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**Evaluation of Telemedicine as an Option for Providing Safe, Accessible, Care to Young
Adults in a University Setting**

By

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DNP Scholarly Project Committee

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Submitted in partial fulfillment of the Requirements for the degree of

Doctor of Nursing Practice

Seton Hall University

2021

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College of Nursing
Graduate Department

APPROVAL FOR SUCCESSFUL DEFENSE

Diane Lynch has successfully defended and made the required modifications to the text of the DNP Final Scholarly Project for the Doctor of Nursing Practice during this Fall, 2021

Final Scholarly Project Committee

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Date

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Date

Dedication

I dedicate this work to my parents Joseph Brennan and the late Barbara Brennan who have supported me in my life-long journey as a student. You have inspired me to persevere by never doubting in my ability to succeed.

To my husband John who lovingly supports me in everything I do, my son John who challenges me to think outside the box and reminds me that life is full of adventures. To my daughter Kristen, thank you for all your support and help over the past year and for offering both inspiration and laughter. Finally, to my canine companion Miles, who spent hours curled up next to me as I worked on this project. Thank you for reminding me of the importance of taking walks.

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I would like to thank Dr. Teresa Conklin for inspiring me to begin this journey and for your feedback and words of encouragement as I have made my way through the program.

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I. Abstract

Previously underutilized, telemedicine has been implemented within a wide variety of health settings as a safe and efficient way of delivering healthcare during the COVID-19 pandemic. Maintaining operations during the pandemic made implementation of telemedicine an important aspect of college and university health center reopening plans. The purpose of this project was to evaluate the acceptance and quality of a telemedicine program implemented at the health center of a medium sized private university.

Data were collected via patient and staff surveys to measure satisfaction with the program and a retrospective review of electronic medical records was conducted to obtain data regarding utilization of telemedicine services. Baseline usage of telemedicine was collected 4 weeks following initiation of the program and again 16 weeks later to measure staff and patient acceptance of the program. Student access to healthcare providers was evaluated by comparing student access to providers with extended telemedicine hours during the 2020-2021 academic year with standard office hours.

Use of telemedicine resulted in an increase in access to university healthcare providers by 32 hours per week during the Fall 2020 and Spring 2021 semesters. Student satisfaction with the program increased significantly between the fall and spring semesters with overall satisfaction growing from 62% in the fall to 92% in the spring and a year-end staff survey and campus partner interviews showed strong support with 100% of participants recommending continuation of the program. The findings suggest that telemedicine can be used to successfully deliver quality care and extend access to care providers in a college health setting.

Keywords: telemedicine, telehealth, college students, satisfaction, utilization

II. Background

Definition of Terms

Telemedicine: Telemedicine is delivery of patient centered healthcare from a geographically separate location from a patient utilizing Information and Communication Technology (Sood et al., 2007).

College Health: College health programs specialize in delivering high quality, affordable and accessible healthcare services by professionals that are prepared to meet the unique needs of students and can assist in connecting these students to a wide range of resources both on and off campus (American College Health Association [ACHA], 2016).

Description of Project

This was a DNP quality improvement initiative focused on evaluating the use of telemedicine in a college health center. Health care providers have used telemedicine since the early 1960's (Atmojo et al., 2020). Prior to the pandemic, 18- to 49-year-olds were the most frequent users of telemedicine. Researchers, via a survey of four large hospital systems, found this age group accounted for 66% of visits in 2019 and that number grew to 73% in 2020 (Koonin et al., 2020). Despite this growth in visits, telemedicine had low utilization in most healthcare settings until February 2020 (Koonin et al., 2020). Beginning in March of 2020, the Centers for Disease Control and Prevention (CDC) advised health care facilities and providers to offer virtual clinical services as a means for mitigating transmission of COVID-19 (Centers for Disease Control and Prevention, 2020). Implementation of telemedicine became an important part of the health center's comprehensive plan to provide safe and accessible care to students during the SARS-CoV-2 pandemic. Use of telemedicine offered the opportunity to extend access to on-campus healthcare providers, help facilitate timely follow up for students with COVID-19

like symptoms, decrease exposure and transmission to COVID-19 in the health office, and help to reduce non-emergent transports to the emergency room. As a new service, it was important to monitor the quality of this telehealth program in a college health setting.

This improvement project focused on meeting the new CDC standards for mitigating transmission of COVID-19. The project also evaluated the expansion of access to care to students who might have been unable to previously utilize college health our services. College health centers are well-equipped to offer telemedicine services, but few centers routinely provided such care prior to the COVID-19 pandemic (Nobleza et. al, 2019). The project evaluated opportunities to decrease non-emergent transports to the emergency room, greater convenience, more timely initiation of care, and continuity of operations. Findings from this project will guide future quality improvement efforts, helping to determine sustainability of the program beyond the pandemic.

Purpose of Project

The purpose of this quality improvement project was to evaluate the telemedicine program at the college health center. Three core aspects, satisfaction, utilization, and program acceptance contributed to the evaluation.

Program Objectives

To aid in the evaluation, the objectives of the project were to:

- Demonstrate that telemedicine can be used successfully to increase students access to on-campus healthcare providers in a cost-effective manner
- Determine if patient satisfaction with the telemedicine program is equal or higher than with standard visits
- Increase and sustain student and clinician utilization of telemedicine

- Establish quality metrics for the telemedicine program to use in chart audits and peer review to support future QI projects

Goals

Three specific measurable goals of this quality improvement project were:

1. Increase student satisfaction with the telemedicine program from 61.91% obtained in the fall patient satisfaction survey to a rate of 90% or higher with a staff training initiative.
2. Monitor utilization of the telemedicine program, show growth in utilization and provide evidence from surveys that at least 50% of students would be interested in having a telemedicine visit in the future.
3. Show by survey, that the program was accepted by at least 90% of staff and supported to improve student access to care.

Significance of the Project

The COVID-19 pandemic brought forth opportunities previously unavailable. This project offers the assistance in ensuring that the telemedicine program offers the same level of services as in person care. Additionally, there was an opportunity to ensure that the program fulfills the standards of the accrediting organization, Accreditation Association for Ambulatory Health Care (AAAHC). Additionally, it was possible that the project will help college health leaders about the future use of telemedicine beyond the pandemic.

There are several important reasons for investigating and studying the use of telemedicine on a college campus. The first reason is the general lack of available knowledge regarding telemedicine with students in that receive services at a college health center. Limited evidence is available that connects telemedicine and mental health care in a college health center. Even lesser amounts of literature are available that evaluate the relationship between telemedicine and

primary care services to college students. What remains unknown are two things that affect students and providers. First, will students accept telemedicine over traditional office visits if allowed. Second, how well clinical staff embrace the change in care delivery. Another unknown factor pertains to health center productivity. Exploring the effect of increased access to services is important for strategic planning purposes. Collecting information from each of these areas can help to guide decisions regarding the continued use of telemedicine in college health settings beyond the pandemic.

III. Review of Literature

Multiple databases including Google Scholar, PubMed, and CINAHL, contributed to literature review. The project leader limited the initial timeframe for publication dates to the last 10 years. The project director conducted a second review to identify literature published between 2020-2021 allowing for additional literature. A librarian assisted with construction of the search. The search found no studies that specifically related to use of telemedicine to deliver primary care services within a college health setting. Studies, however, were available utilizing telemedicine within college counseling settings. Several other studies and resources were available related to implementation of telemedicine into primary care settings.

The selected studies for review included qualitative, quantitative, and peer reviewed journal articles. There were only 2 papers that involved the utilization of telemedicine in college health settings and both studies were examining the efficacy of telehealth in relationship to providing mental health services. Because the university health center project location provides primary care and urgent care services, studies conducted within these settings were also reviewed and considered relevant for inclusion. The literature identified implementation strategies, patient and clinician satisfaction, telemedicine utilization and education.

Authors of pre-pandemic studies often focused on the promise that telemedicine improved access to care. For example, authors of a large cross-sectional study at Kaiser Permanente Northern California found distinct differences in the patient demographics of who chose telemedicine including age, technology access and barriers to accessing in-person visits (Reed et al, 2020). The authors collected data from more than 1.1 million patients, which represented more than 2.2 million primary care visits. Of these visits, 14% were conducted using telemedicine. When examining patient choice between a traditional office visit, a telemedicine telephone visit or video visit, the authors found that female patients and patients aged 18-44 years were more likely to choose a telemedicine visit. The authors concluded that telemedicine could be used to improve access to vulnerable patient groups for which there were challenges associated with transportation, parking costs or other expenses associated with getting to an in-office visit (Reed et al., 2020) While this study did not specifically involve college students, it has relevance to the present project. The relevance is that many college students struggle with limited financial resources and transportation, limiting options for accessing healthcare.

Telemedicine has the potential to increase access to care but for this to occur both staff and patients need to have experience and comfort in using technology. Kruse et.al. (2016) conducted a systematic review of 30 articles that mirrored findings to the Kaiser study. The focus of this systematic review was to identify commonly identified barriers affecting implementation of telemedicine programs around the world. Using Preferred Reporting Items for Systematic Reviews and Meta Analyses the authors found 33 barriers within the 30 articles that occurred with a frequency of 100 occurrences. The most common barriers were related to staff level of comfort with using technology (11%); staff resistance to change (8%); cost (8%); reimbursement (5%); age of patient as it related to lack of experience with technology (5%) and education (5%)

The authors conclude that for telemedicine to increase in utilization, a concerted effort and policy changes need to occur to remove these barriers. The authors of the study recommend programs that provide education related to technology (for both staff and patients) and alternating the delivery of telemedicine with in-person visits can facilitate greater satisfaction and increase utilization. Further recommendations were aimed at policies that aid in supporting telemedicine reimbursement and acquisition of appropriate technology.

Despite previous challenges regarding the diffusion of telemedicine into practice settings, concerns regarding transmission of SARS-CoVid-2 quickly made telemedicine the preferred option for delivering care. This has forced patients and healthcare providers to quickly adapt to telemedicine (Holtz, 2020). Literature supports that by integrating telemedicine into our practice as a continued option for care, we can improve the quality of telemedicine programs, the comfort level of patients and clinicians and support future emergency preparedness efforts (Smith, et al., 2020).

Several studies were published that share tools and tips for successfully implementing a telemedicine program into practice but did not specifically address college students or college health settings. Smith, et al, examined the essential components of a successful telemedicine program. By providing data from a large specialty care clinic over the course of one month, they created an implementation guide that identifies 8 essential elements: an electronic medical record, audiovisual platform, institutional technology support, hardware (laptops, smartphone), training (provider, staff), patient education, participation of patients and coding and billing integration (Smith, et al., 2020). Garber et al (2021) described another example of implementation in a school-based program using a Telemedicine Service Implementation Model (TSIM). In this qualitative study they used a hub and spoke model taken from The Medical

University of South Carolina (MUSC) Center for Telehealth, a center for excellence. This school-based program used a collaborative approach with an interdisciplinary team that included a pediatrician and nurse practitioners working with school nurses to expand the scope of care available to K-12 students. A structured 6 phase implementation plan begins with the request for a program and includes additional phases for: strategy, development, implementation, operations, and continuous quality improvement (Garber et al., 2021). This study was significant in that it provides resources for clinicians to develop sustainable telemedicine programs that can potentially increase access to care and improve healthcare outcomes.

There were several studies that focused on removing staff barriers to providing telemedicine with education. Before the pandemic, many clinicians had limited opportunity to practice telemedicine. However, it is well accepted that education and training can have a significant impact on clinician's attitudes and likelihood to use telemedicine (Kruse, 2016). Rutledge et.al. conducted a qualitative study using Bandura's social cognitive theory of self-efficacy to increase exposure and education of Advanced Practice Registered Nurses. The study took place within a post-master's to Doctor of Nursing Practice (DNP) program in the United States. The participants (n= 60) were DNP students with diverse clinical backgrounds. The aim of the study was to introduce a telehealth education program into the existing DNP curriculum. A multimodal program was introduced to study participants that included didactic, simulation, clinical rotations, and telehealth projects as well as foundational education in telehealth etiquette and reimbursement. Students were also given the opportunity to simulate a telemedicine visit with a student actor ($\bar{X}=4.9$) (Rutledge et al., 2014). This study was significant in that the authors found that several students who participated in the program went on to implement telemedicine into their practice.

Other studies were identified whereby authors also focused on telemedicine training and education. Merritt (2020) examined the use of computer simulation as a tool for training Advanced Practice Nursing students to provide virtual care upon graduation. This author focused on correct management and diagnosis of patients using telemedicine. A total of 17 students, enrolled in either Pediatric or Family Nurse Practitioner programs, participated in the study. All participants were enrolled in a diagnosis and management course. Prior to participating in the simulation, students received an overview of telehealth and practice considerations. The participants engaged with a simulated pediatric virtual visit on the third day of the program. As part of the simulation experience, students received text messages and images from fictitious patients and were allowed to practice collecting the appropriate information from the simulated virtual exam. Next, the students participating in the study were asked to provide the appropriate diagnosis for each of the scenarios by selecting one of 4-multiple choice options to provide a short-answer question to complete to document the management plan. A 5-point pre and post survey measured self-reported competence with using virtual health before and after the simulation experience. Quantitative data were collected and analyzed using SPSS version 25 to calculate diagnostic accuracy. The rate of overall accuracy for the diagnosis and management plan for the 4 case scenarios was 91% for the 17 participants. When comparing pre- and post-surveys related to competence, students reported significantly higher levels of self-reported competence in their virtual assessment and diagnosis skills. Only 35% of students reported confidence with virtual visits prior to the experience versus 100% following the intervention. (Merritt, 2020)

Patient and clinician satisfaction is important for telemedicine program uptake. In 2019 Nobleza, Hagenbaugh, Blue, Vergare, and Pohl conducted a cross-sectional study using patient

surveys to determine participants level of satisfaction with telemedicine. The study looked at the experience of 67 health professional students who utilized telehealth services in a university counseling center. The mean age of the students was 27 years, and, ranged from 23 years to 42 years of age. All students were encouraged to provide feedback via an anonymous, web-based survey distributed by email. The investigators noted a 53.7% response rate (36 of 67 students) to the survey. Of the students surveyed, 94.6% indicated a high level of satisfaction and reported they would utilize telehealth services again. Students also reported high levels of satisfaction in respect to convenience (94.4%) and helping them feel better (83.3%). The findings of this study support the use of telehealth services as a viable option for providing convenient care to students that overcomes barriers to accessing care such as time and stigma (Nobleza et al, 2018). While the study did not survey clinician satisfaction it spoke to clinician concerns that telehealth might affect therapeutic alliance by providing a snapshot of student perceptions of telehealth as an effective form of treatment.

A recent study by Holtz (2020) provides a snapshot of perceptions of patients regarding telemedicine pre and post pandemic. This study demonstrated that patients who lacked the choice of scheduling for an in-office visit during COVID, were just as satisfied with telemedicine visits when compared to those who had opted for telemedicine visits pre-pandemic. Differences in perception between the two groups included reasons for using telemedicine, quality of in person care and continuity in care. Past users were less likely to feel they would have gotten better care with a traditional office visit but both past and new users felt the telemedicine provider genuinely seemed to care about them and overall satisfaction with the visit (Holtz, 2020). The author concludes that more studies are needed on patient perceptions and satisfaction with telemedicine if it becomes an ongoing option for health care in the future.

Atmojo, Sudaryanto, Widiyanto, and Arradini (2020) conducted a systematic review looking at cost-effectiveness and patient satisfaction in relationship to telemedicine. The sources of the review were collected from a variety of healthcare settings including primary care and urgent care settings. The findings included lower costs for patients related to reducing the time spent accessing care by 56%. Telemedicine visits also saved costs for transportation and parking. Additional evidence of decreased cost was associated with nurse provided tele-homecare particularly for the elderly and those with chronic diseases who were likely to access care more frequently. Furthermore, the authors find that patients were less likely to require transports or admission to the hospital when able to access telemedicine services. The authors also evaluated patient satisfaction. A total of 51% of respondents reported being satisfied while 11% reported being quite satisfied and 38% indicated being very satisfied. The authors found high levels of patient satisfaction associated with respect to patient satisfaction with telemedicine. While these studies did not specifically reference college or university healthcare providers, they support patient acceptance and satisfaction with telemedicine and potential cost savings that are relevant to a college health population.

Barney et.al (2020) shared similar observations on utilization of telemedicine with a young adult and adolescent population. These authors describe the experiences of one specialty practices that implemented telemedicine in response to the pandemic. Within one month of telemedicine implementation, 97% of visits were being delivered remotely. The total number of clinic visits were comparable to the previous year (337 visits in 2019 versus 332 visits in March 2020). Relevant to the university population were the challenges they described with shared spaces and clinical decision-making without physical exams and POC testing. To address the concerns related to providing virtual care to this age group in a shared household setting, the

practice came up with problem solving strategies. The use of earphones and the providers use of yes-no questions was used successfully improve privacy issues and sending patients to a lab for POC testing was identified as an option to assist with diagnosis of common ailments. The authors concluded that while telemedicine was a reasonable option for providing care during the pandemic, there are unanswered questions regarding confidentiality and quality of care. They also urge clinical guidelines be created to help guide best practices.

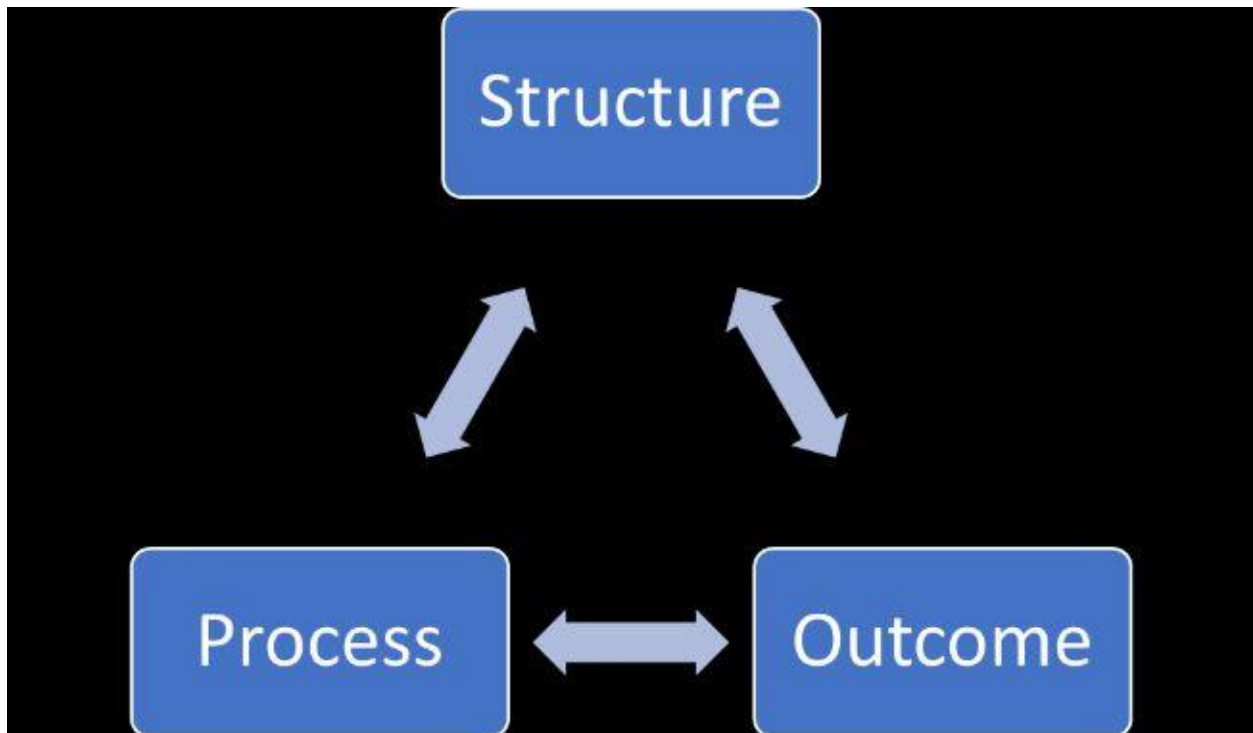
IV. Theoretical Framework

This project used the Donabedian Model. This model was selected because of its focus on examining the relationship between structure, process, and outcome as a means of evaluating the quality of care being delivered to patients. This model (Figure 1) provided a framework that is ideal for evaluating a new mode of healthcare delivery and its impact on the organization, healthcare providers and patients receiving care.

The Donabedian Model is based on the belief that three components are crucial to focus on for the delivery of quality healthcare:

- “Structure” or what is needed to deliver healthcare and the setting in which care will be delivered;
- “Process” or what action is needed to give and receive care; and
- “Outcome” or the end results or the care delivered.

Donabedian believed that the interaction between these elements was multidirectional and that each element could have an influence on another. He is quoted as having said: “A good structure increased the likelihood of having a good process and that increases the likelihood of a good outcome” (Donabedian, 1988, p. 147).

Figure 1*The Donabedian Model*

(Image adapted from Donabedian, 1988)

Structure

Due to the nature of how quickly the implementation of telemedicine unfolded, an initial focus of this QI project was looking at the structure needed to provide this new mode of care. There were many concerns regarding the steps that would need to be taken to sustain a high-quality program. The first step was to look at individuals both within and outside the Health Center, who would be needed for the program to function. This included support staff in the office such as the front desk staff who scheduled appointments and registered nurses (RNs) who assist during the visits and triage patients. Campus partners identified as important to supporting the program included public safety staff, housing and residence life staff and staff, administrators within the division of Student Services and IT support services. These individuals would need to

be provided with information regarding the new service to share with students, assist in promotion of the program and assist with social media and campus communications.

The clinicians who would be delivering the care were also an important aspect of the structure needed to successfully sustain the program. Staff training and provider meetings helped to ensure that clinicians were prepared for this new service and had the tools they needed to be successful. Attitudes regarding scheduling and hours of service needed to be considered prior to launching the program to insure adequate staffing during the year. Clinicians met to coordinate schedule availability and preferences in relationship to anticipated scheduling needs. Allowing clinicians to self-schedule and select desired shifts was aimed at supporting work-life balance and clinician satisfaction

Students who would be receiving the care were also considered when planning for extended telemedicine hours. The existing hours for accessing visits within the office were Monday thru Friday from 8:45am-4:45pm. Extended telemedicine hours were targeted to meet anticipated student needs. Our existing hours did not meet the needs of students for accessing clinicians on the weekend or evenings. All clinicians were open to covering weekend shifts and two clinicians preferred providing weekend and evening coverage over weekday coverage.

Although one important aspect of this QI project was to increase student access to campus healthcare providers with telemedicine, equally important was the need to deliver safe care during the pandemic. Implementation of telemedicine in health services was also a strategy to reach students who found getting to the office inconvenient. This was identified as being particularly important in extending services to students outside of the main campus where health services are located. Telemedicine was able to provide health services to students on campus

without transportation, avoiding the use of outside providers and non-emergent emergency department transports.

A potential barrier was avoided by launching the telemedicine program in a college health center which had the advantage of a robust information technology (IT) department with availability of laptops, smartphones, and Wi-Fi. The Department of Information Technology was equipped and skilled in remote learning and meetings even prior to the pandemic. All students on campus and staff within the health center had university provided laptops and Wi-Fi access. The existing electronic medical record was used for documentation of visits. Campus MD's and APN's discussed options for what Health Insurance Portability and Accountability Act (HIPAA) compliant platforms would be acceptable to use for delivery of telemedicine visits. Doxy.me was decided upon as the preferred platform. The use of TEAMS was also discussed as this platform was confirmed by the universities Information and Technology department to also be HIPAA compliant and allowed for flexibility in terms of communicating with students. TEAMS was very familiar to students and staff and often aided in reaching students who did not pick up their cell phone when contacted at the time of visit.

Process

Another important aspect of this QI project was focused on processes. Conducting assessments of the policies we had in place in relationship to making decisions regarding the types of visits that would be appropriate for telemedicine, workflow, and training. The delivery of patient centered care was essential for program success. Consistency of care delivery and quality of visits were targeted when evaluating process. One example of a process that was reviewed was in relationship to scheduling. After meeting with all members of the team, the project implementor recommended a time block approach for scheduling telemedicine visits

during the day to avoid conflicts with in-office visits and on-call scheduling was utilized to extend the hours into the evening and weekend. Another process was related to workflow within the telemedicine visit. Once the visit was scheduled, the student received an email with instructions and a telemedicine consent form to review and sign. At the time of the visit the provider would reach out to the patient by phone to make sure the student understood how to access the telemedicine platform and had all the necessary equipment and Wi-Fi connection to complete the virtual visits. The use of audio and video components was preferred for conducting visits. Clinicians were able to document using the existing electronic medical record while completing the visit in much the same manner as when completing in-office visits. Documentation included verification of consent for visit and documentation regarding location (NJ) where provider and patient were physically located while conducting the visit. Clinicians used the appropriate visit code with the required 95-modifier code when billing for telemedicine visits. Patient education was provided verbally and electronically via a secure patient health portal.

Outcome

The outcomes for this project were aimed at evaluating student and staff satisfaction with the telemedicine program as well as the satisfaction of campus partners outside the Health Center. Other outcomes include answering whether telemedicine was able to successfully expand the number of hours per week students would have access to on-campus healthcare providers and to categories of students that had not previously utilized health services. Data utilization was collected using reports within the electronic medical record.

Table 1*Donabedian Project Framework*

Project Framework:	Telemedicine Program Considerations:	Project Focus:
Structure	Support staff Healthcare professionals Patients receiving care Technology	Individuals supporting process Skills, attitude Location (residential vs off campus), access to private space for visit, transpiration, schedule Laptop or smart device, WiFi, electronic health record, HIPPA compliant platform
Process	Healthcare actions Management	Workflow, patient centered QI, templates, and tools Chart reviews
Outcome	Visit quality Experience of students receiving care Experience of healthcare professionals Efficiency	Satisfaction, convenience Ease of use, schedule impact operations, cost vs. revenue

(Project framework adapted from Donabedian, 1988)

V. Project Methodology

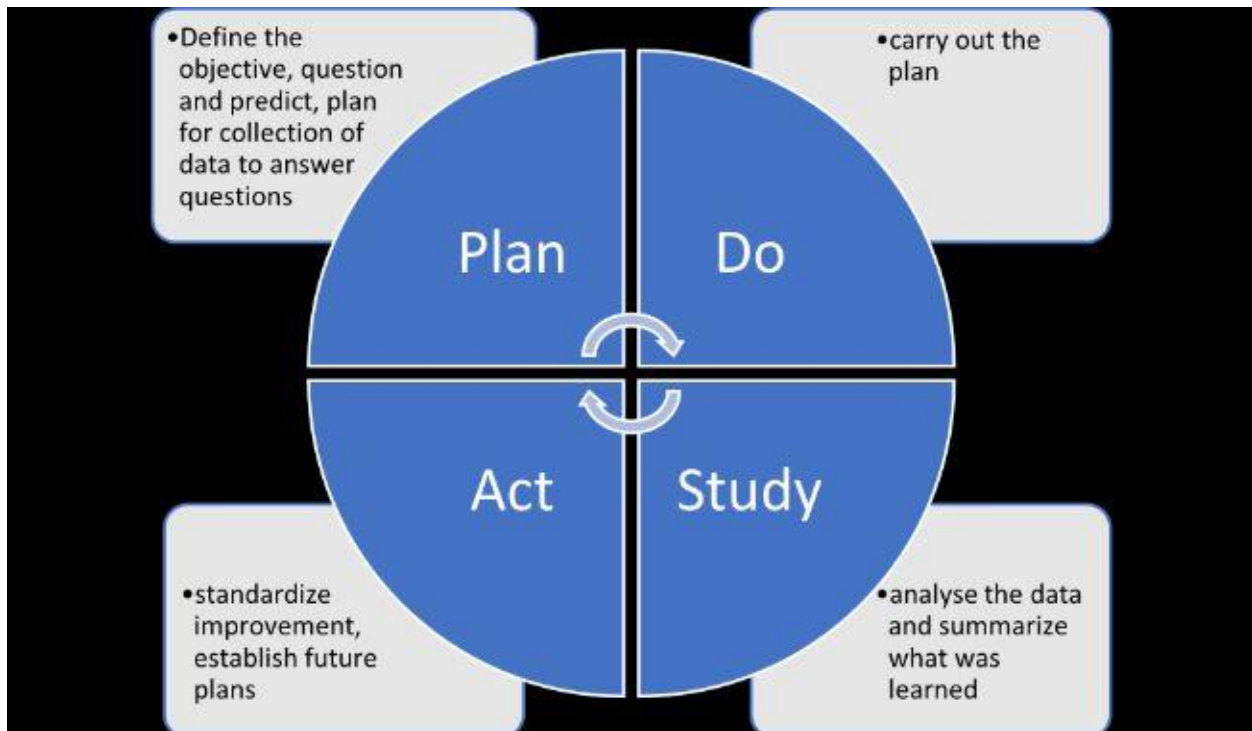
Approval Process: The approval process began in the Spring of 2020 after identifying telemedicine as a topic of interest. Meetings with key stakeholders took place within the university setting where the project was to be launched. Telemedicine was introduced as part of a QI initiative to improve access to healthcare providers and did not qualify as human subject research, therefore it did not require Institutional Review Board (IRB) oversight. Approval was received following meetings with key stakeholders including the medical director and clinicians of the university health center, Associate Vice President and Dean of Student Services and Vice President of Student Services.

All information related to the project was collected in a manner which protected patient confidentiality by removing any patient identifiers (Name, DOB, and chart ID number). All laptops were issued by the university and both laptops and electronic medical record were password protected. The platforms utilized for providing telemedicine services were confirmed to be HIPPA compliant.

Methodological Method: The methodological method utilized within this project is the Plan Do Study Act approach. This method allows for constant improvement by implementing a process based on cycles of performance improvement. (Institute for Healthcare Improvement [IHI], 2021)

Figure 2

Plan Do Study Act Cycle



(Image adapted from the Institute for Healthcare Improvement, 2017)

The plan included defining the objective which was to develop a way to safely expand and extend health services in a university health center. The question was whether telemedicine

could be used to accomplish increasing hours that students would have access to on-site healthcare providers and whether having these services could result in greater access to care, increased satisfaction of both students (patients), campus partners and health services staff in a cost-effective manner. Data were planned to be collected via patient and staff surveys, review of medical records, and interviews.

A patient satisfaction survey was conducted 90 days after telemedicine implementation for initial evaluation of the program. These data were analyzed to study how satisfied patients were with the program. The program implementor created the Fall 2020 patient satisfaction survey to gather information that included student attitudes regarding telemedicine regardless of the type of visit they had. The program implementor created the survey to include patient satisfaction questions used in previous patient satisfaction surveys to allow for benchmarking but included 3 additional questions. A question was added to identify the type of visit the student participated in and the student's interest and attitude regarding telemedicine visits. Students who received telemedicine visits received additional questions to evaluate their satisfaction with participating in a telemedicine visit. (See appendix) The survey was sent electronically via email to a random sample of 500 students who had visited Health Services between 11-16-20 thru 12-15-21. A total of 124 students responded to the survey. A Likert scale was used to evaluate responses. The survey respondents included 99 students who had in-office visits and 25 students had utilized telemedicine. A total of 45% of the 124 students indicated interest in utilizing telemedicine in the future and 40% of students indicated they were unsure about having a telemedicine visit. Of particular concern were the responses from students who had utilized telemedicine services. A total of 38% of these students reported that they felt they would have received better care if they had seen the healthcare provider in person and only 14% would

choose a telemedicine visit over a traditional visit when possible. In addition, only 35% of these students would recommend health services to a friend following their telemedicine visit. The feedback was reviewed and shared with office staff, RN's, nurse practitioners, and physicians and the feedback was used to improve the initial telemedicine program by planning and implementing a staff training program. The Follow-up evaluation was made with a second patient satisfaction survey that took place between Feb 2021 and May 2021.

Similarly, utilization of telemedicine services was assessed in the Fall over a 3-week period and compared to utilization in the Spring over a 3-week period. The offices electronic medical record also allowed for comparison of populations of students utilizing the service to assess whether telemedicine expanded services to those who previously may not have been able to access services. The student populations of particular interest were commuters and students attending satellite campuses.

Non-emergent ER transports were assessed using the universities public safety reporting system and through interview of housing and residence administrators and public safety administrators.

Interviews of key campus partners from housing and residence life and public safety were also conducted to assess success of the program and future sustainability. The interview collected information on satisfaction with the telemedicine hours and gaining insight as to whether our campus partners felt the program was helpful in providing support to students outside of our standard office hours. It also sought to gain perspective on whether these partners felt the program would be useful to continue for the 2021-2022 academic year

All data were collected and summarized. This information was shared with key stakeholders.

Risk Analysis

A S.W.O.T. analysis was conducted to identify strengths weaknesses, opportunities and threats that support or threaten the program and to create an action plan for successful implementation.

Strengths

The strengths identified for implementing telemedicine at the project site are the support and collaboration with a physician who is experienced in working with a college aged population and experience in utilizing telemedicine platforms in her private practice. This support is available for the clinic and the students who will be utilizing the services. An assumption which was identified as a strength is the likelihood that college aged students are comfortable with the use of technology. An established electronic medical record and patient health portal is already in use. The project leader is an APN who has experience in a college health setting in both clinician and leadership roles. Finally, the project was fueled by the need to provide safe and accessible care this year in response to concerns surrounding the pandemic.

Weaknesses

Weaknesses identified are that the telemedicine program was initially implemented as part of COVID-19 emergency response limiting time to plan prior to launching the program and limited staffing to provide coverage. Existing office structure included a small professional staff (2 APN's and 1 MD) to cover both office and extended telemedicine hours. Because of the limited number of staff available, existing office staff were used to schedule telemedicine visit requests received during office hours and students were provided a "telemedicine call line" to access clinicians during scheduled extended telemedicine hours.

Opportunities

Opportunities include students having greater access to care. This includes students who might normally utilize health services such as commuters and students attending classes on satellite campuses located in Nutley and Newark. on other campuses. A high-quality telemedicine program will provide greater convenience and more timely scheduling of visits. This supports patient and clinician satisfaction (Rutledge, et al, 2017) Another potential opportunity is decreasing non-emergent transports to the ER. Finally, considering the challenges of this past year, telemedicine allows for continuity of operations and continuation of services in a pandemic that restricts in-office visits.

Threats

Threats included concerns regarding HIPPA violation penalties. These penalties were temporarily waived in response to the pandemic, allowing for the use of common video calling platforms to deliver care. (Smith et al., 2020) More concerning perhaps than the video platform, however, is the shared space that the students typically live in. My plan to reduce risk in this area will be implementation of a checklist within the electronic medical record. The checklist will address privacy concerns prior to the start of the visit (AAAHC, 2020).

Contingency Planning

A plan was developed to manage the threat of not meeting the expectations of key stakeholders such as students and providers. Disappointment with the quality of telemedicine visits was a threat that could potentially impact the program's success, therefore patient satisfaction and utilization of services were measured early in the process to identify concerns and target follow up performance improvement efforts and clinician education. In the same

manner, clinician feedback was obtained during regularly scheduled provider meetings to ensure satisfaction with the program.

A major concern would be an underlying assumption that telemedicine visits do not provide optimum and/or quality encounters which could affect satisfaction. Since the telemedicine program was implemented as part of the emergency response to COVID, there was limited time to plan prior to launching the program. Interventions to improve the initial program included creating templates within the electronic record to aid providers in addressing and documenting on key quality and safety concerns. The templates provided cues to providers to obtain consent for the telemedicine visit, document their location when doing the visit, as well as identifying COVID risk factors and known contact with COVID positive individuals.

Because telemedicine has not been used widely, providers were given an opportunity to share experiences and participate in professional training to develop confidence and competency. The project implementor introduced the Old Dominion University's Center for Telehealth Innovation, Education C-Tier Video Series (Old Dominion University, 2020) to provide training to clinicians on preparing for telemedicine visits, telemedicine etiquette, and how to conduct common exams via telemedicine. The Old Dominion University training videos were available free and allowed clinicians to complete self-paced training.

Another threat identified was competition with other health care providers. As telemedicine programs are becoming popular, students have many options for obtaining care. To encourage utilization of the telemedicine program, the project leader worked with campus partners and the health services team to promote student awareness of the program, how to access services, hours of service, and advantage of using campus health services versus alternative care providers.

Potential costs may occur to facilitate the goal of extending hours with telemedicine services beyond the 2020-2021 academic year. COVID mitigation strategies resulted in decreased campus density during the 2020-2021 academic year. This decreased density allowed for existing staff to provide sufficient coverage in the office as well as providing the extended hours for telemedicine. The campus pivoted to remote learning early in November 2020, and all residence halls closed dramatically decreasing the number of students seeking in-office visits. Planning for the 2021-2022 academic year has been focused on uninterrupted in-person learning and full occupancy of residence halls. With full capacity residence halls and in-person learning it is anticipated that existing staff will be needed to staff the office and additional telemedicine hours will require additional staffing. If more staff are required to provide the additional coverage for telemedicine, a proposal will be developed to demonstrate the benefits of this service such as utilization of services by students, increased satisfaction, and decreased emergency room visits. Additionally, cost can potentially be offset by third party billing if telemedicine is utilized by students.

Implementation Timeline

Phases of Implementation. The program consisted of in several phases beginning with a needs assessment. The implementation of telemedicine within the project site was identified as essential to being able to continue to provide safe, accessible care to students given the environment of the SARS-CoV-2 pandemic. After deciding on a project framework, a budget, marketing plan and SWOT analysis were shared with key stakeholders. Approval was obtained to conduct the project and implementation took place over the course of the Fall 2020 and Spring 2021 semesters.

Fall 2020

Implementation of the telemedicine program began in the Fall 2020 semester. Data were collected pre- and post-program promotion. Utilization data were collected for billable telemedicine visits scheduled in October and November and compared to data collected from visits in February and March 2021. In addition to utilization of telemedicine services, sustainability of the program is dependent on satisfaction with the program. Patient satisfaction data were collected 3 months post-program implementation and served to inform the curriculum for provider telemedicine training. All clients received a satisfaction survey and 38% of survey respondents in the Fall 2020 indicated that they felt they would have received better care with an in-office visit. Only 14% indicated they would choose a telemedicine visit over an office visit in the future and only 35% of survey respondents receiving telemedicine reported they would recommend health services to a friend. The program implementor shared survey results with staff within the project location and training options were reviewed with clinicians at a follow up provider meeting.

Clinicians agreed on the value of training videos for use with existing staff and a decision was made to include competencies with simulated telemedicine visits as part of the orientation for new clinicians. The program implementor launched a new staff training program in January and February 2021 to address student concerns regarding the quality of telemedicine visits. Staff received training on telemedicine etiquette and tips on conducting common types of exams via telemedicine using video resources available thru the Old Dominion University Center for Telemedicine Innovation, Education and Research (C-TIER). New clinicians will be given additional training that includes simulated telemedicine visits with a member of the health services team prior to conducting telemedicine visits with patients. The simulated visit will allow

the new clinician to utilize the technology and become familiar with telemedicine platform options, IT support services and conducting virtual visits.

Follow-up Surveys and Chart Reviews

Spring 2021

A staff survey was conducted in Spring 2021 to evaluate additional training needs and degree of satisfaction with the telemedicine program. All 3 clinicians who participated in the survey indicated that no additional telemedicine training was needed when surveyed in the spring. On a rating scale of 1-5 with 5 being very proficient and 1 being not at all proficient: 1 NP and 1 MD rated themselves as 5 or very proficient in providing telemedicine services and 1 NP rated themselves as 4 on the scale. All 3 clinicians who responded to the survey indicated that they felt documentation options and technology provided at the project site were sufficient for providing telemedicine services.

A patient satisfaction survey was sent to every student utilizing health services between 1-26-21 and 5-1-21 to obtain feedback regarding satisfaction with services during the Spring 2021 semester. The survey was sent to all students regardless of the type of visit they received to allow for a comparison of data based on visit type. Considering the relatively low level of satisfaction with telemedicine in the Fall survey, one goal of the spring survey was to compare satisfaction levels of traditional office visits with telemedicine visits to guide future decisions related to continuing the program.

Interviews were conducted in May with campus partners to get feedback on benefits of the program from the perspective the housing and residence life staff and public safety. The interview process was conducted informally, and participating staff were asked if they felt

telemedicine services benefited students during the 2020-2021 academic year and whether they felt the telemedicine program would be worthwhile to continue for the 2021-2022 academic year.

Utilization Data were collected for billable telemedicine visits in February and March to compare with Fall utilization data as another important measure of sustainability of the program. Chart audits were also conducted to evaluate documentation within telemedicine visits and will be used for future quality improvement initiatives.

Summer 2021

Telemedicine templates were updated within the electronic medical record targeting quality metrics. An updated telemedicine curriculum and competencies were developed to meet ongoing staff training needs, Reports were shared with stakeholders regarding program utilization, quality, and satisfaction to support sustainability of program.

Budget

The following project budget includes an estimate of costs to develop and launch a telemedicine program in a university health setting. The costs for materials include equipment, training, and program promotion items. The student project implementer did not receive compensation for program development, hosting staff training and planning activities for program promotion. The amount of time to complete these activities can be estimated to involve 75 hours of labor but approximately 25 hours could be performed by office support staff and other nurses as opposed to an advanced practice nurse.

The program utilized office supplies such as paper, card stock, a printer, laptops and projector for training and program materials. Surveys were conducted electronically at no cost. It should be noted that costs can be minimized by using electronic training and program materials.

In the practice location where this project took place, an electronic medical record was already in use and implementation of the project did not result in any additional costs related to documentation of visits or laptops. A free telemedicine HIPPA compliant platform was chosen to facilitate the audio-video component of the visit. Providers could bring their work issued laptop home for providing telemedicine visits remotely. Labor and operational expenses are estimated and may vary depending on salary differences across various geographical regions. In the university health center where the program was implemented physician coverage for extended telemedicine hours was covered by using hours within their existing contract. Two nurse practitioners also provided coverage. One of these providers was paid hourly and simply exchanged some of her scheduled in-office hours for telemedicine. This provider expressed a preference for covering telemedicine shifts as it resulted in decreased time commuting and wear and tear on her car. The other nurse practitioner was paid a stipend to compensate for working additional hours as needed on the weekend and evening and this cost was accounted for when planning the budget. Third party billing covered the cost of the stipend.

The benefits of this program included removing barriers to telemedicine for healthcare providers who may not have provided these services in the past. Most importantly, implementing increased student access to healthcare providers outside typical office hours and remotely during office hours. This expanded the office's ability to provide safe, convenient cost-effective care to students attending other campuses and commuting from home.

A significant benefit to extending hours with telemedicine was its efficiency related to staffing. Extending hours for in-office visits would require two or more individuals to staff the office. Utilizing telemedicine, visit could be scheduled during office hours using the existing scheduling team and after hours with the on-call provider via a “telemedicine call line” staffed

remotely. Finally, the project implementor believes that with greater access to care, there will be less non-emergent transports to the emergency room which has great impact within the campus community and beyond.

Marketing Plan

The introduction of telemedicine in the medium-sized private university setting where the project was conducted was fueled by challenges to provide safe and effective care during a global pandemic. Telemedicine in college health, like other healthcare settings, offered the benefit of delivering care in a manner which avoided the exposure of individuals to a potentially serious viral illness, helped to conserve PPE, and offered an option for identifying cases of COVID-19 on campus to facilitate rapid isolation, contact tracing and quarantine of contacts. Following the recommendations of the American College Health Association and other respected public health organizations, telemedicine was implemented and became the predominant way for triaging and assessing students with symptoms of acute illness.

One year later, perhaps the best reason for answering whether telemedicine will be viewed positively by students was its sustainability beyond the pandemic. The project's potential for continuity of care and follow-up with on-campus healthcare providers was impressive. A telemedicine program supports the mission, values, and goals of student health services by improving and expanding patient access to healthcare in a safe and cost-effective manner. For many students, the process of assessing healthcare services is new and unfamiliar territory.

College health providers are prepared to spend more time with students than an outside healthcare provider and evaluate more fully what assistance a student may need. When more support is indicated, an on-campus provider can take additional steps to connect students with on-campus resources. The variety of support possible is wide-ranging and could include delivery

of OTC or prescription medications, follow-up status checks, delivery of food or fluids, or referral to other resources such as Counseling and Psychological Services, Disability Services, the Dean of Student Services' office or even Public Safety for emergencies requiring rapid response. When students utilize onsite telemedicine services, they have access to healthcare providers who are knowledgeable regarding a variety of resources which may support students in following the recommended treatment plan resulting in better health outcomes.

Providing telemedicine services had the additional benefit of expanding services to students who would not have utilized health services in the past due to schedule or location. Being able to access services remotely will increase the potential patient population who could benefit by cost-effective student focused health care.

Finally, the use of telemedicine can help to identify and prevent the spread of infectious disease and outbreaks on campus and in the community because visits within health services (both within our office and via telemedicine) allow for daily and weekly reports to be run which identify clusters and outbreaks in the community. This is particularly important given the use of congregate settings on campus.

Stakeholder Analysis

A key stakeholder identified when developing this marketing plan was the Dean of Student Services and Assistant Vice President of Student Services who was an immediate supervisor and would provide approval for the program. A few other stakeholders were identified and include the contracted physician's group and the university employed APN's who would be providing patient care, as well as RN nursing staff and office support staff who were often involved in triaging and scheduling appointments. Additional campus partners who were targeted as being important to the success of the program included staff within Housing and Residence

Life and Public Safety for their role in directly communicating with students regarding the availability of telemedicine on campus and the Associate Dean for Student Engagement and Public Relations Department staff for helping to communicate the new program using student social media platforms and webpages. A key external stakeholder identified were parents of students. Making parents aware of the telemedicine schedule which offered extended and weekend hours often helped to connect us to students who may not have otherwise been aware of this service. All students on campus and staff within the health center had university provided laptops, Wi-Fi access and on-campus IT support. IT services was also a valuable resource in identifying secure platforms for delivering telemedicine services and obtaining additional equipment such as headsets and assisting with set up of the “on-call telemedicine line” via Microsoft TEAMS. Key stakeholders were part of the data evaluation cycle.

Project Outcomes

Patient Satisfaction: Fall

A total of 124 surveys were completed during the Fall survey period. The survey was offered electronically to all students who utilized health services between 11-16-20 and 12-15-20. The survey was administered over a 30-day period. The survey was concerned with measuring student attitudes and experiences with telemedicine services but also provided an opportunity for feedback about the health services department in general. The goal of the survey in addition to assessing for quality of care rendered was to identify areas of care that may need improvement and ascertain the response to telemedicine health care services overall. This was a new modality of care employed during the SARS-CoV2 pandemic. The survey was composed of 10 questions and allowed for comments about any other issues concerning the health services department at the end of the survey questionnaire. All responses were anonymous. Of the 124

respondents, only 20.16% (25) respondents had utilized telemedicine services during the Fall semester. A total of 62% (13) of the students reported being satisfied with the care they received via telemedicine services. A total of 62% of students completing the survey indicated they would choose a traditional office visit over telemedicine when seeking health care services.

Patient Satisfaction: Spring

A curriculum was developed after the review of the fall 2020 survey to provide additional training to clinicians. Templates within the electronic medical record were revised to meet quality metrics and included prompts to: document the visit being completed via telehealth, the location of the person providing the service (state) and the patient's informed consent. A total of 156 patient satisfaction surveys were completed during the spring. The survey was delivered electronically via email to all students who utilized health services between 1-26-21 and 5-1-21. Of the 156 individuals surveyed, 66 students had utilized telemedicine services. Patient satisfaction had increased significantly from the fall with 92% of students indicating overall satisfaction with their telemedicine visit. This was slightly under the 95% satisfaction rate of students with a traditional office visit and 95% satisfaction rate of those who had a telemedicine visit combined with in-office testing. The information in Table 2 summarizes the number of students included in the survey and displays the results in relationship to traditional office visit (N=88), vs. telemedicine visits (N=26) vs. a combined visit using telemedicine with in-office testing or follow up (N=41).

Figure 3

Overall Satisfaction with Telemedicine

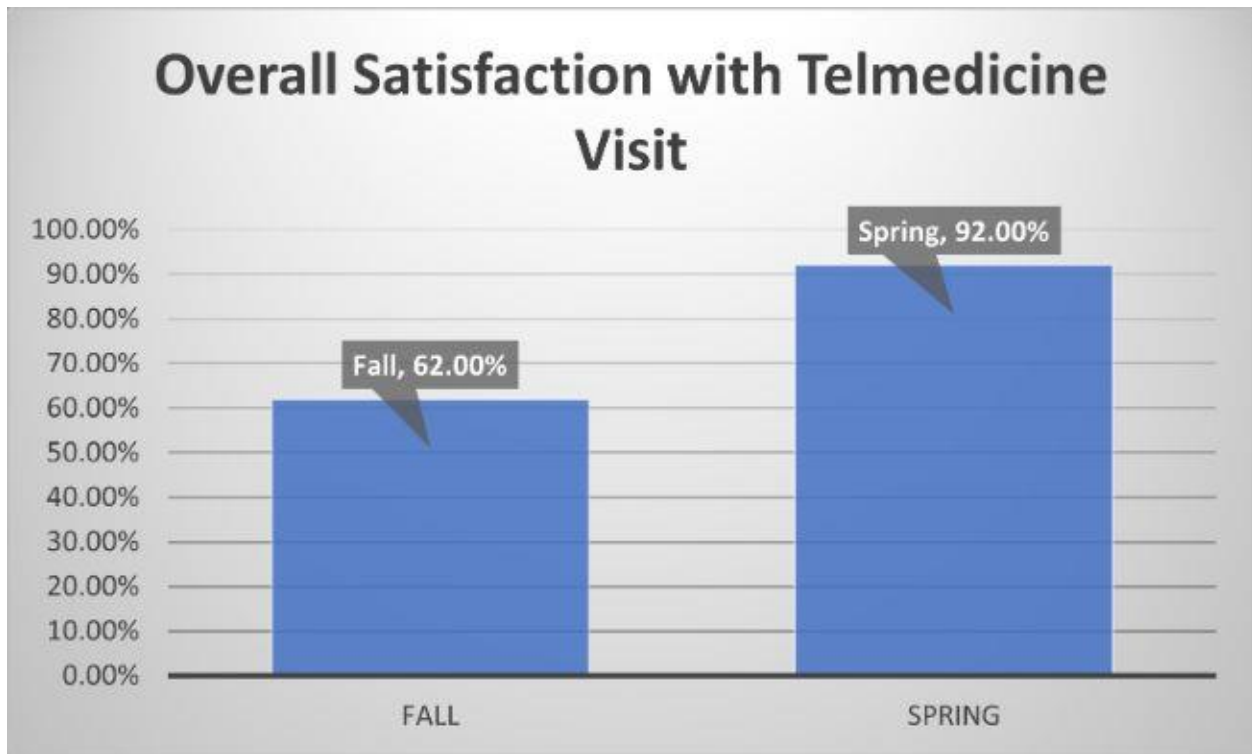


Table 2

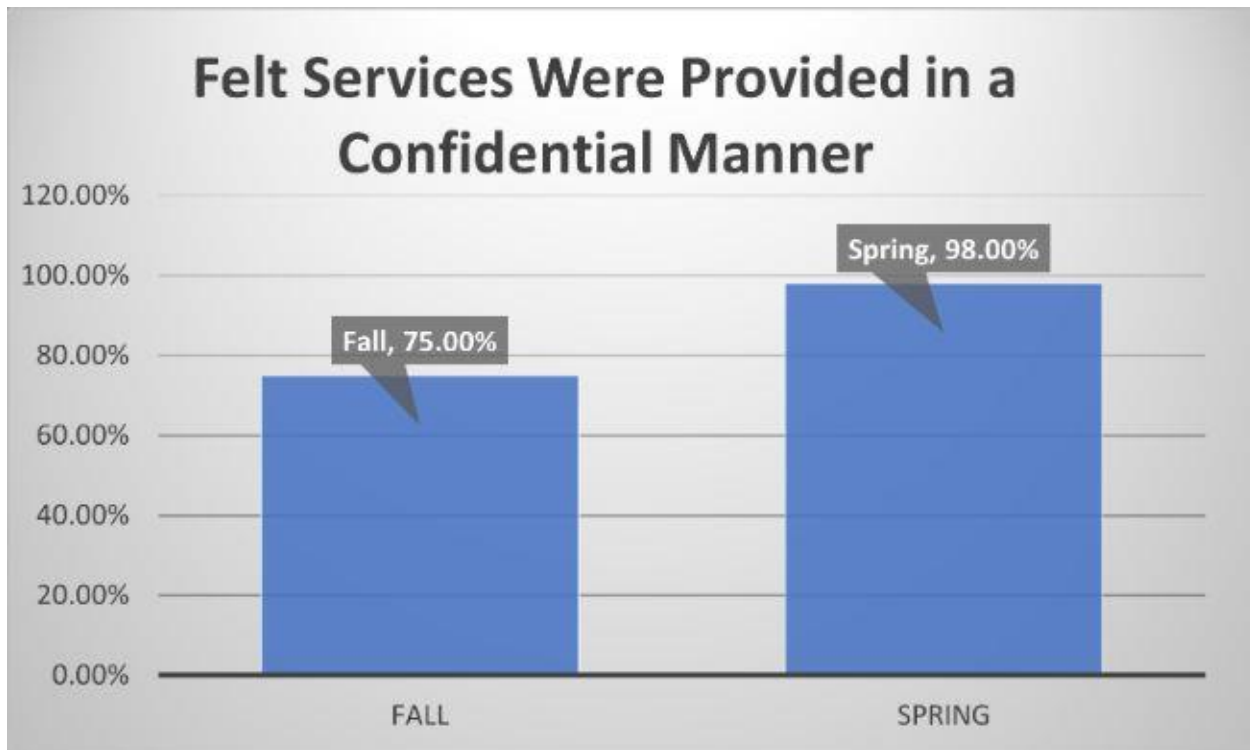
Spring Patient Satisfaction-Overall I felt satisfied with the care I received

	Office Visit		Telemedicine		Telemedicine and testing	
	Count	Percent	Count	Percent	Count	Percent
Strongly agree	73	82.95%	19	76.00%	31	75.61%
Agree	11	12.50%	4	16%	8	19.51%
Neither agree nor disagree	3	3.41%	2	8%	0	0%
Disagree	0	0%	0	0%	1	2.44%
Strongly disagree	1	1.14%	0	0%	0	0%
N/A	0	0%	0	0%	0	0%
Total	88	100%	26	100%	41	100%

The survey also looked at several metrics to gauge student satisfaction with telemedicine and compare satisfaction with in-office visits to those conducted using telemedicine. One area of concern for providing telemedicine in this population was meeting the standards of confidentiality. Many students share living space with other students or family members. Twenty percent (20%) of students who participated in the Fall Patient Satisfaction Survey did not feel telemedicine services were provided in a confidential manner.

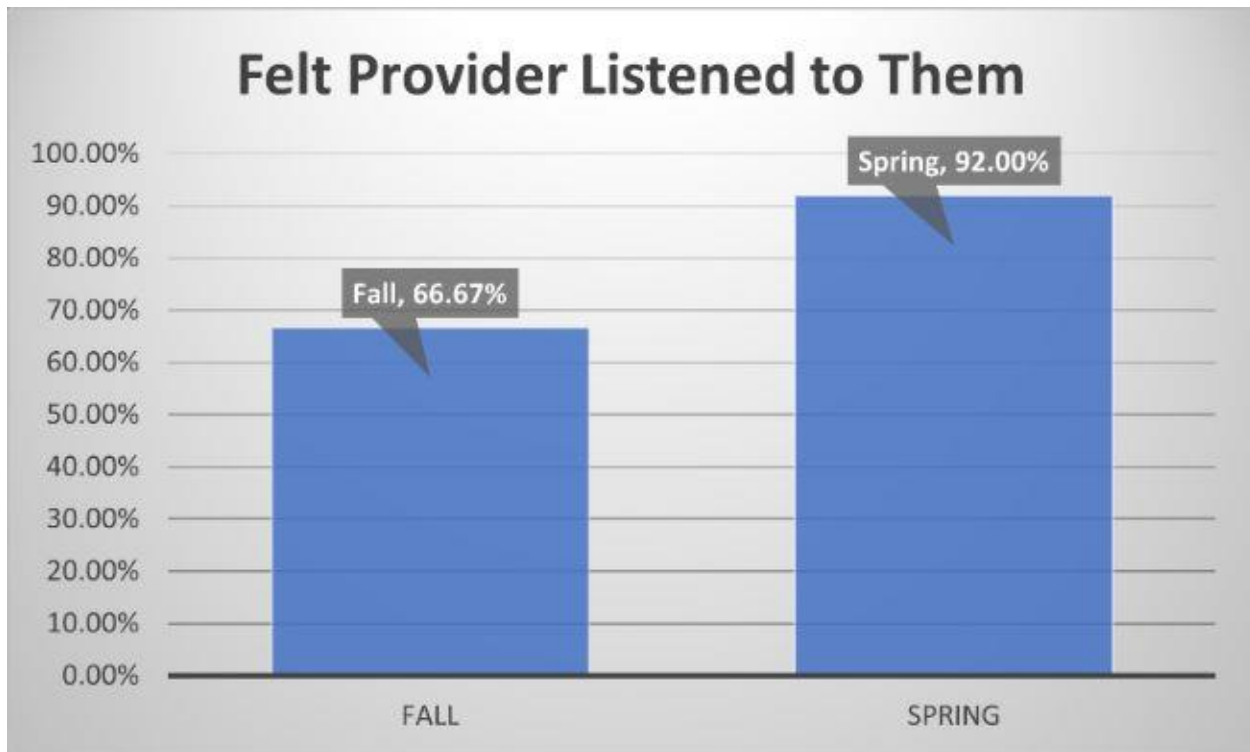
In response to this confidentiality concern, starting in the spring 2021 semester, students were provided instructions at the beginning of the visit, on how to prepare for their telemedicine visit to allow the student to create a comfortable and private space during the visit. Students who were in shared living spaces were encouraged to use headphones to promote privacy. Provider telemedicine training included selecting an appropriate space to conduct telemedicine where confidentiality of the patient would be assured, and distractions avoided.

For the students (n=67) completing the spring survey, 100% with a telemedicine visit either agreed or strongly agreed that their care was delivered in a confidential manner compared to 98.88% of students (n=88) who had in-office only visits.

Figure 4*Confidentiality of Services*

Another metric looked at in the spring survey was whether the student felt they had received education regarding their condition or service during their visit. A total of 95.51% of those receiving an in-person office visit vs 100% of those receiving a telemedicine visit and 98.25% who had a combined telemedicine and office visit.

One metric where telemedicine did not fare as well as in-office visits was how students perceived the provider listened to them during the visit. Roughly 92% of those who had a telemedicine visit felt the provider listened to them vs. 98% of those who had an in-office visit. Despite this difference, the satisfaction level was acceptably high for both types of visits and showed a significant increase from the fall patient satisfaction survey where only 66.67% of students felt listened to during their telemedicine visit.

Figure 5*Patient Perception of Being Listened To***Spring Staff Survey**

A total of 11 invitations were sent out electronically between 5-3-21 and 5-4-21. The invitations to participate in the survey went to all members of the health services team. 10 invitations were delivered successfully, and 9 individuals completed the survey. 100% of participants felt telemedicine services should continue beyond the pandemic. Comments that shared by participants to support their answer included:

“Offers more options and convenient care for students”

“Useful and timesaving for students”

“Helpful for students who might feel too sick to travel to health services”

“Great service for students who are unable to come in during office hours”

When asked about proficiency with providing telemedicine visits 3 potential providers rated themselves on a rating scale of 1-5 to indicate degree of perceived proficiency with a rating of 1 being “not proficient” and a rating of 5 being “very proficient”. One MD and 1 APN rated their proficiency as “very proficient” and 1 APN rated their proficiency as 4 on the scale.

A total of 78% of participants felt current documentation and technology was sufficient for providing telemedicine services. Suggestions for improvements were made by 22% of participants and included:

- Reminder for schedulers to give instructions for students on how to prepare for call
- RN’s suggested adding templates within the electronic medical record that they could use and coming up with solutions for documentation of telemedicine and in-office visits that occurred within the same day
- Providers suggested giving blocks of time for a telemedicine visit to occur in as opposed to a specific time for off-hours appointments.

78% of participants indicated they did not feel as if they needed additional training at the time of the survey and 22% stated they did. The discrepancy related to training may be attributed to the relative focus on APN and Physician training for telemedicine. An RN and the Medical Records assistant represented the 22% of participants identifying as needing additional training. Future training will address reviewing telemedicine visits that might be appropriate to schedule with our RN staff and additional training for staff scheduling telemedicine visits.

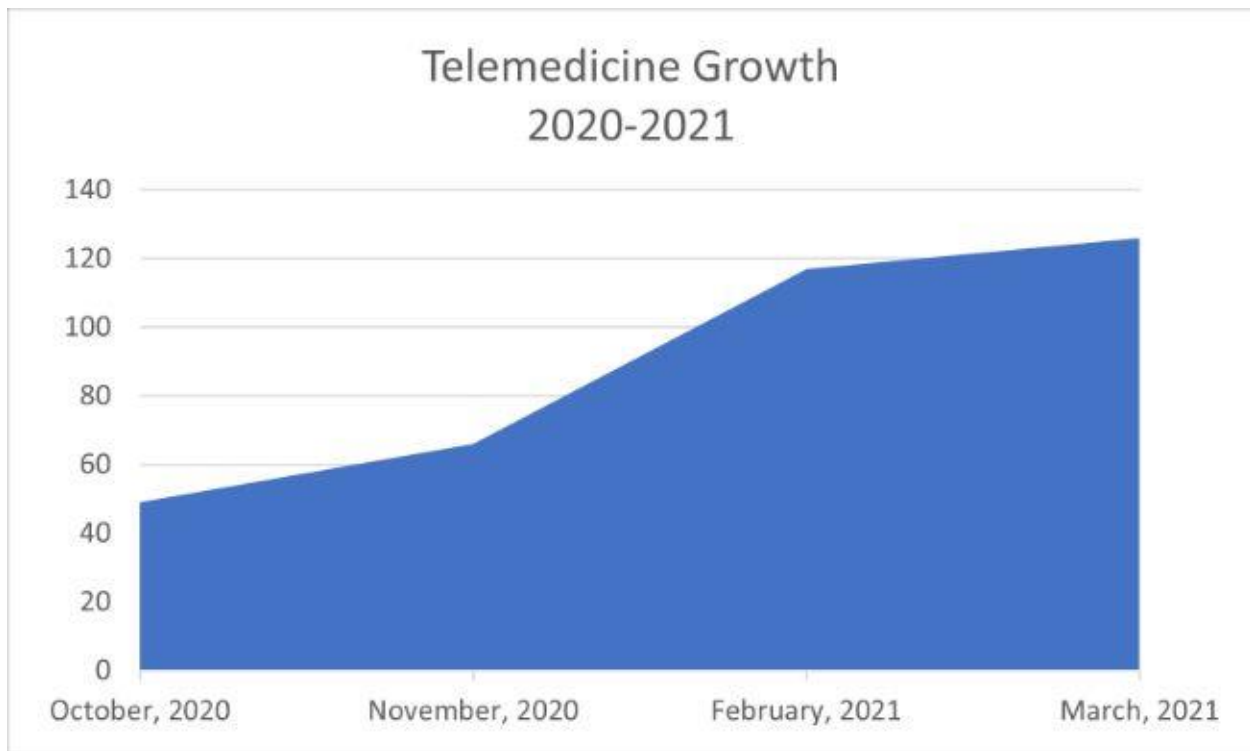
Utilization of Services

A comparison of telemedicine visits billed within the electronic medical record between October 1, 2020, and November 23, 2020, revealed a 34% increase in utilization of telemedicine (from 49 visits in October to 66 visits). Utilization continued to increase during the spring with

117 visits being billed in Feb and 126 visits billed in March 2021, more than doubling usage between the Fall 2020 and Spring 2021 semesters. The percentage in change between October 2020 and March 2021 shows a growth in utilization of 157.14%.

Figure 6

Trend in Telehealth Visits

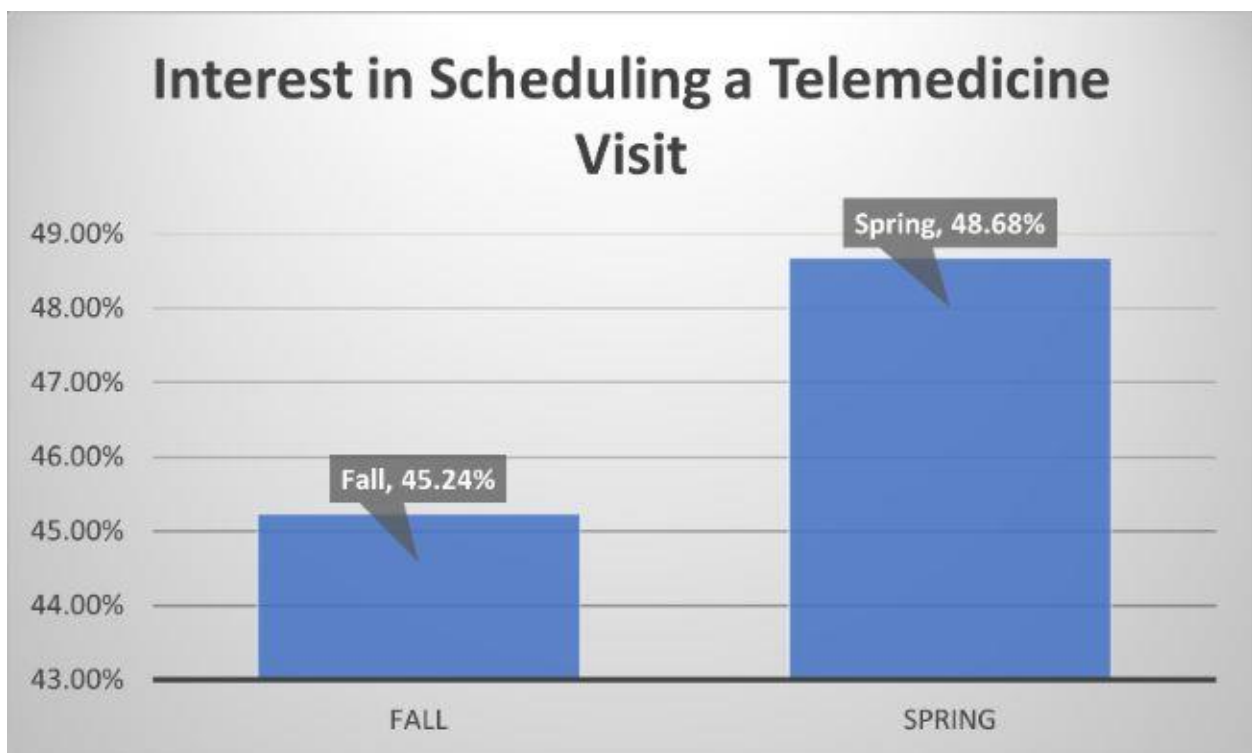


One potential benefit of the use of telemedicine was use by students who normally would not utilize our services at the satellite campuses (Interprofessional Health Sciences campus or Law School campus). While it proved difficult to extract data accurately from the electronic medical record for these populations in their entirety, a sample of Law School students showed that telemedicine services grew significantly between Fall 2020 and Spring 2021 semesters from 1 visit to 9 visits. While utilization of telemedicine services continued to be low by low students, the growth in use between the two semesters of 800% is encouraging as a means of expanding services to students for whom an in-office visit would not be convenient.

A comparison of the Fall 2020 and Spring patient surveys revealed a small increase in the percentage of students who would be interested in choosing a telemedicine visit in the future from 45.24 % to 48.66% and those who indicated they would not, remained almost the same at 14.29% in the fall compared to 14.47% in the spring. The remainder of those who responded indicated they were unsure about future use of telemedicine.

Figure 7

Interest in Scheduling a Telemedicine Visit



In an interview in with Jessica Proano, Director of Housing and Residence Life, residential staff appreciated and valued the expanded hours that campus health providers were accessible via telemedicine and felt the services were beneficial to students living on campus. Another interview with Public Safety Director Sergio Olivera found that the public safety personnel also supported the continued use of telemedicine. He shared feedback that he felt it was very helpful to be able to have extended availability of on-campus health care providers via

telemedicine and that the service helped to decrease the number of ER transports during the 2020-2021 academic year.

The telemedicine program increased student access to healthcare providers by 32 hours per week during the fall and spring semesters at a cost of \$84 per day. Telemedicine hours extended access to providers from 5pm-9pm M-F and provided coverage on Saturday's from 12pm-8pm and Sunday's from 4p-8pm. (see appendix B)

Review of Goals and Objectives

1. Student satisfaction with the telemedicine program increased from 61.91% obtained in the fall patient satisfaction survey to a rate of 92% with a staff training initiative. This successfully met the program objective for this metric.

2. Utilization of telemedicine grew by 157% between Oct and March meeting project expectations but survey interest in scheduling telemedicine fell short of 50% with only 48% of students reporting they may schedule a visit in the future.

3. 100% of staff supported continuation of the telemedicine program exceeding program expectations.

VI. Discussion

This project demonstrated that telemedicine visits can be used to successfully augment existing in-office services with high levels of satisfaction reported by patients, health services staff and campus partners. It remains important, however, to continue to monitor quality metrics through survey and allow opportunities for both patient and staff feedback as the program continues to develop. Consideration must be afforded to patient preferences as to visit type as well as appropriateness of visits in respect to delivering the best quality of care and combining telemedicine with in-office testing.

Future QI studies are being considered to look at quality of care in respect to variation in care delivered when comparing telemedicine visits with in-office visits. Some potential topics include whether antibiotics are prescribed more or less frequently based on visit type and whether care providers are using appropriate guidelines when making these choices regardless of visit type. A concern is whether providers completing telemedicine visits will prescribe more antibiotics to compensate for not being able to complete a “in-person” objective exam.

Sustainability

Utilization data, satisfaction, and continued support of key stakeholders for the program, support sustainability going forward. Future opportunities exist for visits to include RN follow-up calls and implementing additional health and wellness programs utilizing similar platforms. The ability to provide telemedicine extended hours via a telemedicine call line offers a cost-effective way to extend availability of on-campus providers to students.

Limitations

Some challenges in data comparison were identified during this process. APN’s and MD’s use a 95-modifier code is used to indicate that a visit is completed via telemedicine. The code allows insurance companies to differentiate between visits conducted in the office and those completed via telemedicine. Coding for visits that included telemedicine followed by testing and further evaluation in the office were not coded using the telemedicine modifier. The off-hour's telemedicine line was utilized by students for consultation with providers that did not always result in a billable visit and these contacts could not be quantified through the electronic medical record. Many telemedicine visits were followed up by in-office testing and often additional in-office assessment. Providing safe care and confirming a diagnosis often requires labs or point of care testing and often an objective exam in the office. For example, students who were seen for

upper respiratory symptoms such as nasal congestion, sinus pressure usually required COVID testing. The symptoms of COVID in our college aged population were non-specific and identifying individuals who had COVID was extremely important in controlling transmission of COVID on campus. Review of 67 telemedicine visits in the Spring 2021 showed that 41 of these visits resulted in the need for in-office services following the telemedicine visit. 100% of the in-office follow up was related to point of care testing or labs. The fact that many telemedicine visits will require follow up in the office will need to be considered with respect to sustainability targeting future utilization of the program.

The number of students living on campus during the 2019-2020 academic year when this project was conducted was approximately 50% of typical residency. This reduced density allowed for decreased clinician coverage during regular office hours facilitating the expanded coverage for off-hours telemedicine. To continue providing expanded telemedicine hours during a typical academic year, with full occupancy of residence halls would require additional staffing and cost in association with the program budget.

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VIII. Appendices

Appendix A

Telehealth Announcement

Seton Hall Health Services Telemedicine After Hours:

Call

1-862-338-9129

To speak with a healthcare provider

-Monday to Friday:

4:30 pm to 9 pm

-Saturday: 12 pm to 8 pm

-Sunday: 4 pm to 8 pm



If you need an appointment from M-F 8:45 am to 4:45 pm,
please call Health Services at 973-761-9175



@SETONHALLHEALTH

Appendix B

Budget for Telehealth

Resources	Estimated Expense	Actual Expense
Initiator Cost	25 hours @\$35 per hr, 50 hours @\$55 per hr (Total: \$3625)	\$0
Internet (WiFi)	variable	\$0
Laptops/headphones	\$750 x 4 providers=\$3000	\$0
Projector	\$700	\$0
Educational and promotional materials (card stock, paper, printing costs)	\$50	\$50
Telemedicine platform	\$0-\$30 per month	\$0
Electronic medical record	Highly variable (Medicat already in use: \$27,000 per year)	\$0
APN hourly rate	\$45-\$65 per hour	Stipend \$2500 per month x 9 months
Physician hourly rate	\$125-\$150 per hour	No additional cost incurred-stayed within annual contract agreement
Total Cost	Estimated will vary depending on existing resources and scheduling goals	\$22,550 for implementation of program and 9 months of telemedicine extended hours coverage. Approximately \$84 per day

Appendix C**Example of Projected Revenue**

Visit type:	Amount billed:	Estimated # of visits per day	Expected revenues per day
Level 3 visits	\$76-\$135 per visit	6	\$456-\$810
Level 4 visits	\$120-\$195 per visit	2	\$240-\$390
Total:			\$696-\$1200