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Implementation of a Pilot Telehealth Training Module (TTM) for Clinical Preceptors:
Facilitating Student Return to Clinic During COVID-19

DNP Project
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of the Requirement for the Degree of
Doctor of Nursing Practice

Saint Catherine University
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ST. CATHERINE UNIVERSITY

ST. PAUL, MINNESOTA
This is to certify that I have examined this
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and have found that it is complete and satisfactory in all respects,
and that any and all revisions required by
the final examining committee have been made

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DEPARTMENT OF NURSING
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This project is dedicated to my husband and my boys for their love, support, and patience. For my parents, who have taught me hard work and perseverance.
Abstract

Problem: The COVID-19 pandemic led to the sudden and widespread implementation of the telehealth platform, changing health care forever. Telehealth is not a new concept, but health systems have been slow to adopt its widespread use due to strict regulations and low reimbursement rates. At the onset of the pandemic and with state executive orders, systems canceled traditional face-to-face visits or converted them to telehealth visits. In-person preceptorships for advanced practice clinicians (APC) were put at a standstill to reduce the spread of the virus and preserve personal protective equipment. The rapid implementation of the telehealth platform provided one opportunity for resuming clinical training for providers. However, adequate telehealth training was needed for clinical preceptors to provide telehealth education.

Objective: The purpose of this quality improvement project was to pilot an evidence-based telehealth training module (TTM) for clinical preceptors to increase preceptors' knowledge, confidence, and competency in telehealth utilization.

Background: Telehealth uses electronic information and telecommunication to deliver health care, health information, and remote health education. Clinical preceptors should feel confident using telehealth to provide clinical training to students.

Methods: This quality improvement project process followed the Plan, Do, Study, and Act cycle. A literature review and training needs assessment from nurse practitioner (NP) preceptors was used to create the TTM content and learning objectives. The project outcomes were evaluated using quantitative survey data.
Results: The results revealed that TTM increased clinical preceptors' confidence and knowledge in telehealth. Additionally, clinical preceptors' confidence in precepting students with telehealth increased.

Conclusion: The TTM is a promising educational tool that can educate preceptors about telehealth, increases its usability, and increase preceptors' confidence. A clinical preceptor well versed in telehealth will exude confidence and competency and, in turn, can provide an excellent clinical experience for students. The TTM is broad and can be easily modified to meet the needs of new hire providers and as an onboard training for students.
Implementation of a Pilot Telehealth Training Module for Clinical Preceptors: Facilitating Student Return to Clinic During COVID-19

The COVID-19 pandemic led to the sudden and widespread implementation of the telehealth platform. At the onset of the pandemic and with state executive orders, face-to-face visits were converted to telehealth, and elective surgeries and clinical placements were postponed to reduce the spread of the virus and preserve personal protective equipment. The rapid implementation of telehealth limited adequate training for clinical providers. Adequate training and a new clinical platform are required for clinical providers in preceptor roles and to allow students to return to clinical.

Background and Significance

The large healthcare system in the Twin Cities where this project was implemented postponed preceptorships and converted in-person visits to telehealth visits to reduce the spread of the COVID-19 virus in April 1, 2020 (M. Noltimier, personal communication, June 22, 2020). Telehealth training for providers was limited and focused on patient care. Procedures and guidelines continued to change in real-time. Many clinics, including this project's clinic site, still lacks procedures and training on clinical teaching using telehealth (M. Noltimier, personal communication, June 22, 2020). The development of a TTM for clinical preceptors is critical and essential in clinical teaching to prepare students for telehealth clinical preceptorships. Previously, clinical preceptors were not required to have additional clinical teaching training (M. Noltimier, personal communication, July 2020).

Clinical Preceptorships
Preceptorship is vital because it allows students to experience health care, collaborate and interact with the professional team, and use knowledge and skills to connect with and care for patients (Girotta et al., 2019). Preceptors use their knowledge and skills to guide and help shape students, to increase their confidence and enhance their practice skills, and allow students to experience the reality of health care (Girotta et al., 2019). Preceptorships are at the center of the medical and nursing education process (Bengtsson & Carlson, 2015).

Preceptors are often faced with many challenges due to role restraints and expectations. Balancing the role of being both a provider and a preceptor may be difficult because of the many responsibilities, coupled with long work hours, high volume of patients, and patient debriefing with the student. Preceptors are expected to meet high education and health care standards (Girotta et al., 2019). Preceptors must also provide an effective learning environment and facilitate a progressive learning experience for students. To do all of this, it is crucial to give preceptors the necessary tools to transform future health care professionals.

The National Organization of Nurse Practitioner Faculties (NONPF, 2018) asserts incorporating telehealth in education curriculum and clinical experiences to prepare nurse practitioners (NPs) as future nurse leaders and providers. Given telehealth's vast expansion and full adoption in all levels of healthcare, it is essential that students, especially NPs, can utilize telehealth with ease and to its full potential. With the recent rapid expansion of the telehealth platform due to COVID-19, it became necessary for preceptors to receive adequate training to ensure the proper usage and application of telehealth and continue their role in precepting students. This training will allow the advanced practice clinician (APC) students to return to clinical rotations during the pandemic and complete their training.

Telehealth
Telehealth is defined as the use of electronic information and telecommunication in care delivery, health information, and remote health education (HealthIT.gov, 2020; Rutledge et al., 2017). Telehealth is safe, secure and can extend access to healthcare services for patients in rural areas, patients with small children, and patients with ambulatory restrictions (HealthIT.gov, 2019; Kruse et al. 2017; Rutledge et al., 2017). Despite its potential and benefits, only 15% of physicians utilize telehealth (Rutledge et al., 2017).

Videoconferencing, the internet, store-and-forward imaging, streaming video, and wireless communications are telecommunication technologies that can be utilized during a telehealth appointment with patients (HealthIT.gov, 2017). Telehealth has been around since the late 1800s (Nesbitt, 2012). The first documented telehealth article was in *The Lancet*, which described a doctor using a telephone to decrease unnecessary office visits. Home-based monitoring was first noted in the magazine *Science and Invention*. In the 1920s, the magazine revealed a doctor was diagnosing a patient by radio. However, telehealth was not fully developed until the National Aeronautics and Space Administration (NASA) began evaluating physiologic performance with remote monitoring (Nesbitt, 2012).

**Problem Statement**

This project site health system lacked formal telehealth training for providers and had no standard procedure or training for clinical preceptors to continue their role in clinical education. The development of a TTM and standardized procedures is critical to ensure effective and safe clinical education. COVID-19 created a platform for us to think differently about how clinical education is completed.

The purpose of this project is to (1) develop a pilot TTM for clinical preceptors, (2) enhance clinical preceptors' knowledge, and confidence in utilizing telehealth to sufficiently train
students, and (3) develop a standard procedure for clinical preceptors and students in utilizing telehealth.

**PICO Question:**

For preceptors in the clinic setting, will the effect of the telehealth training module, compared to current practice, increase the preceptor's knowledge and confidence in the use of telehealth for clinical teaching?

**Objectives:**

1. Design and implement a telehealth training module for clinical preceptors.
2. 75% of clinical preceptors will report an increase in knowledge and confidence in telehealth.
3. 75% of clinical preceptors will report increased telehealth usability and willingness to precept students during the pandemic.

**Project Design**

The goal is to develop a TTM for clinical preceptors to continue their clinical teaching roles. This project was initially geared towards NPs; however, it was opened to all clinical provider preceptors to increase the number of participants. The project stakeholders included physician assistants (PA), NPs, physicians, an Epic developer specialist, and DNP faculty from Saint Catherine University. The TTM content material included the background of telehealth, legal and HIPAA aspects of telehealth, telehealth etiquette, and video setup. The TTM also contains step-by-step directions for downloading Google Voice and Duo and a standard protocol for conducting a telehealth assessment with students.

The quality improvement project included implementing the TTM for clinical preceptors at the healthcare system. The healthcare system needed a standardized protocol for conducting
telehealth with students (M. Noltimier, personal communication, August 22, 2020). A literature review by Rutledge et al. (2017) also demonstrates a lack of telehealth training programs for practitioners. Based on the needs of this healthcare system, adequate telehealth training will improve clinical preceptors' knowledge, competency, and confidence in using telehealth. Having clinical preceptors trained in telehealth and telehealth precepting will provide a great learning opportunity and experience for students who may not otherwise be exposed to or use telehealth.

Theoretical Framework

The andragogy theory (Appendix A) was used as the theoretical framework for developing the TTM within this quality improvement project. The andragogy theory by Knowles states that adults are self-directed learners and take responsibility for their decisions. Andragogy emphasizes four key factors (Clardy, 2005):

1. Adults need to know why they need to learn something
2. Adults need to learn experientially
3. Adults approach learning as problem-solving
4. Adults learn best when the topic is of immediate value.

Using the andragogy theory, the clinical preceptors are the adult learners, who were approached due to their role in clinical teaching and their impact on patient care and future providers. The clinical preceptors have all experienced the rapid shift of the telehealth platform and may be obligated to improve or identify where the organization's training gaps exist. The clinical preceptors learned about the significance of this project through their own experiences of providing telehealth and volunteered to participate. Perhaps, they felt the need to do something good and valuable in a time that appears very uncertain. By participating in the project and providing their feedback and experience with telehealth, they solve a problem to increase their
knowledge and competence in telehealth. Additionally, the knowledge gained will increase preceptors’ confidence in clinical teaching when social distancing and wearing masks are required.

The TTM is a self-directed, asynchronous, online learning module for adults. The adult learner is in control and is responsible for their learning. According to Tekkol and Demirel (2018), self-directed learning is a skill of lifelong learners. It is an efficient and effective training method for students, residents, providers, nurses, and other healthcare professionals. Self-directed learners allow practitioners to know the current literature and trends (Murad et al., 2010). A literature review by Edirippulige and Armfield (2017) further supports that online learning is the best approach for busy practitioners who choose to gain knowledge and skills.

**Literature Review**

Prior to conducting the literature review, a Google search was used to define telehealth and telemedicine. Both terms are used interchangeably in the literature. Next, in the Fall of 2020, electronic databases, including CINHAL, PubMed, and Google Scholar were searched. The search included the following keywords and Boolean phrases: telehealth, telemedicine, e-health, telehealth AND training, telehealth AND preceptor, telehealth AND education, and telehealth AND satisfaction. The literature was screened for inclusion, and the identified studies analyzed for relevant themes.

Articles meeting inclusion criteria had to (i) be published in a peer-reviewed journal; (ii) involve using telehealth care in an outpatient setting; (iii) involve telehealth education in medical and nursing students curriculum; (iv) include efficiency of telehealth platform in terms of patient satisfaction; (v) be published only in English; (vi) been published within the last ten years; and (vii) have full-text articles available in databases. Exclusion criteria included the following:
reviews, letters to the editor, conference briefs, and studies not designed to use telehealth as the mode of care delivery. The PRISMA flow diagram is found in Appendix B.

**Results**

The literature review identified six articles. Four were systematic reviews of the literature, and two were quantitative studies. Three articles looked at the effectiveness of telehealth and patient satisfaction. Two articles discussed telehealth education and training that is needed and the lack thereof. A table comparing the identified studies can be found in Appendix C.

A systematic review and narrative analysis by Kruse et al. (2017) looked at the correlation between telehealth and patient satisfaction related to effectiveness and efficiency. The study looked at 44 articles; 25 articles reported patient views on effectiveness, six studies reported patient satisfaction, and 14 studies reported both. The researchers found a correlation between patient satisfaction and the modality of telehealth. The common facilitators of either efficiency or effectiveness association between telehealth and patient satisfaction are mixed. Patient satisfaction is a measure of quality in the United States and can affect reimbursement from the Centers for Medicare and Medicaid (CMS).

Polinski et al. (2015) also looked at patient satisfaction and telehealth. They completed a cross-sectional satisfaction survey with Minute Clinics offering telehealth (Polinski et al., 2015). A total of 1734 participants, aged 18 and older, completed the survey; 70% were women, and 30% were men (Polinski et al., 2015). The study found that 94-99% reported being “very satisfied” with all telehealth attributes and rated their health better than or just as good face-to-face visits (Polinski et al., 2015). Approximately 98% of all participants were very satisfied with the quality of care, 98% rated the assisting nurse as very capable, and 94% were very satisfied
with the treatment plan and education they received (Polinski et al., 2015). Additionally, according to Polinski et al. (2015), more than half of the patients noted shorter/no wait time as their primary reason for using telehealth, and one-third preferred telehealth visits. The study cited that the lack of medical insurance influenced patients' preference for telehealth (Polinski et al., 2015).

Orlando, Beard, and Kumar (2019) conducted a systematic review of the literature examine whether patients and their caregivers living in rural and remote areas were satisfied with telehealth videoconferencing. The cost of travel, taking time off of work, adjusting the childcare schedule, or caregiver dependence are obstacles to access (Orlando et al., 2019). Telehealth can be an alternative for in-person appointments. The findings from the 36 article literature review found consistent evidence that telehealth had a significant positive impact on patient and caregiver satisfaction (Orlando et al., 2019). The literature review noted that the telehealth experience seemed to improve access to health care and enhanced communication and engagement with providers, patients, and caregivers (Orlando et al., 2019).

In a retrospective chart review of 32 patients with type 1 diabetes, Xu, Pujara, Sutton, and Rhee (2018) found patients who received telehealth had a decreased mean hemoglobin A1c, reduced glucose variability, and insignificant increase in hypoglycemia episodes. Travel time one way was decreased by 78 minutes, and the Veteran Administration saved $72.94 in travel reimbursement per patient visit. Telehealth appointment adherence was 88%, and 100% of the surveyed participants would recommend telehealth to other veterans (Xu et al., 218).

Another systematic literature review by Rutledge et al. (2017) looked at current evidence and techniques in preparing providers for the use of telehealth. The review provided an overview of topics and strategies used for telehealth training in NPs and NP students. Rutledge et al.
(2017) found a gap in the literature relating to preparing NPs for telehealth in practice. The review suggested that there is limited telehealth training in health profession programs. Interestingly, the review found that most articles focused on didactic content compared to hands-on experience or clinical rotation. Additionally, telehealth training programs focused on the following content: 1) defining telehealth, 2) telehealth etiquette, 3) interprofessional collaboration, 4) regulations, 5) reimbursement, 6) security/Health Insurance Portability and Accountability Act (HIPPA), 7) ethical practice in telehealth, and 8) satisfaction. A multimodal approach to telehealth education is highly recommended in NP education. It includes didactic education, telehealth simulation experiences, clinical telehealth rotations with experienced telehealth preceptors, and engagement in telehealth projects (Rutledge et al., 2017).

Similar to Rutledge et al.’s (2017) systematic review, Edirippulige and Armfield (2017) also found limited peer-reviews literature on telehealth education and training. Nine of the 338 articles were selected for final reviews. Eight studies sought to evaluate the telehealth education and training (E&T) aspects. Seven studies aimed to evaluate participants' satisfaction, and one study set out to investigate the effect of health E&T programs on student's professional careers. The literature review found minimal studies in the telehealth E&T field and only available in a few countries (Edirippulige & Armfield, 2017). The review revealed that a formal university course and continuing professional development (CPD) were two main types of E&T, which is not unique to telehealth. Edirippulige and Armfield (2017) found that online learning is the most used format for both university-level and CPD courses.

**Synthesis**

Overall, evidence has continued to demonstrate a high rate of patient satisfaction with telehealth. The utilization of telehealth is widely supported as it can save traveling time, reduce
no-show appointments, decrease waiting time, decrease hospital admissions, improve medication adherence, and reduce stress (Kruse et al., 2017; Polinski et al., 2015; Orlando et al., 2019; Monaghesh & Hajizadeh, 2020). The evidence strongly supports that the telehealth platform is cost-effective and allows access to quality health care (Orlando et al., 2019; Polinski et al., 2015). Several studies showed that patients and their caregivers are satisfied with the care received through telehealth and are comparable to face-to-face visits (Orlando et al., 2019; Polinski et al., 2015; Xu et al. 2018). Patient satisfaction is a vital measure indicator of telehealth viability and quality (Kruse et al., 2017; Orlando et al., 2019). Every aspect of health care is affected by patients feedback, such as satisfaction rate. Telehealth viability is based on patient satisfaction because the patients are the only source of information that can provide feedback on how they were treated and if the care received met the patients' expectations (Kruse et al., 2017).

Literature relating to telehealth training for clinical preceptors is limited. Most of the literature reviews support the integration of telehealth in practice, its effectiveness, and the need for educational programs. The literature review supports the TTM as a value-added tool for clinical preceptors using telehealth (Edirippulige & Armfield, 2017; Rutledge et al., 2017). In particular, the Rutledge et al. (2017) review provides a valuable starting point for developing a TTM and strongly advocates for implementing this training.

The absence of a telehealth curriculum in medical and nursing education amid the pandemic posed many challenges for clinical preceptors and the current students in clinical rotation. Given the strong evidence of the positive impact telehealth has, I am confident that the pilot of a TTM for preceptors will be successful.

**Project Implementation**

**Project Design and Methods**
Expert interviews were conducted to build additional evidence for clinical preceptors. Combined with the above literature review results, this content informed the evidence-based development of the TTM. The TTM objectives, content, and learning outcomes were elicited from the semi-structured expert narrative interview data. A semi-structured interview can provide qualitative data to create a robust TTM (Kallio, Pietila, Johnson, & Docent, 216). The key informants included NP preceptors from St. Catherine University and practicing NPs from Integrative Geriatrics, LLC were interviewed. The interview questions focused on their experience using telehealth during precepting, what objectives they felt were necessary for conducting a telehealth encounter, what objectives were important for students to know regarding telehealth, and procedures during telehealth visits to align with social distancing guidelines.

By using the descriptive data from the key informant interviews along with best practices found in the literature, the following topics for the TTM were identified: basic history and background of telehealth, the purpose of telehealth, legal and regulatory issues, basic etiquette, and ethical best practice guidelines. Topics were considered specific to this health system, including basic skills of installing Google Voice and Google Duo, general guidelines in conducting a visit with a student, what students need to know before creating a telehealth encounter, and a one-minute preceptor model. The TTM was developed in conjunction with Krista Johnson, MSN, APRN, CNP, a DNP student from Saint Catherine University, and an Epic developer specialist from this specific health system. The content was developed into a PowerPoint platform that allowed the clinical preceptors to be engaged through self-directed learning. The organization's Epic developer training specialist provided feedback on the telehealth training module's format and layout. The Epic specialist's existing information was
incorporated into the training module for the accuracy of information previously provided to the organization. Opinions from both expert categories were instrumental in the creation of the training module content and formulation.

**Data Collection**

Project implementation and data collection began after the project was reviewed and deemed exempt by the institutional review board at St. Catherine University. The key informants' virtual interviews were recorded and followed the semi-structured format (Appendix D). The questions were developed partially based on review literature regarding telehealth education and used open-ended questions. Before piloting, the TTM was reviewed by the key informants and the health care system's Epic Developer Specialist. The feedback was included in the final TTM.

The pre-and post-implementation surveys were emailed to preceptors using Google Form. Once the preceptors submitted the surveys, Google Form collected the response and transformed the data into charts. The responses are de-identified.

**Social Justice Consideration**

Both telehealth and COVID-19 have significant social justice considerations that build on and inform each other. The first reported case of COVID-19 in the United States was on January 20, 2020. A little over a year later, on March 31, 2021, there had been 31 million cases in the US, more than 500,000 deaths and 23 million people have recovered from contracting the virus (Elflein, 2021). The coronavirus 2019, or COVID-19, is an infectious disease that can cause severe respiratory syndrome leading to pneumonia, multi-organ failure, and death. Social determinant factors play a significant role in determining one’s risk of contracting the virus. The mortality rate is highest among those over 85 years (Centers for Disease Control and Prevention [CDC], 2021). With age comes underlying medical conditions that can impact their immune
system, increasing their risk of COVID-19. Race and ethnicity, coupled with poverty and crowded housing, have higher hospitalization rates or death from the virus (Cox, 2020). In many experimental studies, the older population and a diverse population are not well represented in clinical trials, leading to the unknown efficacy of treatments (Cox, 2020).

Despite the negative impact of COVID-19, the expanded use of telehealth that has resulted can help relieve healthcare barriers caused by social determinant factors. The government and CMS lifted restrictions and barriers for telehealth; allowing patients to continue to be seen by providers (Centers for Disease Control and Prevention, 2020). Universities and schools have added telehealth into their curriculum to keep up with the times provide safe, high-quality care to patients (Jumreornvong et al., 2020). The advancement in technology and availability can narrow the health disparity gaps by increasing health care equity geographically. However, technology’s impact may be the greatest among older people, those with low socioeconomic status, people with disabilities, and non-English speakers (Pew Research Center, 2021; Xu et al., 218). The ongoing effort of health systems implementing strategies to ensure that patients continue to receive care will narrow the health disparity gap and increase health care equity (Cox, 2020).

Universities and schools implementing telehealth into their curriculum will prepare the next generation of providers with the knowledge and confidence to use telehealth to deliver high-quality, safe, and individualized care that can directly improve negative social determinant factors that present barriers to healthcare (Jumreornvong et al., 2020). A well-designed telehealth curriculum can explore many aspects of telehealth, such as accessibility, cost, benefits of telehealth, patient experience, and clinical experience. By integrating telehealth with existing
clinical skills, students are better prepared to deliver quality care to patients (Jumreornvong et al., 2020).

**Ethical Considerations**

During the quality improvement project, ethical issues were minimal to none. Clinical preceptors, St. Catherine DNP faculty, and an Epic developer specialist volunteered to participate in the project interviews of their own free will. Surveys completed by clinical preceptors were de-identified and securely stored on Google Form. The surveys and the telehealth training module were disseminated to the clinical preceptors by email to view and submit. No patients were involved at any point in the project; therefore, no privacy data were breached, and no harm was done.

The rapid and widespread expansion of telehealth can lead to ethical concerns, such as HIPAA-compliant security standards, firewalls, end-to-end encryption, security and privacy measures, and connectivity problems (Frith, 2021). Many healthcare systems seek out various virtual applications, including Zoom, Doximity, Google Duo, and Google Voice (Lieneck et al., 2020), to support the telehealth infrastructural and patient care needs. The selected application chosen was likely due to the feasibility and usability of the patient population. By ensuring that all patients have access to telehealth, previous policies were amended, including the relaxing of HIPAA standards, lessened restrictions by the Center for Medicare and Medicaid Services (CMS), and new billing/reimbursement codes to support the use of telehealth. The lack of training on security and privacy measures and the use of non-HIPAA compliant video visits continue to pose critical patient privacy and private health information confidentiality concerns (Lieneck et al., 2020).

**Methods of Evaluations**
To capture the TTM’s effectiveness for clinical preceptors, a pre-and post-implementation survey was completed by preceptors. The majority of the participants were from one large health organization in the Twin Cities. The pilot project's implementation required that participants hold a current role as a clinical preceptor and a provider. The pre-implementation survey identifies the participants' demographics, area of discipline, and length of service. A 5-point Likert scale questionnaire was used.

The TTM was edited and finalized based on feedback from the Epic specialist. Once participants completed the pre-implementation survey, the TTM was disseminated for providers to use. Approximately one to two weeks after viewing the module, a post-implementation survey was completed by preceptors. The post-survey included a 5-point Likert questionnaire to evaluate preceptors' knowledge, confidence, and competence in light of completing the module and any feedback they may have. Google Form supported both surveys. Respondents were anonymous. The quantitative data was collected and analyzed by Google Form using basic descriptive statistics.

**Evaluation**

A total of 12 preceptors completed the pre-implementation survey (Appendix E). Of the 12 preceptors, 33% (4) were nurse practitioners, 33% (4) were physician assistance, 26% (3) were physicians, and 8% (1) was a music therapy intern. Of the preceptors completing the survey, 41.7 % (5) had no telehealth experience, 33.3% (4) “disagree” they had adequate training. Approximately 25% (3) “strongly disagree” that the use of telehealth was complex. However, 25% (3) were “neutral.” Regarding preceptor’s confidence in using telehealth, 33.3% (4) felt “neutral” and 25% (3)“strongly agree.” Preceptors’ confidence in precepting students before the pandemic, 36.4% (4) “strongly agree,” and 27.3% (3) “agree.” An exact percentage of
27.3% (3) “strongly disagree” and “disagree” to having confidence in had adequate telehealth knowledge.

A post-implementation survey was completed after preceptors viewed the TTM (Appendix F). Of the 12 preceptors, 11 completed most of the questions in the survey, 66.7 % (8) “strongly agree” having confidence using telehealth, and 55.6 % (5) “strongly agree” that the telehealth training module increased their knowledge. Additionally, 55.6% (5) “agree” the module increased telehealth usability. Furthermore, the survey revealed that 22.2 % (2) of preceptors were “neutral or agree” to having confidence in precepting students using the telehealth platform. Most importantly, 44.4% (4) of preceptors “strongly agree” that they feel safe precepting students during the pandemic.

Preceptors were also asked for feedback on whether or not the content was helpful (Appendix G). One preceptor commented that the history of telehealth was the least beneficial. One did not appreciate the multiple animation clicks within the slides. The most helpful content includes one-minute precepting examples, slides that provide content relating to precepting, and the group call feature in Google Duo.

The pre-implementation surveys revealed that preceptors had minimal telehealth experience before the pandemic and did not find telehealth complex but did not require additional training. Preceptors were confident in using telehealth as well as precepting alone. The knowledge of telehealth was slightly increased. After reviewing the module, preceptors' confidence in telehealth increased (figure 1), and precepting students with telehealth also increased. Telehealth knowledge was increased (figure 2), and they would feel safe precepting during the pandemic (figure 3). The feedback from the preceptors will be instrumental in the finalization of the module.
Fig. 1. Confident Utilizing Telehealth Result

![Confident Utilizing Telehealth Result](image)

Fig. 2. Knowledge in Telehealth

![Knowledge in Telehealth](image)
Fig. 3. Confident in precepting students utilizing telehealth

Discussion

Telehealth education at this large health organization has been implemented but in fragments during the pandemic in less than one year. Portions of this health system's TTM content were also incorporated in my TTM for accuracy and training purposes. When the pilot project was implemented, providers had been using the telehealth platform for approximately nine months, and some clinical rotations had resumed both in-person and through telehealth. The providers' confidence and knowledge in using telehealth may be higher than anticipated affecting the post-implementation results.

Literature related to telehealth training in a clinical teaching environment for clinical preceptors was limited. Much of the literature supports telehealth integration in academic settings for medical and nursing programs and practices. Rutledge et al. (2017) suggest that
telehealth training often occurs in a clinical setting or through post-professional certification programs since many health professional programs lack formal training.

Overall, the TTM project was successful. The project increased preceptors’ knowledge and confidence in telehealth and competence precepting students over the telehealth platform. The TTM can be a valuable tool for preceptors to utilize to increase their competence in telehealth. The module included content about telehealth and content relating to precepting, including the basic communication skills and the one-minute precepting model. The training module also provides two telehealth procedures for conducting a telehealth visit to comply with social distancing.

The TTM content is broad enough to easily be modified to fit new hire provider training or as an annual learning requirement for all providers. The TTM can also be modified to fit universities onboard training for preceptors and students for clinical rotation. Telehealth’s future will only improve as it is readily available and acceptable to patients and providers. The rapid implementation of telehealth during the pandemic has demonstrated success throughout the world. Telehealth has been proven cost-effective and correlates with improved access to care, better health outcomes, and increased patient satisfaction (Kruse et al., 2017; Orlando et al.; 2019Smith, 2018).

Limitation

This pilot project's main goal was to evaluate the effectiveness of the telehealth training module for clinical preceptors. Limitations to the pilot project include a small number of preceptor participants and only moderate post-survey completion rates, which may have skewed the results. Another limitation involves the content of the telehealth training module. The semi-structured interview was conducted with nurse practitioners and one Epic specialist, which may
have limited the learning objectives and content for the TTM. Adjustments may be needed for the TTM to apply to physicians. The pilot project was originally geared towards advanced practice clinicians, NP preceptors, but it was expanded to include all preceptor providers due to the low participants. Overall, the feedback for the module content was positive, except for the history portion. The training module has two slides that pertain to the history of telehealth; one is a chronological illustration that is not clear, making it difficult to read the fonts, which may have resulted in the least helpful content. Lastly, TTM completion time was a big factor and the primary limitation mentioned by participants. The project was started three months into the pandemic with limited time to complete a thorough needs assessment. The literature on COVID-19 and telehealth was scant to minimal at the start of the project. However, the significance of this project in contributing to the new body of evidence about telehealth and telehealth precepting.

**Implications**

Much of the literature supports the benefits of telehealth in reducing cost, increasing health care access, reducing travel and wait time, and decreasing health disparities. Telehealth is most effective if providers and students are adequately trained. Incorporating telehealth training into clinical rotations, classrooms, new employee providers training, lectures, and universities, can provide an opportunity for students and providers to gain competency and knowledge in using telehealth. Additionally, telehealth education and training would increase the number of preceptors available.

The outbreak of the COVID-19 showed how vital technology is in all aspects of our lives, from having family and friends gathering via video, working from home using various technology applications, and providing routine care to patients via telehealth. Thousands of lives
may have been lost to COVID-19, but the pandemic has benefited us in many ways. The pandemic revealed a lack of provider and student preparedness and competence for telehealth. This ultimately provided the opportunity for universities to integrate telehealth curricula into their program. Medical students have minimal exposure to telehealth in their academic training and can take telehealth as an elective compared to NP students (Waseh & Dicker, 2019).

Integrating the telehealth curriculum into NP education is critical and aligns with recommendations, as the NONPF supports and encourages the implementation of telehealth in the NP curriculum and clinical experiences (NONPF, 2018). The American Association of Colleges of Nursing “Essentials of Doctoral Educations for Advanced Nursing Practice” deemed information system and technology as a requirement to enhance patient care and increase health outcomes (2011).

**Conclusion**

This pilot project aimed to identify the impact of the TTM on clinical preceptor’s confidence and knowledge for utilizing telehealth in clinical teaching. Given the limitations and limited literature review, the project revealed that the TTM could increase preceptors’ knowledge and confidence in telehealth for clinical teaching. To date, studies relating specifically to telehealth precepting are limited. This warrants future studies about the impact of telehealth precepting to understand the preceptors’ and students’ needs thoroughly.

**The Essentials of Doctoral Education for Advanced Nursing Practice**

The *DNP Essentials* provides the eight foundational Essentials outcomes required for all graduates of a DNP program (American Association of Colleges of Nursing, 2006; Moran, Burson, & Conrad, 2014). As a graduate of a DNP program, students are held to a higher level of expectations, higher knowledge, and competencies in the nursing profession. That being said,
DNP is a degree and not a role (Moran, Burson, & Conrad, 2014). The TTM project demonstrates meeting the criteria of the Essentials of doctoral education.

_Essential I: Scientific Underpinnings for Practice_, the graduate incorporates the highest nursing practice foundation with the evidence-based theoretical framework and develops new approaches in their practice (American Association of Colleges of Nursing, 2006; Moran et al., 2014). The TTM was created based on evidence-based practice and guided using the Andragogy theory. _Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking_, the graduate has the skills and knowledge to work within organizational and policymaking entities to address disparities and develop new strategies to improve health outcomes. This quality improvement project included a partnership with this healthcare system in the Twin Cities and NP leaders/preceptors to creating the TTM. _Essential III: Clinical Scholarship and Analytica Methods for Evidence-Based Practice_, the graduate is active in the advanced nursing practice role and provides evidence-based practice leadership. This includes translating new knowledge into practice, the evaluation of the course and outcome. Literature review, expert opinions, and needs assessment at this healthcare organization resulted in creating the TTM product. _Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care_, the graduate is knowledgeable and competent in using technology and accepts information systems and technology to enhance patient care and increase health outcomes. The TTM will increase providers’ knowledge, confidence, and competence in the use of telehealth. _Essential V: Health Care Policy for Advocacy in Health Care_, the graduate engages in health care policymaking to promote and address social justice and equity issues in health care. Social justice and ethincal consideration were identified in the paper. _Essential VI: Interprofessional Collaboration for Improving Patient_
and Population Health Outcomes, the graduate partake in a highly collaborative interprofessional team to create change in health care and care delivery. The creation and implementation of the TTM included the collaboration of an interprofessional team. Essential VII: Clinical Prevention and Population Health for Improving the Nation’s Health, the graduate uses their leadership and knowledge to promote population health through clinical prevention and health promotion. The results of the TTM will increase preceptors' knowledge and skills in using telehealth to continue the delivery of care. Essential VIII: Advanced Nursing Practice, the graduate is deemed competent in refined assessment skills and techniques in their area of practice and base practice on the social determinants that affect their patient population. The learning objectives in the TTM explores the barriers and benefits of technology, including a special set of skills for telehealth assessment and telehealth etiquette. Graduates must abide with the highest integrity of the DNP Essentials outcomes and its expectation for an advanced practice profession.

The TTM is a scholarly project that meets the criteria of the DNP curriculum and Essentials. The DNP Essentials guides the DNP curriculum, demonstrated in the scholarly project (Moran et al., 2014). The scholarly project is built on the knowledge and competencies that is put forth by the DNP Essentials. The TTM adds value to the nursing knowledge and beyond the program expectations.
References

https://www.aacnnursing.org/Portals/42/Publications/DNPEssentials.pdf


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http://doi.org/10.1177/1357633X16632968


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http://dx.doi.org/10.5888/pcd15.170168
Appendix A
Andragogy Theory: Self-Directed Learning

- Adults need to know why they need to learn something
- Adults learn best when the topic is of immediate value
- Adults approach learning as problem-solving
- Adults need to learn experientially
- New knowledge gained

Andragogy-Self-Directed Learner
Appendix B
PRISMA Flow sheet

Records identified through database search (n=535)

Records screened for titles and abstracts (n=120)

Records of full-text articles eligibility (n=10)

Articles included (n=6)

Records identified through database search (n=535)

Records excluded (n=110)

Articles excluded, with reasons (n=4)
- Poor assessment of telehealth
- Hospital settings
## Appendix C

### Literature Matrix

<table>
<thead>
<tr>
<th>Author &amp; Date</th>
<th>Evidence Type</th>
<th>Sample, Sample size &amp; Setting</th>
<th>Findings</th>
<th>Limitations</th>
<th>Evidence level and Quality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Edirippulige &amp; Armfield (2017)</td>
<td>Literature Review</td>
<td>Nine of the 338 articles were selected for final reviews. Eight studies sought to evaluate the telehealth education and training (E&amp;T) aspects. Seven studies aimed to evaluate participants’ satisfaction and one study set out to investigate the effect of health E&amp;T programs on student’s professional careers.</td>
<td>The literature review found very limited studies in the telehealth E&amp;T field and only available in a few countries. The review revealed that a formal university course and continuing professional development (CPD) were two main types of E&amp;T, which is not unique to telehealth. The review also found that an online learning is the most used for both university level and CPD courses.</td>
<td>Limited number of studies in the field. Limited countries Lack of interest relating to E&amp;T</td>
<td>Level: V Quality Rating: A</td>
</tr>
<tr>
<td>2 Kruse et al. (2017)</td>
<td>Systematic Review and narrative analysis</td>
<td>2193 articles were filtered and assessed for suitability (n=44) R1: Is there an association of telehealth w/patient satisfaction? R2: Are there common facilitators of either efficiency or effectiveness mentions in the literature that would provide 44 articles 25 studies reported patient views on effectiveness, 6 studies reported patient satisfaction, 14 studies both. Improved outcomes 20%; preferred modality (10%); ease of use (9%); low cost (8%); improved communication (8%); decreased travel time (7%).</td>
<td>Selection bias Publication bias Limiting search to only two databases Identified was the young age of the telehealth modality of care.</td>
<td>Level: III Quality Rating: B</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Orlando, Beard, and Kumar (2019)</td>
<td>Systematic review</td>
<td>36 studies</td>
<td>Patients and caregivers were indeed satisfied with telehealth due to a range of reasons: travel time, parents with children, those with chronic conditions.</td>
<td>Most of the studies were set in high-income countries with few from low-income countries.</td>
</tr>
</tbody>
</table>

**positive or negative association between telehealth and patient satisfaction**

**Found that patient satisfaction can be associated with the modality of telehealth, but factors of effectiveness and efficiency are mixed.**

Providers and patients should be accepting of telehealth because of its ease of use, its tendency to improve outcomes and communications, and its low cost. It can decrease travel time and increase communication with providers. Telehealth can provide high-quality service, increase access to care, increase self-awareness, and item powers patients to manage their chronic conditions.

Health care system: decreased missed appointments, is a good modality for education, decrease waiting times, decrease readmissions, and improves medication adherence.
<table>
<thead>
<tr>
<th></th>
<th>Authors (Year)</th>
<th>Design/Methodology</th>
<th>Participants</th>
<th>Findings</th>
<th>Limitations</th>
<th>Quality Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Polinski et al. (2015)</td>
<td>Cross-sectional satisfaction survey Quantitative design QI</td>
<td>Age &gt;18 years, presented to minute clinic offering telehealth in Jan-Sept 2014 N=1734; 70% women and 30% men</td>
<td>94-99% reported being “very satisfied” with all telehealth attributes and rated their telehealth as better than or just as good traditional visit. One third preferred a telehealth visits to traditional in-person visit. Convenience and perceived quality of care were important to patients, suggesting that telehealth may facilitate access to care</td>
<td>Did not survey those optout of telehealth Survey instruments were created by the pilot program evaluation team, reliability or validity was not tested</td>
<td>Level: III Quality Rating: B</td>
</tr>
<tr>
<td>5</td>
<td>Rutledge et al. (2017)</td>
<td>Systematic Review</td>
<td>The review provided an overview of topic and strategies used for telehealth training in nurse practitioners (NP) and NP students.</td>
<td>The review found a gap in literature relating to preparing NP for telehealth in practice. The review suggested that there is limited telehealth training in health profession programs. Interestingly, the review found that most articles focused on didactic content compare to hands-on experience or clinical rotation. Additionally, telehealth training programs focused on the following content 1) defining telehealth, 2) telehealth etiquette, 3) interprofessional collaboration, 4) regulations, 5) reimbursement, 6) security/Health Insurance Portability and Accountability Act (HIPPA), 7) ethical practice</td>
<td>Limited literature on education</td>
<td></td>
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</table>
in telehealth, and 8) satisfaction. A multimodal in telehealth education includes a didactic education, telehealth stimulation experiences, clinical telehealth rotations with experiences telehealth preceptors and engagement in telehealth project is highly recommended in NP educational program (Rutledge et al., 2017).

|   | Xu et al (2018) | Retrospective chart review Quantitative study | 32 veterans with Type 1 diabetes who live in rural Alabama and Georgia | Patients who received telehealth had a decreased mean hemoglobin A1c, reduced glucose variability, and insignificant increase in hypoglycemia episodes. Travel time one way was reduced by 78 minutes, and the Veteran Administration saved $72.94 in travel reimbursement per patient visit. Telehealth appointment adherence was 88%, and 100% of the surveyed participants would recommend telehealth to other veterans. | Self-selection bias Small sample size Significant loss of follow up Referring diabetes specialist also independently manages diabetes | Level: III Quality rating: B |
Appendix D

Expert Interview, semi-structured Expert Narrative Interview Questions

1. How long have you used telehealth in your practice?
2. What do you find students struggle the most with when using telehealth? How did you help them overcome the struggles?
3. What do you find students struggle the most with when using telehealth? How did you help them overcome the struggles?
4. What do you expect students to know and be comfortable with before starting telehealth?
5. What are your daily procedures for conducting telehealth with a student during the COVID-19 pandemic?
6. What telehealth learning objectives do you find are important for the preceptors to know?
7. What telehealth student learning objectives do you find are important for the preceptors to know?
8. What kind of software or application do you use to provide telehealth?
Appendix E

Pre-implementation Survey Results

What is your level of experience with telehealth prior to the COVID-19 pandemic?
12 responses

Strongly disagree to Strongly agree

- 5 (41.7%)
- 5 (41.7%)
- 1 (8.3%)
- 1 (8.3%)
- 0 (0%)
I had adequate training prior to utilizing telehealth.  
12 responses

I found using telehealth was complex.  
12 responses
I am confident in precepting students.
12 responses

Strongly disagree to Strongly agree

The TTM increased my usability of telehealth.
9 responses

Strongly disagree to Strongly agree
Appendix F

Post-implementation Survey Results

I feel confident utilizing telehealth
9 responses

Strongly disagree to Strongly agree

The TTM increased my knowledge of telehealth.
9 responses

Strongly disagree to Strongly agree
I am confident in precepting students utilizing telehealth.

Strongly disagree to Strongly agree

9 responses

Strong disagree to Strongly agree

After viewing the procedure content of the TTM, I feel safe precepting students during the pandemic.

Strongly disagree to Strongly agree

9 responses
Appendix G

Post-implementation Feedback

What content from the TTM, was least helpful for telehealth and/or precepting?

8 responses
Presentation content was really great. I’d encourage you to cut back on the animations-too many clicks for the viewer.
The history of telehealth
It was all valid and important
physical exam options for telehealth
There was no bit of information I found least helpful. I feel it is all relevant and applicable.
Already using this with students so didn't need the information
The telehealth history was interesting, but not necessarily helpful for precepting.

What content from the TTM, was most helpful for telehealth and/or precepting?

8 responses
I liked the one minute module in which specific examples were provided on teaching techniques to use with students.
It was very helpful knowing how to use a group chat feature to precept via telehealth.
The slides directly addressing perception were helpful
options of how to precept students
I found all of it helpful for different reasons. From legal rules to lighting during a call to protocol to everything else in between, it is all helpful information to know.
I found the history of telehealth to be interesting
The info on a telehealth physical exam was very helpful/useful.

What other content should be in the TTM that you have found to be helpful for precepting students using telehealth?

5 responses
None
It was very thorough, nice job!
nothing comes to mind
N/A
A couple sample "case studies" or practical examples of telehealth medicine would be helpful.