

I have used a different program but started with [Name of digital platform] a couple of years ago.

Kalista Rice:

Okay.

Tressa Hopkinson:

So, I have a follow up question. Is the [Name of digital platform]—tell me about how that's set up? When they click on it, what happens?

Interviewee:

Oh, sure. Meaning what comes up?

Tressa Hopkinson:

Yeah, like, if, if one of your nurses was unsure about something, and they were going to click that icon that's on your computer, what comes up? What is the interaction that happens there?

Interviewee:

Oh, okay. Sure. So, they click on the link, and then you'd go into your nursing—it's a web page that says nursing—and you click on nursing. And then in the search bar, you search for whatever you need. So, I'm, you know, I need to know how to do a two-hour—I'm looking at it right now as we go so that I can give you a little better, you know, input on this. If I needed the two-hour time urine specimen collection—that's the exact one—it gives you an introduction and tells you what you're looking for, why you do this test, what you're doing. Then it will go over your equipment, and it will list it step by step, what equipment you need, how you prepare it, and then your implementation—showing you, you know, how you're going to implement those different steps as well as the equipment. And then after that, it will tell you how to collect the actual specimen. And if you have it from a clean catch versus an indwelling catheter versus, you know, the different ways you can collect urine. And we'll do that. And then it will also give you some precautions, things to watch for, things to avoid. And then completing it, and then special considerations, as well as teaching and documentation. And then, also, at the very, very end, it gives you references on where they have done the tests, where have they done, you know, the information—where the information is coming from to tell us it's best practice.

Tressa Hopkinson:

Okay. And so, is that, are there illustrations? Or is it all text?

Interviewee:

Um, I believe most are text. If you'd like, I mean, I can put my camera around and you can see what it is.

Tressa Hopkinson:

Oh, no, it's, it's fine. These are just—we have a couple of things going. We are interaction designers, so we're looking for what, how it works for you. And then Kalista is a public health student. So, she's working on the public health side of it, and we're working together to kind of see what's available and what's missing. So.

Interviewee:

There are a couple—I know I just clicked on another one on measuring abdominal girth. And there is an illustration of a person and how he would actually do that. So, I think in some there are—most are words.

Tressa Hopkinson:

Okay, perfect.

Kalista Rice:

Would you find it more helpful if there were pictures?

Interviewee:

I would, because that's how I'm, that's how I learn. And so, I believe yes. It would be helpful.

Kalista Rice:

Perfect. I'll go on to the next question. When there isn't a reliable Internet connection, how does this impact your ability to provide care?

Interviewee:

Let's see, I believe this one is on an intranet. So, it doesn't require that, um, you know, I've never come across that situation where we didn't have reliable Internet here in our hospital setting. So, I don't know if I can give you a very great answer. Trying to think if I don't—let me see if I can turn my Internet off my computer and still access it. Is that okay?

Kalista Rice:

Sure.

Interviewee:

Give me just one moment. Okay, so this is not accessible if there is no Internet. They do not recommend—what am I trying to say? They don't recommend printing things off, or writing things down for the fact that it could change. And it can change quickly. In the healthcare setting, things are always being found to be working, or actually, this is new best practice. And so, writing things down is not necessarily our go-to for most things. During downtime, I would, you know, I am not sure on that question. I'm so sorry that that's not very helpful for you.

Tressa Hopkinson:

No, that's just fine. We have—right now, there's a lot of issues with the electricity in Houston, and Texas, in general. And so, we're looking at what happens if you lose power, or if, you know, if you're in a remote situation, what kind of things would you utilize? So, you know, if it doesn't apply, it doesn't apply, and that's just fine.

Interviewee:

Okay.

Kalista Rice:

So, Tressa, would I just skip the next two questions or ask a hypothetical question?

Tressa Hopkinson:

Yeah, you can use them as hypotheticals. Yes.

Kalista Rice:

Perfect. So just the next few questions were, how often does this happen? And like, what work arounds do you use to utilize this problem? So hypothetically, if you were to you lose power, how would you work around?

Interviewee:

I feel like our, our best practice would be to talk with our senior staff—the ones who have the most nursing experience. So those would come in the beginning. So, if I'm a floor nurse, and I don't have much experience or have questions, I would first reach out to my charge nurse. And then from there, if they don't know, we would go to our next area, which would be our house supervisor. And then if they don't know, we would go to a content expert. So, if it was something about a laboring mother and I had no idea—I mean, we don't take laboring mothers on our unit—but if that was something I was curious about, I would go to that unit and ask specifically, their educator or their staff. As an educator, we're kind of held to that standard to know things. And if we don't know, I'm not afraid to say I don't know and find the person who does. So, I think that would probably be our chain of command that way.

Kalista Rice:

Why would you take that approach?

Interviewee:

I feel like it's the safest for patients. And utilizing other people's knowledge base, I think is important as well, because I can know 100 things about one specific procedure, but know nothing about, you know, procedure B, and the person that

does, I feel like it's helpful and it helps me learn and helps me grow and helps round out my knowledge base.

Kalista Rice:

Great. And my next question is, what are some of the other issues you encounter frequently as you use digital solutions in your workplace?

Interviewee:

I would say the frustration with finding exactly what you want to find. When opening [Name of digital platform], we were just doing a search for catheter cleaning and our procedures for that. Everything we searched for came up neonatal or infant and nothing on adults. So, we definitely had to find the right keywords in order to find the information we're looking for. So, if you don't know the keyword, that was frustrating. And I'd say that's probably our main—that and the fact that we have to go out to a computer, login, and actually get the program up and running.

Kalista Rice:

Which of these issues is the most impactful on your ability to deliver care and why?

Tressa Hopkinson:

So, you're talking about finding things, searching for things. And how is that and why does that impact your ability to give care is what this question is specific to.

Interviewee:

Oh, I think it—meaning?

Tressa Hopkinson:

When you have a challenge with your digital solutions, how does that impact your care—when you can't find what you're looking for?

Interviewee:

Oh, okay, I see. I think that definitely takes away from the time with the patient, and critical minutes that we may need. And also, not knowing, I feel like a lot of people—I haven't encountered many in my workplace, because we have very good teaching and if you don't know you ask—but a lot of people, in order to not be seen as incompetent or be judged on not knowing, they'll just go ahead and do it how they see, how they think is best. So, I think the harder it is to find those solutions, the more likely someone is to just do it how they think it should be done or cut corners. And I think they're also, I mean, that's a detriment to patient care and to patient outcomes for sure.

Kalista Rice:
Yeah, definitely.

Interviewee:
Is that what you were looking for?

Kalista Rice:
Yeah, that's perfect. Yeah. And so, when that frustration of not knowing keywords does occur, what would you expect to happen in a perfect world?

Interviewee:
In a perfect world?

Kalista Rice:
In a perfect world.

Interviewee:
So, if I can't find, if my keyword doesn't work in a perfect world, what would happen?

Kalista Rice:
Or no, like, in a perfect world let—me rephrase this.

Interviewee:
Sorry (laughter)

Kalista Rice:
So, like when those issues of the frustration of not being able to find something on the [Name of digital platform] app, what would you expect to happen instead if you were in a perfect world?

Tressa Hopkinson:
If you had the perfect system?

Interviewee:
Yep. Okay, okay. Um, honestly like, saying what I want to find, and then it just popping up. That sounds so stupid. We live in this day and age where everything is just boom, boom, boom—you don't have to find anything. But even things being set in body systems would be helpful. You know, if I need something to do with the bladder, I could click on bladder and everything that has to do with bladder, or has the word bladder in it, would be found in that section. I think that would be beneficial and more quick, you know, it's a faster route to find what we need.

Tressa Hopkinson:

Awesome. So, you said, following up, you said, if you could say what you wanted to find and have it find it? Would you like to be able to voice interact with it? Would that be helpful?

Interviewee:

I think it would be faster. I don't necessarily think it would be—I don't think it would benefit as much as I—how am I trying to say that? I find that typing in a search box or saying it I think would be would give me the same result.

Tressa Hopkinson:

Do you ever have trouble with spelling things that you're trying to find?

Interviewee:

I know people do. In general, I think people probably do, you know.

Tressa Hopkinson:

Okay.

Interviewee:

Trying to write some of these medical terms are probably hard sometimes.

Tressa Hopkinson:

Okay.

Kalista Rice:

Do you think, like, new nurses or new staff would benefit from that?

Interviewee:

You know, I, I would say the staff that have been out of school a little longer would probably benefit more than someone fresh out of nursing school, because in nursing school, you are taught all of those things, you have to write them, and you have to read about them. And you're doing all those things. I think, being out of nursing school, you'd probably forget how to write uncommon words.

Kalista Rice:

'Kay, great. Do you have anything else, Tressa, to follow up?

Tressa Hopkinson:

No.

Kalista Rice:

Perfect. Is there anything you often look for in the digital solutions you use that is missing or hard to find?

Interviewee:

I think this kind of goes back to when we were talking about how most of the things are written. I would like to see more video, or pictures or animations, just because I feel like those people that may not have the best reading comprehension. I feel like that's hard. And I also do better if I see it, and then I can see myself doing that as well. I think that would be something that I would look for, personally, to help me through those steps.

Kalista Rice:

Great. Is there any way that digital solutions you currently use aren't supporting your needs?

Interviewee:

You know, I don't think so. Um, honestly, it's been a good change. We had a different program before, and it wasn't as in-depth. And this one has been really great in the past couple of years. So, I don't really have any—not really finding any problems as of late.

Kalista Rice:

Did you find problems in the past program that you used?

Interviewee:

Yes. It wasn't—I don't feel like it was a complete database. People would say, “Oh, you know, check your CPGs for that,” and you check it and it wasn't there. It was found in some other S drive somewhere. And so that was always a little frustrating. You didn't know where you could go to find current procedures.

Kalista Rice:

Okay, that's great. So, this is my last question for you. What haven't we asked you today that you think would be valuable for us to know?

Interviewee:

One thing that I know we didn't talk about was in our charting system. We do have information. It's not necessarily regarding procedures, it's more regarding medications and things like that. In our charting system, we have access to medications—and it comes from the manufacturer—about contraindications, and side effects, things like that, how to concentrate things, all that stuff in our specific charting program, so I don't know if a lot of them are incorporating those as they go. But that would be something to think about, that I think could be helpful, would be to incorporate those and maybe have them link best practice cpgs or [Name of digital platform] to diagnoses in your charting system. I don't know if that's an option, but I think that would be helpful. In ours, we have, you know, someone comes in with heart failure, and you're, and you are taken with a link from that diagnosis to [Name of digital platform] for things that you may be

needing to do. Or, they had a thoracentesis, and you need to know what supplies you need for that, you could click on it and it would take you there. I think that'd be helpful to integrate your charting system and your best practice database.

Kalista Rice:

Awesome. Thanks so much for adding that.

Tressa Hopkinson:

You're not the first person to tell me the charting systems are— (laughter)

Interviewee:

You know, we got a new one a couple of years ago and for all the heartache that it caused, it has been really great. But it's a lot faster and a lot easier.

Tressa Hopkinson:

Is it more uniform from profession to profession? Like I was talking with a respiratory therapist, who was just trying to find something on his chart at a hospital that he was new to, and the nurse couldn't find it because her chart looked different than his chart on the charting system.

Interviewee:

Ours is very different. Ours is different from unit to unit as well. Depending on if you're ICU trained, or if you're med surge, you have workflows, which when you're in it, it's very helpful, right? Because it has everything you need top to bottom, set, wrapped up in a bow. But when you do have to find things that you're unfamiliar with, it's difficult.

Tressa Hopkinson:

Okay. All right.

Interviewee:

Gotta love it.

Tressa Hopkinson:

Gotta love it.

Tressa Hopkinson:

So, anyway, thank you so much for taking the time to talk with us. And we really appreciate this. We will let you know; we're publishing our findings in April. And we'll send you a link to those findings.

Interviewee:

Wonderful. Thanks so much.

Tressa Hopkinson:
Alright. Thank you.

Interviewee:
Okay, good luck.

Tressa Hopkinson:
Thanks. Bye.

Interviewee:
Bubye.

Kalista Rice:
Bye.

5. Health Care Assistant interview - 2/18/21

Tressa Hopkinson:
So, thanks so much for coming. And so, I assume that you know, Kalista. [Name of Interviewee], is that true? Yeah. Awesome. Well, we're so grateful that you're willing to come and meet with us today. So, my name is Tressa. I'm the project manager on this project that Kalista has helped and joined with us for this semester. And so. I'm going to—if I can get my screen to work—I'm going to read a little blurb to you to explain what our project is, and what we're doing. And then I'm going to have Kalista do the interview questions with you.

Tressa Hopkinson:
So let's see. So, this is kind of like a boilerplate approval kind of a process. So first, like I said, we want to thank you for being willing to be interviewed today. We'll be asking you open ended questions that, as a health care worker, you have a unique perspective and insight that can really help us achieve our goals. I'll be using the, or well, we will be using the term digital solutions in the questions today. So, we're going to define that before we begin. Digital solutions are solutions that resolve problems without any physical effort, and which are present online. So, in this interview, the questions regarding digital solutions don't have anything to do with patient healthcare information. We're just interested in understanding how you find information when you need to treat a patient or if you're unsure of best practices and best solutions instinctively, like right off the bat. So let me know if you need any clarification on those questions. And feel free to include anything in addition to your answers that you feel might be relevant to what we're talking about. And then, do we have permission to record you, record our interview for our research? Yes. Okay.

Tressa Hopkinson:

Great. Let's begin, I will turn it over to Kalista.

Kalista Rice:

Okay, so my first question is, what does your organization do? And how does your role fit in there?

Interviewee:

So I work for the [Name of Interviewee's employer], which treats specifically patients with cancer. And then within that, I'm in the surgical department. So, we treat anyone that can have their cancers surgically removed, as well as like any other surgeries that they need regarding the cancer. And my role is a healthcare assistant, which just helps the nurses with like, whatever they need. Usually, with the surgical department, I'm in charge of, like, during the day, making sure that all the patients, like, just kind of do regular things like brush your teeth, take a shower, get up and walk around after their surgery, and are able to get to the bathroom safely. And kind of just anything miscellaneous that falls within that during the day.

Kalista Rice:

Great. So, my next question is how do you use digital solutions in a typical day as a health care assistant?

Interviewee:

Sorry, can you remind me the definition of digital solutions again?

Tressa Hopkinson:

So digital solutions are the things that you would utilize that are digital. So, if you were looking up information about how to treat something or the process for doing something like how to clean a catheter, or if you were looking for—you had to chart something—where you're doing something on a computer or on your phone, or any other digital type of device.

Interviewee:

Oh, okay. Yeah. Yeah, I'm sorry. And now can you repeat the question?

Kalista Rice:

How do you use digital solutions in a typical day as a healthcare assistant?

Interviewee:

Okay, um, so I use it, like, pretty much for almost everything. So, like charting was mentioned. So, part of my job is that I chart, like, all of the vitals that the patient has. I chart all of their input and output the patient has including any, like, surgical drains or anything of that nature, as well as, like any time that the patient

gets up and walks around or even just like what they're doing every hour, I'm supposed to be charting. Or like if a patient's having some kind of like altered mental status and is just, like, really confused is something that we see a lot with like elderly patients. We also, like, chart all that stuff. With like, taking vitals, we have specific, like, vitals carts that we have like a—I don't know exactly what it's called—like a laser scanner so that I scan my badge and then scan, like, the patient's ID. And then it all can be sent automatically from the vitals cart into the chart. And then, if I'm like, not sure about like, I think the most common is I'll look up, like, what the patient's surgery actually was just so that I have an idea of, like, where they're going to have the most pain or, like, how they're going to be able to move the best. I'll usually just honestly, just like Google, a lot of patients,' like, surgeries just to have a general idea of what the surgeon actually did. Or like a nice resource within their chart, the surgeons have to leave a lot of notes. And so, we'll go back and, like, read the notes that the surgeon left. Or a lot of times, I'll just ask like the nurse, like, what the best thing is to do for whatever I'm working on.

Kalista Rice:

Great. So, my next question is, when there isn't a reliable Internet connection, how does this impact your ability to provide care?

Interviewee:

It definitely makes it a lot harder. I find that I'll usually just write down a lot of the stuff. Like, I'll carry around a little, like, I think we just call it, like a report sheet that has all the patient's information on it. And then it has, like, a little section for all their vitals and, like, all their input and output. But what's nice about the hospital that we work at is that all of the rooms have a computer in them. And so, I like to be able to just chart while I'm in the room as I'm doing whatever it is. And so, when those computers aren't working, or the Internet was down or whatever, I'll just rely on me writing it down. And it's just like throughout the day, you just end up getting so busy that it's, like, not uncommon for me to forget to write something down and then have to, like, try to remember. And so, then I feel like sometimes this happens, like, most often with, like, input and output how much the patient, like, drinks or eats. I'll always just take, like, their food tray away and then completely forget to ever chart it or anything. And it looks like they haven't eaten for five days, because we've all forgotten to chart it. So, I think that that, like, impacts, also just, like, patient care, and, like, what the doctor actually sees, because then the doctor thinks that they're not eating or drinking, or they're, like, peeing a ton when it's normal, because they've been drinking a lot. But, so, I think that it can impact, like, patient care in that way.

Kalista Rice:

How often would you say that happens?

Interviewee:

Um, I feel like it probably happens at least, like on a normal shift, I'll usually have about six patients that I'm caring for. And usually, I have difficulties getting the computers to work, probably in like half of the rooms that I'm in. And then so I'll usually just write stuff down for like half of my patients. So, I mean, like, we're still fairly consistent about, like, charting the input and output even when writing it down. But I would say, like, stuff gets forgotten, or mischarted, probably at least every shift.

Kalista Rice:

Okay, so what workarounds do you use to utilize to solve this problem?

Interviewee:

So something that, like, our department has been doing, like [to] really make sure that everybody is on top of their charting is on top of the report sheet, we are also required to fill out kind of like an accountability sheet that we have to turn into our supervisor. And then they, like, check our charting at random, just to kind of have like an accountability system to help us make sure that we don't forget when the Internet is down. And then, to be honest, I don't really know what we would do if, like, the entire building's, like, Internet went out. If we would have, I would assume we would have some kind of a paper chart that we'd probably try to print out. But I've never had that happen. I don't really know what we do.

Tressa Hopkinson:

So a follow up question. If your computer is down in the patient's room, then are you doing your charting somewhere else?

Interviewee:

Yeah, so each patient's room has a computer in it, but then we also have, like, our nurse's station is what we call it, where we have just a whole bunch of desks with computers sitting at them. And so, it's pretty common for us to do all of our charting, like, sitting at the desk, there. And those computers are pretty consistent that you can get those ones to work. It's just the ones like in the rooms that I feel like I struggle with.

Kalista Rice:

Would you say you waste a lot of time when you have to do that?

Interviewee:

I don't think so. I don't think so. Because I can find out pretty immediately if the computer is going to work for me or not because we have what's called like a—oh gosh, what is it called? It's like a quick authentication factor thing—I don't know exactly—where I can take my ID badge and, like, tack it on to this little, I don't know, box—I don't know what the technology is—that automatically

recognizes my ID badge. And then, I just type in a four-number pin instead of having to put in like a username and password for everything. And so, I can do that as soon as I walk into the room, and I can tell if it's going to, like, load quickly or not. And then if it's not, then I'll just kind of give up on it and do whatever I was going to do with the patient anyways, and then just make sure that I write it down. And I think it's probably like a similar amount of time for me, like, having to write it down versus me like staying in the room and logging in and stuff.

Kalista Rice:

Why do you take that approach?

Interviewee:

Um, you mean like logging in right away, or like writing it down or . . . ?

Kalista Rice:

Writing it down. You said with—I can't even remember. Right, you have like a chart, like you have something on top of the chart that you have to jot down that your supervisor will randomly check.

Tressa Hopkinson:

Your report sheet.

Interviewee:

Oh yeah.

Kalista Rice:

Your report sheet. That's what it was.

Interviewee:

Yeah, we take that approach just because it helps with, like, accountability. We've had issues in the past where patients will, like, get upset. Like we actually just had this happen kind of recently, where a patient and the family member was upset and claiming that we, like, never offered to give them a shower while they were there for like a week. And we never offered to, like, help them with anything. And then, it became an issue because none of that was charted. And so, it looked like we hadn't done any of that, when in reality we had offered, but just didn't chart it. Um, so taking the approach of writing stuff down, but then making sure that the other sheet is an accountability to chart, it helps, like, avoid that problem—like any kind of patient complaints or anything. Then that way, everything is documented. To help prevent that and to, like, help the patient make sure that they get everything that they need. Does that answer the question?

Kalista Rice:

Yeah, that's great. Thank you. So, my next question is, what are some other issues you encounter frequently as you use digital solutions in your workplace?

Interviewee:

Um, I think the most often thing that is difficult for me is like, so our charting system that we have, it provides a small box for each thing that, like, we're supposed to chart. Like, for instance, when the patient takes a walk, we have a specific thing that tells you, like, what time it was that the patient was ambulating, how much help you needed to give the patient, how far the walk was, how they were actually walking, like if they were stable or if they were, like, kind of stumbling kind of thing. And like if, if they're using all four of their extremities, or like, because sometimes we have amputees and stuff. And so, I think the thing I struggle with, with our charting system and our digital technology, is that sometimes those kind of limit my options for what I would say or like sometimes the descriptive words are kind of, like, uncommon for my understanding anyway. So, like, for instance, there's a drain. Most of our patients coming out of surgery have, like, some kind of a surgical drain. And you're supposed to chart what the fluid looks like. And so, like, there are things that are pretty common, like, oh, it looks bloody, it looks red, it looks green, whatever. There's one that's serosanguineous, and I've never really known what that meant. And so, I usually just don't chart it if like, the nurse has said that it looks that way. And so, I think that's like the hardest thing, is sometimes it's kind of limiting with your options and like, I don't know exactly what it's wanting from me or what it means. And it's, like, kind of a hard thing to Google because it's so specific. So.

Kalista Rice:

That's interesting. So, which of these issues is most impactful on your ability to deliver care?

Interviewee:

I would say—good question. I would probably say the computer not working in the room impacts, like, my patient care, because then I feel like, I am often, like, charting things—like I feel like within our department, they are very much proactive for charting immediately when it's happening. So that it's always, like, live. So that at any time, the doctor can look at it and know exactly what's happening at any time, specifically. And so, when the computer is not working in the room, then I find myself writing things down, but not charting it probably for a couple of hours afterwards. So, like, in the case of if somebody has a really bad temperature, or something, and I'm not going to chart it for a couple of hours, then the patient has just had a really high temperature for a couple of hours with nobody really doing anything about it. Um, but in that instance, I would usually just go talk to the nurse, and then the nurse would, like, do something without it being in the chart. But I think that that's just, like, the largest issue is that I'll start

charting things a couple of hours afterwards. And then it's no longer live. And I don't remember as well. And it's just because, like, the computer in the room is not really working.

Kalista Rice:

So like when your computer's not working, or you're, like, limited in your charting, and, like, when those issues occur that you stated, what would you expect to happen instead, in a perfect world?

Interviewee:

In a perfect world, I think I would, first of all, have more clear, like, direction of who I should talk to because when the computer is not working in the room. I don't really know who I'm supposed to tell about that issue to go fix it. I mean, I have, like, I have a nurse manager, but that's not really, like, her job. And I would assume that we have IT, but I'm just not really aware of, like, how I get in contact with them. So, say, first of all, that there should be a much more, like, clear way for me to contact somebody to come and fix that. And then I'd say, like, having it fixed. Probably within like half a day feels like a reasonable amount to expect somebody to be able to come fix something.

Kalista Rice:

Okay.

Tressa Hopkinson:

So follow up question with that. Let's take a step back and say, if you could have any way of doing your charting, and it didn't have to be in the system that it currently is in, what would you love to see that you could do with that system? If you could do it in any way you wanted to? How would you want to do it?

Interviewee:

I think that I still like the way that we have our charting quite a bit, I just think that it should be much more—

Tressa Hopkinson:

Let me give you some examples. Like if you could, instead of having a computer in the room, if you had an iPad-type tablet that you were doing all of your charting on instead of paper, or if you were able to talk to a system instead of having to write it down. Or, if you were able to talk to your phone or talk to your watch. If you could have anything, the world is your oyster, how would you like that to happen for you to make your life better in your job?

Interviewee:

Okay, so part of it—we do carry around phones with us, like smartphones, the

whole time that we're working that are specifically, like, given to us at the beginning of shift and then we turn it in at the end of the shift. And within that phone, there is supposed to be an app that lets me just, like, chart on my phone when the computer's not working. But I feel like the app is, like, really difficult to navigate and hard to use. But I feel like that would be a much faster way for me if the computer were down, that I could just, like, type it into my phone as an, like, note or something, and have it, like, be in the charting. But right now, for me, I never use that because I think it's just, like, really not user friendly. And so, I will write things down by hand and then type it into the computer later. So, I think that I would choose to have, like, the phone app be a lot more user friendly and, like, easier to navigate.

Tressa Hopkinson:

Okay, can you expand upon that? Like, what about it makes it difficult? Is it hard to read? Is it hard to find things? Can you tell me a little bit more about that?

Interviewee:

Yeah, so the charting on the computer gets switched over to like a mobile version. And it doesn't, first of all, doesn't show me all the information that I need sometimes. So, like, each patient has a patient record number. And I don't know— a CSN. I don't know exactly what that stands for. But sometimes, like, I'll need those numbers for whatever I'm doing. And I can't find them on the phone app. I don't know where those are stored. And it's just like, on the computer, they just pop up underneath the patient's name. And so, I've never been able to figure out where I'm supposed to find those on the app. As well as like, within the computer version of it, there are different tabs for each thing that you're doing. And so, all of my charting I usually do under the tab, that's called flow sheets. And then within that tab, there are more tabs. And so, the app version of that doesn't really give me an option. It allows me to go to flow sheets, but then it doesn't really allow me to switch between tabs within the flow sheets. Um, and like to scroll to, like, the specific time that I need, I can't really add in, like, a time that I need for actually, like, charting it at the correct time. And so, I feel like all of the things have just made it like I, I don't use it.

Tressa Hopkinson:

Thank you.

Interviewee:

Yeah.

Kalista Rice:

Is there any way that digital solutions you currently use aren't supporting your needs?

Interviewee:

I think that probably, like, the issues that I have with our phones aren't really, like, working super well. I actually forgot to mention, there is another issue, like we all have our work phones, and I'll use them to, like, call the patient's nurse or call, like, another HCA (health care assistant) for help or something. I'm not quite sure, but sometimes it'll just, like, disconnect from the network. And I, I don't know how to, like, reconnect it. Um, usually I'll just, like, restart the phone, and that will do an okay job. Um, but I feel like that's an issue because then I can't contact the nurse or anything. Um, and then I think the, like, the charting system is like, overall, pretty good, that it works out well. But I would say that sometimes we get, like, so busy that I feel like I don't take the proper time to chart in between everything that I'm doing. And I don't know that that's a digital solution problem, or if that's a timing problem, but—

Kalista Rice:

No, that's perfect. Thank you. Yeah. Um, what haven't we asked you today that you think would be valuable for us to know?

Interviewee:

Um, I think that—I think that there could also be, like, a better way of communicating between nurses and doctors. I don't know a ton about it. But as far as I can tell you right now, we haven't—we'll have an issue with a patient. So, this is what happened. I was working in shift last night and we had something kind of happen with the patient that we are concerned about. But because it was the middle of the night, we weren't sure that we, like, wanted to wake up the doctor that was on call. Just because they get annoyed with you when you do that. And so, um, we'll, like, send them a page, but then a lot of times the page, like, doesn't go through or like they don't respond to the page for a couple of hours because they're asleep and stuff. And so, I feel like I would almost want, like, a specific ringtone or something that they can't turn off, that wakes up the doctor no matter what time it is. Because like sometimes we'll page them about a really concerning blood pressure or something that we kind of need an answer for right now. And then they don't get back to us for a couple of hours. And by then, it's, like, kind of up to the nurse to do whatever they think is best, which, like, usually is a good thing for the patient for sure. But I feel like having the doctor's input is their job. And so, I would rather have some kind of ringtone that they almost, like, can't turn off and just keeps alarming until they respond or something. Doctors probably wouldn't like that, but (laughs).

Kalista Rice:

Okay, great. Well, that's all I had.

Tressa Hopkinson:

That's everything I have. Thank you so much for taking time and answering these

questions for us. We really appreciate it. And when we get our presentation all together, we will send you a link to it.

Interviewee:

Okay, can I ask? So, what is this presentation for? Like who are you presenting to for this?

Tressa Hopkinson:

We actually have a couple of places we're presenting to. We are—the project is for a senior project for a group of us in digital media. And what we do is design digital solutions. And so, right now we're in the research phase of what it is that is missing, and what are people struggling with, and looking at ways we can fix that. And we're going to be presenting at a conference at the first part of April, called SCULPT, where we're going to be presenting this idea of the research we've gotten and possible solutions for some of the challenges that we're finding. And then we're also presenting to an online company called [Name of organization]. That is a virtual therapy group that does family therapy and speech therapy all over the world. And so, they're utilizing a lot of the Telehealth things that are coming about, but they have been focused on that. So, we're also presenting to them what we're finding is the issues that doctors and medical professionals are having with their digital solutions. And what we think is the place to move next with what's coming out and what's available in technology.

Interviewee:

Okay, that is interesting. I shadowed a doctor a couple of weeks ago. He did a lot—not a lot—he did quite a few, like, of the Telehealth appointments. Like, he was consulting with patients before their surgery. Especially because at [Name of Interviewee's employer], a lot of our patients are, like, from out of Montana and Wyoming and, like, wherever. And it was pretty good for the most part, but yeah, he definitely struggled, especially with patients that are like in Montana, and Wyoming and in the middle of nowhere, that kind of have bad Internet connections. So, it was always kind of difficult to, like, talk to them without it freezing and stuff. And so, I feel like most of the time, he would just hang up whatever the Zoom call was, and just call him on the telephone. And that kind of works a lot better.

Tressa Hopkinson:

Yeah, and that's one of the things we find is that there's two big problems that doctors have with Telehealth. And one of those is that connectivity issue. The other one is, if you have older patients who are not tech savvy, in getting them connected in the first place, so that you can talk to them. Because they just don't really understand how to get the process going or utilize the, you know—they don't know that you can click that thing on their text message and it will open a thing, and all they have to do is, you know, type in their name, but they get

befuddled with that.

:

So yeah, but the connection has been a huge issue for a lot of our people who are doing the Telehealth. We've got a group that does Telehealth speech therapy, and they're here—some are in the US. Some are in Europe, but they're doing speech therapy with children in Africa. And so that connectivity is an issue. So, we're looking at what kind of things can we do work arounds for that for them.

Interviewee:

Wow, that's very cool.

Tressa Hopkinson:

And it all applies to health. So, we got the health care workers to help us figure out what it is that will work.

Interviewee:

Okay, great. Well, I hope that helps.

Tressa Hopkinson:

It does. It really does help. And you're not the first person that it was like, charting sucks because, you know, I've talked to a lot of people that are like— One of the people I've talked with has, you know, they have issues in their hospital where they have like a specific room that never has connectivity. Like their scanner doesn't even work in that room. And they're like, you just know that if there's somebody in that room, we're just not going to be able to utilize anything digital. And so, it's not the first time I've heard that. So, I appreciate your working with us and we are very appreciative of your time.

Kalista Rice:

Thanks [Name of interviewee].

Interviewee:

Yeah, no problem.

Tressa Hopkinson:

Thanks so much. Bye.

6. Certified Nurse Midwife Interview - 4/1/21

Tressa Hopkinson:

Alright, so first off [Name of Interviewee], I want to thank you for being willing to be interviewed today. I am going to be asking you open-ended questions and as a healthcare worker you have a unique perspective and insight that can help us achieve our goals. I'll be using the term digital solutions in my questions so I

would like to define that before we begin. Digital solutions are solutions that resolve problems without any physical efforts, and which are present online. Umm, in this interview questions regarding digital solutions do not include and solutions that deal with or contain any form of patient health information. We are interested specifically in how you find information to treat a patient if you are unsure of the best solution instinctively. Umm, let me know if you need any clarification of any of the questions and feel free to include anything in addition to your answers that you feel is relevant.

Do I have your permission to record the interview?

Interviewee:

Yes, you do.

Tressa Hopkinson:

Thank you. So, let's begin. So first off, what does your organization do and how does your role fit in there?

Interviewee:

So, I am a certified nurse midwife and I work for a hospital. So, my role is direct patient care in a clinic and also a hospital setting.

Tressa Hopkinson:

Okay. So how do you use digital solutions in a typical day as a certified nursing midwife?

Interviewee:

I use, I use it a lot actually. Um, I use both my phones and my computer Internet to look things up. I do use, like UpToDate or journals—things like that—databases that I look best practices up that way. One of the things that I would say, like pharmaceuticals, like what I am going to treat a patient with. I know a specific drug I want to use but not necessarily the dosage that's appropriate for that person, so using databases—I do that quite a bit.

Tressa Hopkinson:

Okay so you have told me you use your phones and computers. So, which do you typically use and why?

Interviewee:

I would say, when I'm—I use them in tandem. I would say I use my phone to figure out how to spell things. I have dyslexia, so that's a problem for me.

Um, when I am typing something out if I don't get it, in medicine everything is a little bit more difficult to spell and you need to know exactly which is which. So, I

use voice recognition like Siri or Dragon—things like that—that will help what I am trying to get across. Then I can plug it into the databases to find exactly what I am looking for.

So, I use my phone to do the search. And depending on if I am in with a client, or I am charting at home, or if I am at my office with my desk, it is kind of interchangeable.

Tressa Hopkinson:

So, I would assume as a certified nursing midwife, you are actually doing a lot of those kinds of things when you are not in the office. Is that the case or not?

Interviewee:

I would say I do it everywhere.

Tressa Hopkinson:

Okay. Your patients call you at home? They have access to you at home or are you just seeing patients in the office?

Interviewee:

So, I do a call shift. So, I have patients who call me directly from home. And so, if I would need to do something after hours, then yes, I typically use my phone. I have apps. I have two phones, a home phone/personal phone, and a work phone that has encryptions on it. It has my EMR on it and then my other databases on it. I will use that at home. I will also use it more when I am on the floor on the hospital side.

But in the clinic, I use my phone when I am dictating but then I use my computer EMR.

Does that help?

Tressa Hopkinson:

Yes, that is very helpful. So, when there isn't a reliable internet connection does it impact your ability to provide care? So, I know in the past you have done home births in Alaska and not in Texas where you are at. So, this may be a question that is more relevant to that part of your profession when you were there than it is necessarily in Houston, but either way if you have issues with reliable internet connection how does this impact your ability to provide care?

Interviewee:

So, it is a big struggle. So, because of my dyslexia I actually have a list, a handwritten list. I even have this at my desk. It is a little embarrassing to say, but I have a handwritten list of commonly misspelled words for me that I have to write

out. I have it saved in my notes section of the commonly misspelled words or I carry a non-digitalize book that I use that has my protocols that I use in it. But I do keep one of those around too.

Tressa Hopkinson:

Yup, so that's an issue. In addition to that do you have any additional issues with not being able to have Internet access and your ability to provide care?

Interviewee:

I wouldn't say—I would say having a downloadable resource. I would say specifically for my profession. I don't know, I have a copy of it somewhere. Probably in my bag. But of my guide to practice, you know?

Tressa Hopkinson:

Yah.

Interviewee:

It is old school. You have to go in the back and look it up—go to the page and it tells me how to treat whatever. These are the pharmaceuticals I am going to use, and these are the dosages.

So, it would be nice to have something like that specific to the practice that you are in. I mean specifically for me, if I had that in a downloadable app form—I mean it has everything I need in it. It is just not as convenient as using your phone.

Tressa Hopkinson:

Okay. So how often do you have a loss of internet connection at your current job?

Interviewee:

Umm I would say, not a ton, but it does happen. And there are specific places in the hospital that your phones won't work. So, if you are in a specific wing or rooms, you can't access your phones. And the Wi-Fi doesn't work very well there either because there's the hotspots. So even in where we're at now, it's a challenge. It was definitely more of a challenge in Alaska where cell service is a lot spottier. But I'm in Houston and there are still places in the building that my Internet doesn't work.

Tressa Hopkinson:

Okay. So, what workarounds do you have for solving that problem when your Internet is not working in those specific areas?

Loud crash off camera.

Interviewee:

I'm sorry.

Child crying off camera

Tressa Hopkinson:

Is everything okay?

Interviewee:

Yes, [spouse's name] is taking care of it. Is she bleeding?

More crying off camera

No blood. Sorry.

Tressa Hopkinson:

It's okay.

More crying off camera

Interviewee:

Okay, Daddy will take you upstairs and get some ice. Okay?

I'm sorry about all of this. Telemedicine. This is what happens.

Tressa Hopkinson:

Yes, this is what happens exactly. So, umm. (Laughing) Sorry, we were talking about workarounds if you have an issue with the Internet or your services are down. What do you do? You mentioned that you have a book, is that your main solution if the Internet goes down?

Interviewee:

Right. So, I do. I have a book. I actually have two copies of that book. I have one that I keep at my house and one that I keep at my office. And I use the note section of my phone where I write, where I have kept a digital log of most common things that I use.

Tressa Hopkinson:

Okay, so you recently had this huge power outage down there. Were you working during that? And were you guys affected with your digital solutions during that process?

Interviewee:

When the power went out? Yah! When the power went out the Internet went out. We were without Internet for almost a week. So, I was definitely not able to offer

the same sort of care that I normally offer. My clients—the hospital was not as affected. So, when I was down at the hospital we were not as affected, but when I was home on call, it definitely did hinder what I was able to offer my clients. They would have to—I couldn't call in prescriptions or anything like that for them for that week.

Tressa Hopkinson:

Okay so what are some of the other issues you encounter frequently as you use digital solutions in your workplace?

Interviewee:

I mean for me personally, the issue is my dyslexia. Having something you can voice use and search things. I haven't found a lot out there for that. So, I do it on one, like this is what I am looking for and then I do it to the other with the actual database. So, I would say that's my personal issue that I have.

Tressa Hopkinson:

Okay. In a perfect world what would you like to have happen when you were trying to interface with those databases? Would you like them to be voice activated? In a perfect world what would you like to be able to have them do? We are thinking of Sci-Fi Star Trek.

Interviewee:

Star Trek Sci-Fi. Yeah, I do I think being able to just use my databases that I use and be able to be, "Hey this is what I am looking for," would be the most beneficial for me.

Tressa Hopkinson:

Alright.

Interviewee:

And having everything I use in one place.

Tressa Hopkinson:

Expand on that idea for me. What things would you like to have combined into one place?

Interviewee:

So, because I work in an OB GYN practice, but I am a holistic, more of an integrative practice. So, I have your traditional western medicine UpToDate kind of things. But then I also have an AGA which is the American Gynecological Association References. But then I also have, use the American Midwifery Association References. But then I also use a functional medicine. So, I go to several different places to look for solutions for my clients. And having something

that integrates, like, searches all of those things for me instead of me having to go search individually would be really cool.

Tressa Hopkinson:

Awesome. Okay let's see— Is there any way? Let me see. This question, I think you kind of just answered. But I'll ask it anyway. Is there anything you often look for in digital solutions that is missing or hard to find?

Interviewee:

I think that that's the one. I think that most digital solutions are biased to their one preferred customer, I guess. You can't just do a Google search because most of them you have to have a membership into. So, it would be cool if you could be, I, these are the databases that I want to search and here's my memberships so I can get into all of them. And then I put my stuff in and I get all of that information like a Google search but from all the places I have memberships in. Because you can't get it unless you are logged into their place to look. Does that make sense? So, you spend a lot of time going into each person's thing and it can be time consuming.

Tressa Hopkinson:

Alright

Interviewee:

Especially when you are looking. So, a lot of the things that I do that aren't just specifically direct patient care is I write a lot of policies for our hospital for practice for my midwifery program. Because we started, I started this with my partner. So, we have to go and find all of this information and make a policy and present it. So, I spend a lot of time data diving. And it is very time consuming.

Tressa Hopkinson:

Okay. So, is there any way the digital solutions you are currently using aren't supporting your needs? I think we have covered that. What haven't we asked today that you think would be valuable for us to know?

Interviewee:

Um, I don't— we kind of talked about having a digital, like a book. Like if you take the book that I use, make it digital, then make it so it's accessible by voice, the things I want to look for, would be really cool.

Tressa Hopkinson:

Okay.

Interviewee:

And then being able to pull those other databases that you have to have memberships into one thing would also be cool.

Tressa Hopkinson:

Very cool. Well thank you for taking your time to speak with me [Interviewee's name]. I really appreciate it.

Interviewee:

I apologize for all of the background family noise.

Tressa Hopkinson:

It is just fine. We all have it. And it's like you said, part of the whole Telehealth.

Interviewee:

The new era.

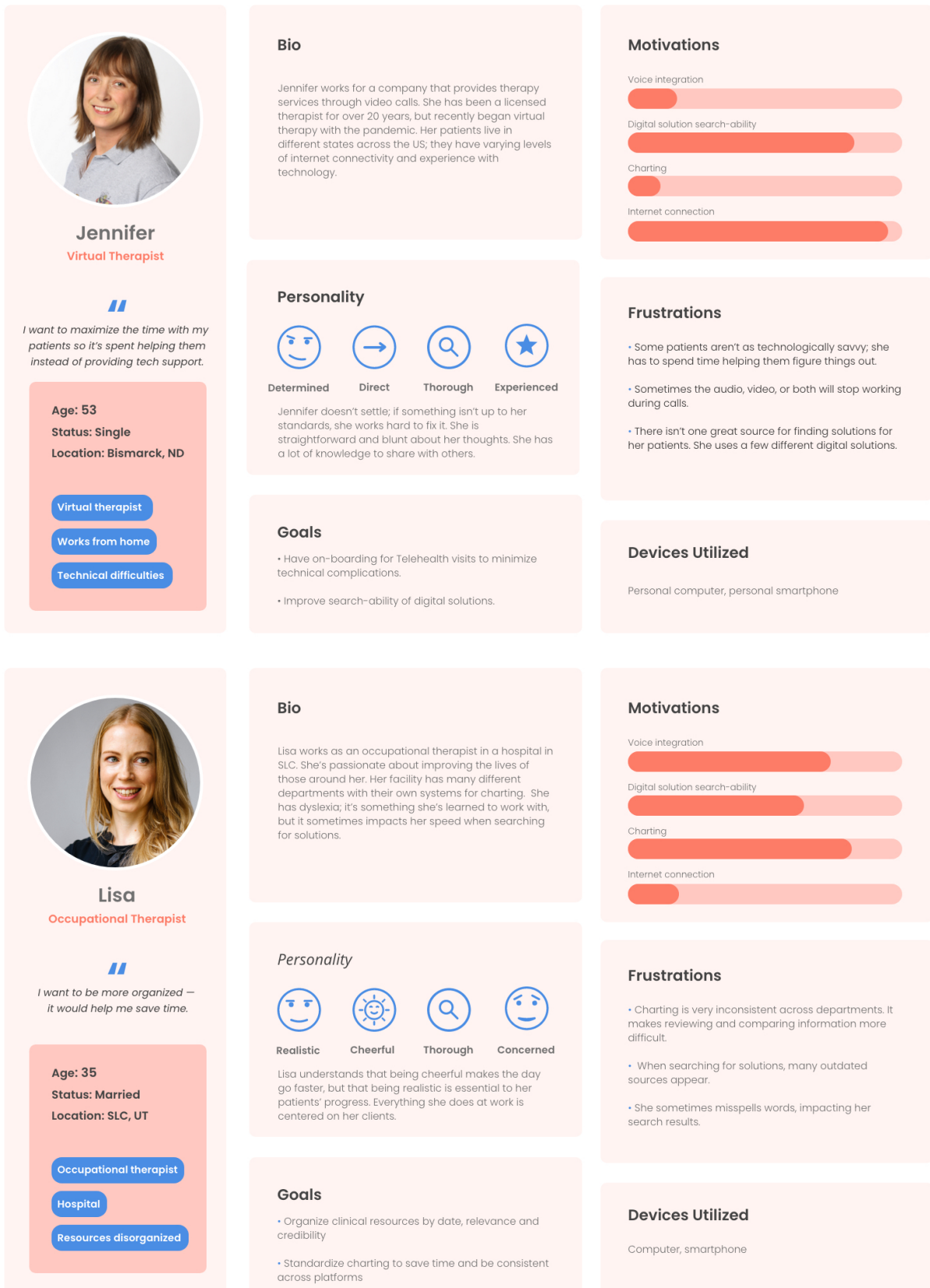
Tressa Hopkinson:

Yes, the new era. Alright, thanks for letting me do this and I will talk to you later.

Interviewee:

Alright. Thanks Tressa.

G. Provider Personas





Tanya
Registered Nurse



I could be more efficient at work if I could multi-task and do some of my tasks hands-free.

Age: 47

Status: Married

Location: Austin, TX

RN

Large hospital

System down regularly

Out of school many years

Bio

Tanya graduated with her nursing degree from the University of Texas at Austin in the year 2000. She has been working as a registered nurse at a large hospital in Austin, TX since then. She has four children and has taken time off of work when each child was born. Because she has been out of school longer than others, she doesn't remember specific medical terms and their spelling as well as others do.

Motivations

Voice integration

Digital solution search-ability

Charting

Internet connection

Personality



Organized



Innovative



Cheerful



Experienced

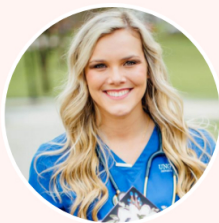
As a mom, Tanya is always coming up with new and innovative ways to get her tasks done. She has an optimistic view of life and likes to keep things organized both at home and at work.

Frustrations

- When searching for answers within digital solutions, answers are difficult to find if the terms are spelled incorrectly.
- Devices don't work in certain rooms in the hospital.
- The hospital has regular updates, during which the workers must do paper charting.
- The charting across departments is inconsistent.

Devices Utilized

Hospital computer, hospital smartphone, personal smartphone



Katie
Certified Nurse Assistant



It's really important to not have any gaps in my residents' care. That includes the charting.

Age: 20

Status: Single

Location: Bend, OR

CNA

In school

Nursing home

Charting info not reported

Bio

Katie is in nursing school and currently working as a CNA in a nursing home. This is her first job in healthcare; she takes it very seriously so she can further her career. She hopes to become an RN within the same facility. She has become very close with the residents there and thinks of them as her family; Katie wants to ensure these last years of their lives are as comfortable as they can be. She isn't one to cut corners.

Motivations

Voice integration

Digital solution search-ability

Charting

Internet connection

Personality



Empathetic



Teachable



Cautious



Concerned

Katie has the biggest heart; she would put the needs of every single one of her patients before herself. She is very careful in all that she does. She's also very eager to learn.

Frustrations

- When the internet goes down, the workers must chart on paper. It's common for those paper chartings to never get entered in digitally.
- She usually has to find answers from Google before she can search within the digital solutions.
- There are many gaps in the patients' care.

Devices Utilized

Facility computer, facility iPad

H. Components of Building a Voice Experience

Voice Interaction Designer, Lauren Madsen, provided the following information in a remote personal interview.

Considerations

Questions to Consider

What user experience problem needs to be solved? Would voice fix the issue?

Voice Assistant Personality

What are the traits of the voice assistant? What would a job description for this assistant look like? What tone or personality will it have? Does tone and/or personality change in different contexts?

Features

What will the experience do and don't do? For example, if creating a game, the voice assistant would explain all of the features, game rules, and so on.

User Scenarios

What are all the scenarios that a user could experience? Scenarios should include edge cases and error handling. What are all of the ways a user can interact with the device?

- For example, the experience might sound different when the user opens the game the first time vs. the second time.
- What task is the user trying to complete? Is the user talking into a mic on their shoulder or walking up to a device to speak into it? Or are they arms-deep in a surgical procedure? The design should be compatible with all of the devices that could be used.
 - The device could be a GUI paired with VUI, or a headless device that has no screen, and therefore, no GUI.
- Avoid silos by considering how scenarios connect to each other.
 - Use flow charts. Lucidchart software or plugins for spreadsheets are useful tools.

Scripting

Consider how the scenarios would sound in a conversation. Punctuation is a key part of voice interactions. For example, commas can change the meaning of what is said by the voice device.

Use Speech Synthesis Markup Language (SSML) to hard code a pause or to change the pitch and speed of the voice. As SSML is difficult to use, it is mainly used to modify pronunciation or pacing. SSML can be useful for ensuring the correct pronunciation of medical terms.

Deliverables

- State Machine Diagram (SMD) - The SMD is an extensive flowchart or “choose your own adventure” map that shows how scenarios and scripts connect to one another. Lucidchart is an ideal tool for SMD work. A high-level or “low-fidelity” flowchart may be helpful to reference how the experience looks from a bird’s eye view—a “site map” for the experience. If the chart is to become a hand-off for development, a high-fidelity flowchart should be used.
- Voice User Interface document: A group of spreadsheets that show all of the lines of conversation or interactions. This document includes training data for the device, such as synonyms that may be utilized by the user.
- Interaction Model: This deliverable is built from the Voice User Interface document. The interaction model includes paths, values, slots, synonyms, and an intents/utterance model. Intent can be considered an umbrella term. For example, “StartGameIntent” would be the intent for playing a game. Utterances encompass all the ways a user might phrase that intention. Start game, start now, begin, I’m ready, and let’s go are examples of utterances that a user might say to start playing.

A voice prototyping tool such as Voiceflow—or any example mentioned below— could replace scripting, SMD, and the interaction model as separate entities. Completing the steps outlined above can be thought of as creating a website by hand. Tools like Voiceflow are the web-equivalent of Squarespace or Wix.

Voice Prototyping Tools

[Voiceflow](#)

[Voicify](#)

[Botmock](#)

[DialogFlow by Google](#)

[Chatbase](#)

[More tools by Voice Devs](#)

Adobe is currently integrating voice capabilities into the prototyping functionality of Adobe XD.

Guidelines

There are currently no industry standards for voice. Google and Amazon have created conversational design guidelines as a resource for voice designers.

[Google Assistant Conversation Design](#)

[Amazon Voice Design Guide](#)

[Amazon Alexa Design Guide](#)

REFERENCES

1. Connolly SL, Miller CJ, Lindsay JA, Bauer MS. A systematic review of providers' attitudes toward telemental health via videoconferencing. *Clinical Psychology: Science and Practice*. 2020;27(2). doi:10.1111/cpsp.12311
2. Goss CW, Richardson WJ, Dailey N, et al. Rural American Indian and Alaska Native veterans' telemental health: A model of culturally centered care. *Psychological Services*. 2017;14(3):270-278. doi:10.1037/ser0000149
3. Hirko KA, Kerver JM, Ford S, et al. Telehealth in response to the COVID-19 pandemic: Implications for rural health disparities. *Journal of the American Medical Informatics Association*. 2020;00:1-3. doi:10.1093/jamia/ocaa156
4. Klingberg A, Sawe HR, Hammar U, Wallis LA, Hasselberg M. m-Health for burn injury consultations in a low-resource setting: An acceptability study among health care providers. *Telemedicine and e-Health*. 2020;26(4):395-405. doi:10.1089/tmj.2019.0048
5. Lin C-CC, Dievler A, Robbins C, Sripipatana A, Quinn M, Nair S. Telehealth in health centers: Key adoption factors, barriers, and opportunities. *Health Affairs*. 2018;37(12):1967-1974. doi:10.1377/hlthaff.2018.05125
6. Madden N, Emeruwa UN, Friedman AM, et al. Telehealth uptake into prenatal care and provider attitudes during the COVID-19 pandemic in New York City: A quantitative and qualitative analysis. *American Journal of Perinatology*. 2020;37(10):1005-1014. doi:10.1055/s-0040-1712939
7. McClellan MJ, Florell D, Palmer J, Kidder C. Clinician telehealth attitudes in a rural community mental health center setting. *Journal of Rural Mental Health*. 2020;44(1):62-73. doi:10.1037/rmh0000127
8. Morenz AM, Wescott S, Mostaghimi A, Sequist TD, Tobey M. Evaluation of barriers to telehealth programs and dermatological care for American Indian individuals in rural communities. *JAMA Dermatology*. 2019;155(8):899. doi:10.1001/jamadermatol.2019.0872
9. Samples LS, Martinez J, Beru YN, Rochester MR, Geyer JR. Provider perceptions of telemedicine video visits to home in a veteran population. *Telemedicine and e-Health*. 2020. doi:10.1089/tmj.2020.0045
10. Interaction Design Foundation. User Interface Design. <https://www.interaction-design.org/literature/topics/ui-design> Accessed 8 March 2021.
11. Nielsen Norman Group. Quantitative vs. Qualitative Usability Testing; 2017. <https://www.nngroup.com/articles/quant-vs-qual/> Accessed 20 October 2020.
12. Nielsen Norman Group. Keep Online Surveys Short; 2004. <https://www.nngroup.com/articles/keep-online-surveys-short/> Accessed 20 October 2020.

13. Nielsen Norman Group. Project Management for User Research: The Plan; 2016. <https://www.nngroup.com/articles/pm-research-plan/> Accessed 20 October 2020.
14. AI Multiple. Chatbots: In-depth Conversational Bots Guide [2021 update]; 2021. <https://research.aimultiple.com/chatbot/> Accessed 2 April 2021
15. Madsen, Lauren. Remote voice design interview. 9 March 2021.
16. Nielsen Norman Group. Survey Response Biases in User Research. <https://www.nngroup.com/videos/survey-response-biases/> Accessed 20 October 2020.
17. Nielsen Norman Group. 5 Qualitative Research Methods. <https://www.nngroup.com/videos/5-qualitative-research-methods/> Accessed 20 October 2020.
18. Nielsen Norman Group. Personas Make Users Memorable for Product Team Members. <https://www.nngroup.com/articles/persona/> Accessed 20 October 2020.
19. Rural Health Information Hub. Telehealth Use In Rural Healthcare Introduction; 2019. <https://www.ruralhealthinfo.org/topics/telehealth> Accessed 15 October 2020.
20. American Hospital Association. Fast Facts On U.S. Hospitals; 2020. <https://www.aha.org/statistics/fast-facts-us-hospitals> Accessed 11 November 2020.
21. Flood, J. What Is Rural?. National Agricultural Library; 2019. <https://www.nal.usda.gov/ric/what-is-rural> Accessed November 2020.
22. Mayo Clinic. Telehealth: Technology Meets Health Care; 2020. <https://www.mayoclinic.org/healthy-lifestyle/consumer-health/in-depth/telehealth/art-20044878> Accessed 15 October 2020.
23. National Academic Press. Achieving Rural Health Equity And Well-Being: Proceedings Of A Workshop; 2020. <https://www.nap.edu/read/24967/chapter/3> Accessed 11 November 2020.
24. Nielsen Norman Group. UX Research, Training, and Consulting; 2013. <https://www.nngroup.com/articles/ux-evidence/> Accessed October 20, 2020.