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The Use of Telemedicine in Primary Care to Improve Medication Adherence: Quality Improvement Project

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The use of Telemedicine in Primary Care to improve Medication Adherence:

Quality Improvement Project

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A DNP project submitted in partial fulfillment of the requirements for the degree of

Doctor of Nursing Practice Davis & Henley College of Nursing

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This is to certify that the DNP Project Final Report by

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has been approved by the DNP Project Team on

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for the Doctor of Nursing Practice degree

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Abstract

Introduction

Lack of medication adherence, a major issue in healthcare, can be costly to the healthcare system and result in poor patient outcomes. Wong et al. (2020) noted that enhanced involvement with health care professionals using the Telemedicine platform can improve a patient's medication adherence as well as decrease the use of emergency services and hospitalizations. Telemedicine allows the healthcare provider, to contact the patient through a mobile phone or computer to provide education and reinforcement regarding medication adherence.

Purpose

The purpose of this project was to improve medication adherence and health outcomes, by piloting a quality improvement project using Telemedicine in a Cardiovascular practice. The goal of this project was to improve medication compliance-in order to decrease emergency service use and hospitalizations in patients with chronic diseases.

Interventions and Settings

The use of Telemedicine for medication adherence was implemented for twelve patients who had three or more chronic diseases and were frequent users of the emergency room. A number of steps were implemented to improve quality of care and increase medication adherence. Firstly, the practice change was proposed to key stakeholders with the goal to implement the use of telemedicine for medication management. The use of telemedicine was then assessed within the practice. Patients were educated on the use of telemedicine as a means to connect with their provider and a telemedicine tool vs usual care of discussing medication was implemented.

Evaluation

Data showed an increase in medication adherence among patients included in the quality improvement project. An audit of ER visits, hospitalizations, BP readings, weight and other measurable factors were evaluated from each patient chart. The patients were tracked using telemedicine from October to January. Over the 90-day period there was a decline in the use of emergency services by 70 percent. Furthermore, additional data showed a decrease in hemoglobin A1C, blood pressure readings and weight for nine individuals.

Discussion

Using the Quality Improvement project at the Cardiovascular practice, the use of telemedicine was increased in an effort to improve medication adherence. Emergency Room usage decreased by 70 percent as well as no recent hospitalizations amongst participants. Given the results, The Project Manager believe that the interventions improved medication adherence among patients with chronic conditions.

Phase 1: Problem Identification & Evidence Review

Background and Significance of Problem

Medication adherence continues to be one of the biggest issues in public health today. Even with improved access to health care, many patients remain non-compliant with taking their medications. Noncompliance is common among patients who suffer from chronic conditions such as diabetes, hypertension, and cardiovascular conditions. The cost of non-compliance not only affects the patient but also the public health system, costing billions of dollars in care (Wong et al, 2020). Telemedicine allows the healthcare provider, a physician, a nurse practitioner, or physician assistant, to contact the patient electronically, through mobile phones or computers to provide education and reinforcement regarding medication adherence.

Poor health outcomes are one of the ways medication noncompliance can affect a single patient. For example, a patient with high blood pressure who does not take his/her medications may suffer a stroke or a heart attack. The cost of hospitalization for this patient would be costly especially if their prognosis is poor. The patient would also need rehabilitation services such as physical therapy and speech therapy for at least three weeks or longer for patients who are more complex. More importantly, some patients who suffer from a stroke may never recover and require extensive care and home monitoring devices. Additionally, these patients may be discharged to a long-term care or assisted living facilities. The enhanced involvement with health care professionals can improve a patient's medication adherence as well as decrease the use of emergency care services and readmission rates to the hospital (Wong et al 2020).

Description of Local Problem/Organizational Priority

ACS is a Cardiology and Primary Care office located in close proximity to Bridgeport Hospital. The patient population includes adults who have chronic conditions with a focus on cardiovascular diseases. Patients are normally seen every three to six months for follow-up appointments for monitoring of their conditions. However, telemedicine is not always used for follow-up in regard to medication adherence. Additionally, when some patients are seen at their next office visit, their blood pressure may be elevated despite being on multiple medications or their A1C may have increased. These patients frequently use the Emergency Room for services, thereby potentially creating not only large increases in healthcare costs but also creating an unnecessary use and burden on emergency services.

In an effort to improve patient outcomes and improve quality of life, ACS organizational priorities included a Quality Improvement project to implement the use of telemedicine for medication adherence among patients with chronic diseases. Telemedicine is unique to these patients in that it allows healthcare to be more accessible, allows providers to reach patients who reside far away, and it may decrease or eliminate appointment travel time. More importantly, patients who are home bound and cannot get to the office for medical reasons or due to the recent COVID-19 pandemic can be monitored through telemedicine making their compliance easier.

Focused Search Question

In patients with chronic diseases (P), does the utilization of telemedicine (I) compared to no intervention (C) improve medication compliance/adherence (O) over a three-month period (T)?

Evidence Search

External Evidence

A database search included CINAHL, MEDLINE and ScienceDirect. The key words used were telemedicine, telehealth, chronic diseases, telemedicine and chronic diseases, chronic diseases and medication adherence, telemedicine, and medication adherence. Adding telemedicine with medication adherence and narrowing the search to articles written in English and between the years 2016-2021 brought articles with key information that would be important for the project.

Internal Evidence

Evidence included the implementation of a telemedicine tool; eHealth that was successfully used among patients in a non-hospital setting. Some of the features of this tool included monitoring conditions, reminding and alerting, providing information and education, dispensing treatment, and support. The evidence reviewed showed that eHealth can improve a patient's quality of life and improve medication adherence (Wong et al 2020).

Patients who were seen at ACS for primary care were asked about individual methods for increasing medication adherence. A few patients said that they used emergency services due to being unable to get to their primary care provider. Others identified the distance from the office as an obstacle for in-person visits. Patients expressed that a simple reminder from their provider through telemedicine visits could improve their adherence as well as maintaining quality of care. Preliminary data from patients suggested the need for best practices and implementing a telemedicine system for medication adherence was necessary for the practice to improve outcomes.

Evidence Appraisal, Summary, and Recommendations

Six articles were reviewed, and they focused on telemedicine and medication adherence in a non-hospital setting. The evidence for all six studies was mixture of Level III and IV. The use of a telemedicine tool allows the healthcare provider to consult with the patient at times outside office hours and a time that is both convenient for both patient and provider. More importantly, the provider giving the education has the resources available to answer any questions the patient may have and reinforce the importance of medication adherence. Target outcomes for each article focused on decreasing morbidity and mortality rates among patients with chronic diseases.

Phase 2: Project Planning

Project Goals

1. To improve communication and coordination of care between the patient and the provider.
2. To improve medication adherence in adults with chronic diseases by implementing the use of a telemedicine tool to reinforce education and reminders.
3. To decrease emergency service use and hospitalizations.

Context

The project was conducted at a private cardiovascular office in southern Fairfield County CT. The stakeholders in the project included the patients who have three or more chronic conditions, their provider, practice administrator, CEO, and the nurses.

Project Team Members and Roles

The onsite practice mentor at ACS helped to implement and guide the project. The practice manager assisted in identifying the patients who were appropriate to participate in this project. He also assisted in monitoring the data through the EHR system at the practice. One of the medical assistants was assigned to the patients and provided medical information that would be helpful during the implementation of the project. Constance Glenn, DNP, MSN, APRN, FNP-BC, CNE is the DNP project faculty advisor and expert in guiding the project.

Key Stakeholders and Buy-in

The ACS providers and patients in the primary care department are the key stakeholders in this project. All stakeholders of interest were notified of the project to encourage buy-in. The project leader communicated the goals and plans for implementation using the best available evidence as it relates to telemedicine and medication adherence. The medical assistant who was assigned to the patients in the study expressed that she saw a decline in ER visits for several of the patients. In addition, the patients who were concerned with their overall health and medications were engaged in buy-in. The new telemedicine tool with assessment questions will assist providers on how to manage each patient's chronic condition which decreased ER visits and hospitalizations.

Framework

The Model for Improvement (MFI) framework guided this QI project. The MFI uses a cycle called Plan-Do-Study-Act (PDSA) to test the effect of small changes, make them, and then spread the change through the practice or organization adjusting as the project evolves. The MFI begins with asking three questions:

- What are we trying to accomplish? (Improve medication compliance)
- How will we know that a change is an improvement? (Decrease in ER visits, hospitalizations, BP readings, A1C)
- What changes can we make that will result in improvement? (Telemedicine platform use for increase in patient medication education and reinforcement, and staff education)

Plan phase. The DNP project manager met with the practice mentor to discuss the ER utilization rates and hospitalizations. The DNP project manager also met with office manager to gather data and to identify patients who were using the ER more frequently than others. Final approval to implement the project was approved by the practice mentor.

Do phase. In this phase the project was implemented, and the patients were tracked for ER visits and hospitalizations. The implementation process began with staff education on telemedicine, medication adherence, and how it reduces hospitalizations and improves patient outcomes (Appendix G). Staff who were educated included the providers, practice manager, nurses, and medical assistants. An educational flyer provided after the presentation was also made available in the staff lounge. Feedback from providers were used to select each patient. The selected patients were enrolled in the Chronic Care Management System (CCM) at the practice, meaning they had complex conditions and needed additional monitoring. The patients were contacted on a weekly basis between appointments to assess medication adherence and provide reminders. The project implementation was over a 90-day period, from October 2021 to January 2022. Chart audits were conducted to track ER visits, hospitalizations, blood pressure, weights, and other important labs such as A1C for diabetics. Feedback from staff contributed to the evaluation of the interventions.

Study phase. Process measures included reviewing a total of 20 charts for patients who were more complex and using the ER more often. The number was then narrowed down to include 12 patients in the project. Each patient's chart was reviewed to determine the number of ER visits and hospitalizations in the past year and the three most recent months prior to the implementation of the project. The charts were also reviewed to determine trends in blood pressure, weight, and hemoglobin A1C. The results from each patient's chart were used to assess the effectiveness of the intervention in the project. Additionally, during the implementation of the project, each patient's chart was reviewed on the 30 or 31st of each month to collect pertinent data relevant to the project. The stakeholders were notified each month to discuss the results from each patient. The DNP project manager was on site once a week contacting patients, gathering data, and communicating with staff. The DNP project manager reviewed the project's results and will make recommendations to the practice mentor to improve the practice.

Act phase. The DNP project manager analyzed the process and achievements as needed to determine if any additional changes were necessary throughout the project.

Possible Barriers to Implementation

Studies reviewed reported barriers to implementing telemedicine or eHealth tools in managing medication adherence. One of the most common barriers was the lack of participant engagement, resulting in low telemedicine tool utilization rate. Studies have shown that patients who were high users in telemedicine generally reported more improvement in health-related outcomes (Bingham et al 2020). Patient engagement may also have been negatively affected by age, especially in adults over the age of 65. One of the reasons may be that many older adults especially at this practice (ACS) reported that they were not familiar with technology such as

Facetime or video calling apps from a computer. Other barriers may include lack of access to a smart phone or the internet, staff resistance to change, lack of patient motivation, clinical staff compliance due to the perception that telemedicine tool increases workload. Education was provided to the staff as well as patients on the use of telemedicine, the new changes that were implemented, and the improved results in patient outcomes to achieve sustainability.

Sustainment Plan

In order to sustain the implementation of the use of Telemedicine from this QI project, a number of strategies will need to continue from earlier phases of implementation. When instituting change, the focus shifts from implementation to integration and sustained use of the evidenced-based practice change (Cullen et al. 2018). The roles and responsibilities of each stakeholder will be made clear in order to avoid confusion and overlap. One strategy in achieving sustainability is personalizing the messages to staff based on actual improvement data. For example, charts will be used to demonstrate the progress towards the use of telemedicine within the practice and how each patient has benefitted from the program. Data on how the ER visits and hospitalizations has decreased will be provided in the form of a graph. Another strategy to achieve sustainability is through audit and feedback. For any practice change to be successful, continued evaluation is necessary to track integration and identify any need for reinfusion.

Dissemination Plan

Internal and External Dissemination will be used to sustain the practice change. Results from the 90-day period will be provided to all staff in the form of a presentation with data showing the outcomes of the project. A project poster will be developed and posted in the clinical area of the practice. External dissemination will include oral and poster presentation as

part of NU 824 at Sacred Heart University FNP/DNP student presentations. Submission of an article is being considered for publication with American Nurse Journal who provides a platform for nurses in all specialties to submit articles that can be helpful in keeping nurses up to date with best practices, maximize patient outcomes and enhance their careers. These findings will be presented to faculty, practice mentor and students.

Data Collection Plan

The charts for each patient included in the study was reviewed to determine the number of ER visits and hospitalizations in the past year and the three most recent months prior to the implementation of the project. Other pertinent data reviewed included trends in blood pressure, weight, and hemoglobin A1C. The data for each patient along with their diagnoses was analyzed and documented on an excel spreadsheet and used to compare with data collected during the study. This approach to data collection was an ongoing process throughout the project.

The Plan-Do-Study-Act (PDSA) framework was used to understand further ACS telemedicine use and needed adjustments to include medication adherence monitoring. The results were reviewed and used to develop the telemedicine medication adherence monitoring tool.

Data Analysis Plan

The audited data was collected and organized using an excel spreadsheet. The baseline information was summarized and used to compare pre-intervention and post-intervention trends. The data was then totaled and averaged to include specific counts and percentages based on the results. The data was also summarized in tables to compare each patient's trends and to

determine if the project goals were accomplished. The data collected during the implementation of the project was represented using bar graphs.

Resources

Resources included time for data collection and analysis, office and IT support, virtual meetings and telehealth tools, staff training and education, patient education. The project manager spent at least 30 hours per month (30 hours x 3 month= 90 hours) managing the project. Additional time was also spent on PowerPoint creation, education, project implementation, data collection, chart audits and analysis and patient follow up.

Table 1.

Total Costs for Project Implementation and Evaluation

Expenses	
Project Manager 2% of average annual salary $121,000	$2420
Staff luncheon	$100
Laminating Sheets	$5.00
Staples Printing Paper	$6.50
Total Cost	$2531.50

Review for Ethical Considerations

- Quality Improvement project- the right and welfare of all participants will not be violated while using telemedicine. IRB not required by ACS or Sacred Heart University because it is a quality improvement project.
- Approval to implement to project was received from the Practice Mentor and Office Manager at ACS (See appendix E).

Table 1 indicates the Quality Improvement Project criteria has been met as there is an answer of yes to all the items in l-l0 and no to all the items in 11-I4.

Table 2.

Differentiating Quality Improvement and Research Activities Tool

Question	**Yes**	**No**
1. Is the project designed to bring about immediate improvement in patient care?	X	
2. Is the purpose of the project to bring new knowledge to daily practice?	X	
3. Is the project designed to sustain the improvement?	X	
4. Is the purpose to measure the effect of a process change on delivery of care?	X	
5. Are findings specific to this hospital?	X	
6. Are all patients who participate in the project expected to benefit?	X	
7. Is the intervention at least as safe as routine care?	X	
8. Will all participants receive at least usual care?	X	
9. Do you intend to gather just enough data to learn and complete the cycle?	X	
10. Do you intend to limit the time for data collection in order to accelerate the rate of improvement?	X	
11. Is the project intended to test a novel hypothesis or replicate one?		X
12. Does the project involve withholding any usual care?		X
13. Does the project involve testing interventions/practices that are not usual or standard of care?		X
14. Will any of the 18 identifiers according to the HIPAA Privacy Rule be included?		X

Adapted from Foster, J. (2013). Differentiating quality improvement and research activities. Clinical Nurse Specialist, 27(1), 10–3. https://doi.org/10.1097/NUR.0b013e3182776db5.

Phase 3: Implementation

Project Implementation

This QI project followed the PSDA cycle for implementation in testing the change by developing a plan to test the change (Plan), carrying out the test change (Do), observing and learning from the consequences (Study) and determining what if any modifications should be made to the change (Act). The first step in implementing any change is to create awareness and interest. This was done by educating the staff and providers on the advantages of increasing the use of telemedicine for medication compliance. A staff meeting was held and evidence from clinical guidelines and research was presented to encourage buy in. Flyers were made available in the staff lounge as well as work areas that showed the content and development of this project as it relates to telemedicine and patient care. Staff education was provided for medical assistants who follow up with patients for care. Frequent meetings were held with the DNP project manager, practice mentor, office manager and the medical assistant who assisted with following up with the chosen patients included in the project.

Patients who participated in this QI project have three or more co-morbid conditions. A total of 12 patients were included in the project. The patients were selected based on their number of co-morbid conditions and because they were using the emergency room and urgent care more often than other patients at the practice. Emergency service use for each patient was retrieved from EPIC. The recommendation was also made by the provider who was familiar with each patient. The availability of telehealth platforms was also taken into consideration when

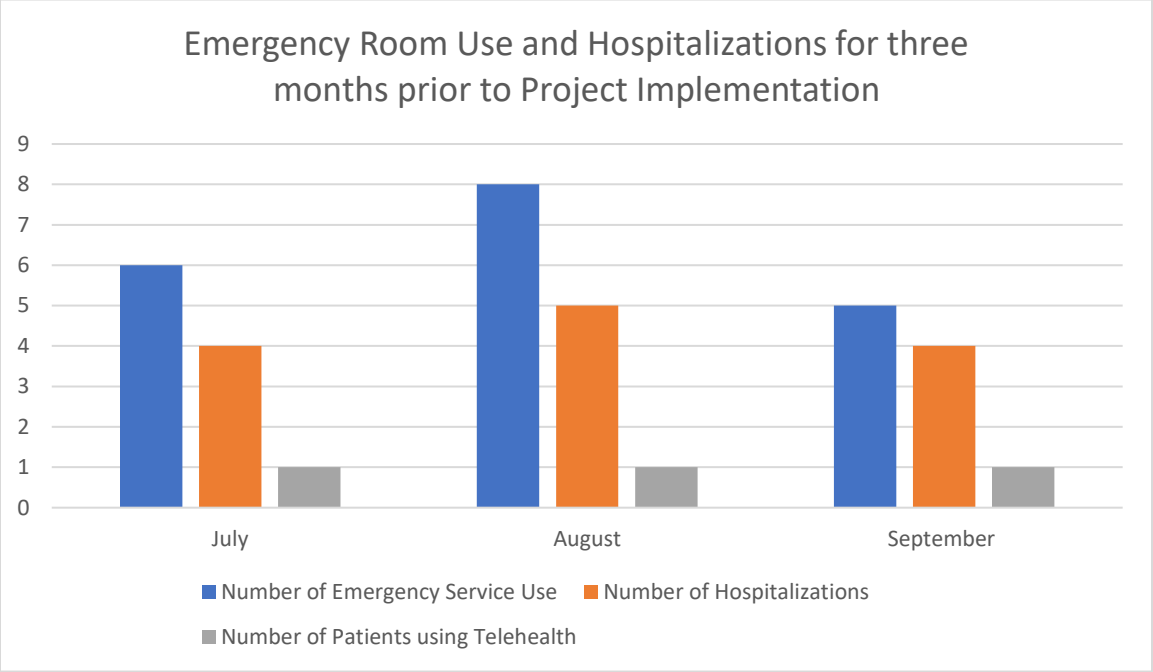
selecting these patients, to determine that they all had access to cell phone and video usage. The age, ethnicity and gender of the patients were not considered in patient selection, but they were all enrolled in Chronic Care Management system (CCM) at the practice.

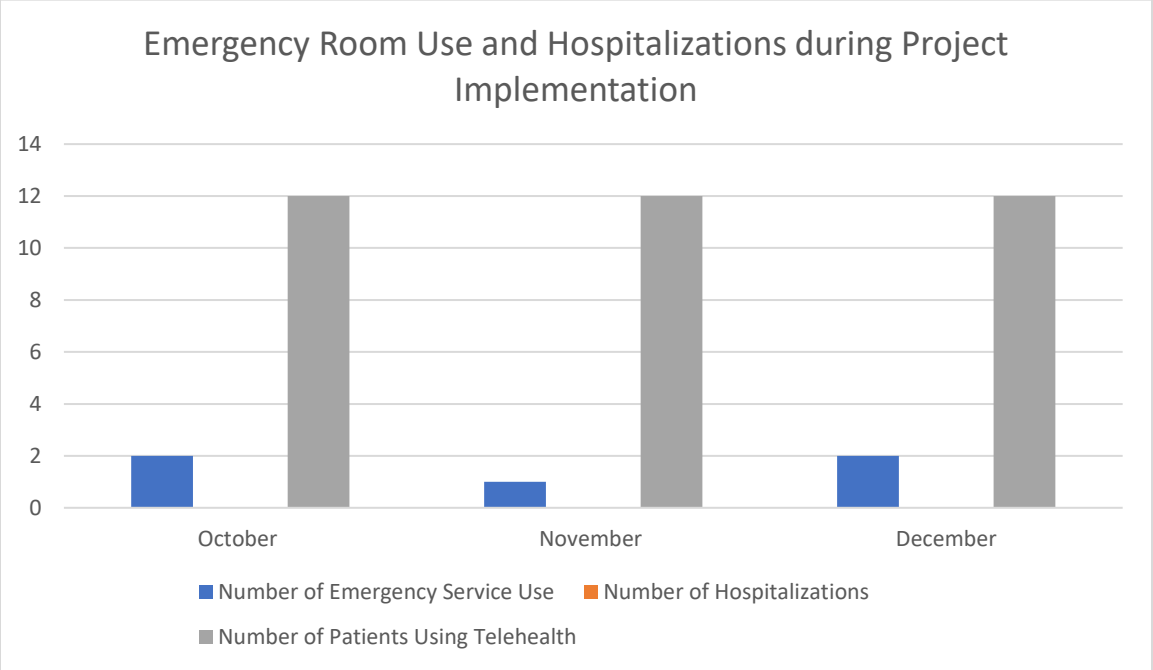
The patients were contacted on a weekly basis by the project manager, between scheduled appointments to address medication compliance, any ER visits, any questions as it related to chronic conditions, home BP monitoring etc. Phone calls were made to each patient primarily and the use of video if available. The medical assistant's wellness checks and contacts were also used in the project's data. The data for each month was reviewed by the project manager on the 30th or 31st of each month over a 90-day period. Each individual patient's data was retrieved from their health record. The results were shared with the practice mentor in order to make needed changes.df

Phase 4: Evaluation

An audit of ER visits, hospitalizations, BP readings, weight and other measurable factors were evaluated from each patient chart. A spread sheet was used to organize and track each patient data. A total of 12 patients were tracked using telemedicine from October to January, and all of the patients were already enrolled in the Chronic Care Management system. For the month of October only one patient out of twelve participants used the Emergency Room or Urgent care for services, compared to six in July prior to project implantation. For the month of November only one patient out of all the participants used the Emergency Room for services compared to eight in August. In the final month of December only two patients of all participants used the Emergency Room for services compared to five in September. Over the 90-day period there was a decline of emergency services use and an increase in medication adherence. Eight of the twelve patients had a decrease in hemoglobin A1C, blood pressure readings and weight. Audits were

done for the previous months before the implementation of the project in October in order to provide comparison data.





Data was collected from each patient's chart in EPIC, dating back to December of the previous year. The comparison was then made based on the most recent months of July, August, and September to compare with the data from October to December. The data for each patient was also analyzed based on feedback from the practice mentor, clinicians, and staff. Nonadherence to medication was tracked as well as the use of telemedicine (whether a patient was available for reminders). The data for the three-month period was dated and made specific for each patient. Throughout the progress of the project none of the participants who used emergency services were hospitalized. Prior to the implementation of the project based on medical records, eight of the patients within the study had hospitalizations in the past when visiting the ER. The data was kept in a secure location accessible to the DNP project manager, practice mentor, clinicians, and medical assistant and patient information was de-identified with patients categorized only by numbers.

Phase 5: Dissemination

Sustainability and Key Lessons Learned

To sustain the practice change, results from the study highlighting the positive implications such as reduced ER visits and improvements in medication adherence will be provided to the staff at ACS. The data will show the pre and post implementation ER visits rates. Staff concerns will be acknowledged, and their input will be used to make improvements.

This project demonstrates that providers can use a telemedicine monitoring tool to help increase medication adherence. Medication adherence can benefit the patient tremendously by reducing hospitalizations rates and improving health. Using Telemedicine to monitor the patient can also decrease "no shows", which in turn drives revenue within the practice. Incorporating

Telemedicine for medication monitoring can alleviate some of the barriers affecting health disparities especially in the underserved population.

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Appendix A

Evidence Search Plan

CINAHL, MEDLINE and ScienceDirect were the databases used to conduct this search. The key words used were Telemedicine, Telehealth, Chronic Diseases, Telemedicine and Chronic Diseases, Chronic Diseases and medication adherence, Telemedicine, and medication adherence. Adding Telemedicine with medication adherence and narrowing the search between the years 2015-2020 brought articles with key information important for this project topic.

Table 1. Search Terms and Search Results by Database (CINAHL)

Search Terms	Number of hits	Number of title & abstract reviewed	Number of full-text articles reviewed	Number of articles selected for this review without duplicates
Telemedicine	8046	15	6	4
Telehealth	8192	12	7	4
Chronic Diseases	59,388	21	9	6
Telemedicine and Chronic Diseases	551	7	4	2
Chronic Diseases and medication adherence	790	10	3	2
Telemedicine and medication adherence	179	7	2	1

Table 2. Search Terms and Search Results by Database (Medline)

Search Terms	Number of hits	Number of title & abstract reviewed	Number of full-text articles reviewed	Number of articles selected for this review without duplicates
Telemedicine	12,216	11	6	3
Telehealth	8809	8	3	2

Chronic Diseases	191,626	17	8	5
Telemedicine and Chronic Diseases	1119	6	4	2
Chronic Diseases and medication adherence	1763	7	3	2
Telemedicine and medication adherence	374	4	2	1

Table 3. Search Terms and Search Results by Database (ScienceDirect)

Search Terms	Number of hits	Number of title & abstract reviewed	Number of full-text articles reviewed	Number of articles selected for this review without duplicates
Telemedicine	1744	4	3	3
Telehealth	737	8	6	4
Chronic Diseases	39,117	25	10	6
Telemedicine and Chronic Diseases	86	3	2	1
Chronic Diseases and medication adherence	209	6	2	2
Telemedicine and medication adherence	20	3	2	1

Appendix B

PICO Question: In patients with chronic diseases, does the utilization of telemedicine compared to no intervention improves medication compliance/adherence over a three-month period?

Citation	**Conceptual Framework**	**Design/ Method**	**Sample/Setting**	**Major Variables Studied and Their Definitions**	**Outcome Measurement**	**Data Analysis**	**Findings**	**Level of Evidence/ Quality**	**Quality of Evidence: Critical Worth to Practice**
Author Year Title County Funding	**Theoretical basis for study**		**Number Characteristics Exclusion criteria Attrition**	**Independent variables IV1 = IV2 = Dependent variables**	**What scales used - reliability info (alphas)**	**What stats used**	**Statistical findings or qualitative findings**	**Level =**	**Strengths Limitations Risk or harm if implemented Feasibility of use in your practice**
Article 1									
Bingham, J. M., Black, M., Anderson, E.J., Li, Y., Toselli, N., Fox, S., Martin, J.R., Axon, D.R., & Silva-Almodovar, A. (2020). Impact of Telehealth Interventions on Medication Adherence for Patients with Type 2 Diabetes, Hypertension, an/or Dyslipidemia: A Systemic Review. The Annals of Pharmacotherapy, 1060028020	N/A	This review was registered in the PROSPERO international registry of systematic reviews (CRD42019133379). It was also conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.	Research studies included telehealth interventions, including telephonic, electronic health (eHealth) information technology, or mobile health interventions, intended to improve medication adherence for patients 18 years of age or older with a reported medication adherence outcome. Studies where patients did not have one of the chronic conditions (ie, type 2 diabetes, hypertension, and/or	IV1= The use of telemedicine compared to no intervention. IV2= effects on medication compliance/adherence in patient with chronic diseases. Dependent variables =use of telemedicine over a three-month period.	Medication possession ratio (MPR) or proportion of days covered (PDC) rate.	The practice setting, medication related to chronic condition, measure of adherence, and adherence outcomes were described for all studies included in the systematic review. Medication adherence intervention components were categorized as eHealth, mobile health, or telehealth.	This review identified 13 studies that utilized measures of medication adherence to measure the effects of telehealth interventions to improve medication adherence among patients with type 2 diabetes, hypertension, and/or dyslipidemia. The most successful telehealth modalities included telephonic outreach, text messaging, and specialized tools designed to increase health literacy. These interventions utilized protocols to identify and address barriers to medication nonadherence or electronic alerts to remind patients to take their medications or included tools to improve a patient's health literacy. The implementation of these interventions in health systems may improve overall	Level III/Good quality	The study only researched interventions performed on adults and did not include interventions that included or targeted pediatric patients. Second, the study did not research medication adherence interventions for other chronic conditions, further limiting its generalizability to all adult patients. However, medication nonadherence is estimated to cost the health care system approximately $30 billion in avoidable health care expenditure among patients with chronic conditions. This review has highlighted valuable interventions that can be utilized to improve medication adherence in different patient care settings.

950726.https://doi.org/10.1177/1060028020950726.			dyslipidemia) were excluded. For inclusion, the intervention outcome had to be measured using industry standards as either the medication possession ratio (MPR) or proportion of days covered (PDC) rate				medication adherence among patients.		
Article 2									
Hincapie, A. L., Gupta V., Brown, S. A., & Metzger, A. H. (2019). Exploring Perceived Barriers to Medication Adherence and the Use of Mobile Technology in Underserved Patients with Chronic Conditions. Journal of Pharmacy Practice, 32(2), 147.	N/A	This study used cross-sectional focus groups. Focus groups were carried out at a federally qualified health center which serves a medically underserved area and medically underserved populations in Dayton, Ohio between 2015 and 2016. Both MUAs and MUPs have limited access to primary care providers, high infant mortality, high poverty,	**Inclusion Criteria** Inclusion criteria were patients 18 years or older who spoke English and had a diagnosis of at least one of the following chronic disease ; diabetes, dyslipidemia, and/or hypertension and had been prescribed 3 long-term medications for at least 3 months.	IV: The use of mobile health interventions. DV: To identify barriers to medication adherence in medically underserved populations and the use of telemedicine.	Health Belief Model (HBM) was used as the conceptual framework for the questionnaire guide.	Data analysis was conducted using inductive thematic analyses. Two investigators not present during the focus groups read the interview transcripts to identify codes relevant to the objectives using a descriptive coding approach. After the 2 reviewers agreed on the coding scheme, a third investigator	This research demonstrated that developing and promoting multiple strategies that encompass both technological and nontechnological-based approaches might be more effective for underserved patients. Providing multiple medication adherence approaches to patients and allowing them to select the ones that best fit their lifestyle and needs may have better results in promoting medication adherence.	Level IV/Good quality	The study conducted found changes in daily routine and complexity of medication regimens as common barriers to medication adherence in medically underserved patients. The use of mHealth solutions to improve medication adherence in this population may be limited. Providing patient-centered approaches to assist patients construct their individualized medication adherence strategies might be more effective than the one size fits all approach commonly seen in research examining approaches to improve medication adherence.

		and/or high older adult population.				reviewed the data line-by-line to ensure coding consistency.			
Article 3									
Badawy, S. M., Shah, R., Beg, U., & Heneghan, M. B. (2020). Habit Strength, Medication Adherence, and Habit-Based Mobile Health Interventions Across Chronic Medical Conditions: Systemic Review. Journal of Medical Internet Research, 22(4), e17883. https://doi.org/10.2196/17883.	N/A	The guidelines for the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) were followed in the reporting of evidence.	**Inclusion criteria:** Studies examining all ages, conditions, and countries were included. The included studies needed to evaluate habits specifically in the context of taking medication. **Exclusion criteria:** Studies that looked at adding medication to preexisting habits were excluded as well as studies that evaluated habit strength and medication adherence solely from qualitative interviews without any validated measures.	IV1: Habit based mobile health interventions across chronic medical conditions. IV2: Patient all ages with chronic medical conditions.	GRADE criteria.	The GRADE approach evaluates a body of evidence by starting with a quality level based on the underlying methodology and then upgrading or downgrading the quality level based on various factors. Randomized trials or double-upgraded observational studies were rated as high. Downgraded randomized trials or upgraded observational studies were rated as moderate. Double-downgraded randomized trials or	The study found that habit strength was strongly correlated with medication adherence, with stronger habit being associated with higher medication adherence rates, regardless of the theoretical model and/or guiding framework. As the behavior becomes more automatic, there is less chance for an individual to forget to take their medicine. The study also found that the effect of habit strength on adherence was also related to the individual's self-efficacy, social norms, and mental health symptoms.	Level IV/ Low Quality	The study conducted was not only on telemedicine interventions related to medication adherence but also habit strengths.

						observational studies were rated as low. Triple-downgraded randomized trials and downgraded observational studies or case series/case reports were rated very low.			
Article 4									
Song, Y., Reifsnider, E., Zhao, S., Xie, X., & Chen, H. (2020). A randomized controlled trial of the Effects of a telehealth educational intervention on medication adherence and disease activity in rheumatoid arthritis patients. Journal of Advanced Nursing (John Wiley & Sons, Inc.), 76(5), 1172-1181. https://doi.org/10.1111/jan.14319.	N/A	An un-blinded randomized controlled trial. Ninety two eligible patients were recruited from January 2015 to December 2015. Participants were randomly assigned to either the intervention ($N = 46$) or control group ($N = 46$). The intervention group received four educational sessions delivered through a telephone across a 12-week intervention.	**Inclusion criteria:** Rheumatoid Arthritis patients from a tertiary hospital who were 18 years and older and able to speak and understand Chinese as well as willing to participate. **Exclusion Criteria:** Patients who had hearing impairment, lack of telephone, severe cognitive or mental disorder were excluded.	IV = Telephone tailored educational intervention. DV = To assist patients with rheumatoid arthritis with medication adherence.	The Chinese version CQR reported that the intraclass correlation coefficient (ICC) was 0.994 and the CQR score was positively correlated with true compliance.	A total of 77 patients were analyzed, including 36 patients in the control group and 41 patients in the intervention group. Data were presented by means (standard deviation, *SD*), or median (interquartile range, IQR) for continuous variables and frequencies and percentage (%) for categorical variables. The independent *t* test, Chi-square test and Mann–Whitney U test were used to compare differences among the two groups at the baseline, 12th and 24th week. All the statistical analyses were considered significant at $p < .05$.	The study conducted used a telehealth approach to deliver education for RA patients. Education delivered through telephone does not require travel and can be conducted at convenient times, which makes it easier for patients to receive information about medication management. The tailored educational intervention, consisting of four sessions, was specific to patients' situations and needs and showed improvement in medication adherence.	Level IV/Low Quality	The study demonstrated that the telehealth educational intervention by nurses could improve medication adherence. However, no significant effects on disease activity at 12 and 24 weeks were detected in the intervention group compared with control group. Education through telemedicine did not have a direct impact on the patient's clinical condition but significantly improved medication adherence to prescribed RA medications. This study is significant to clinical practice.

Appendix C

Levels of Evidence Synthesis Table: PICO Question #1

PICO Question: In patients with chronic diseases, does the utilization of telemedicine compared to no intervention improves medication compliance/adherence over a three-month period?

Articles	1	2	3	4
Level I: Systematic review or meta-analysis	X		X	
Level II: Randomized controlled trial				X
Level III: Controlled trial without randomization				
Level IV: Case-control or cohort study		X		
Level V: Systematic review of qualitative or descriptive studies				
Level VI: Qualitative or descriptive study, CPG, Lit Review, QI or EBP project				
Level VII: Expert opinion				

Outcome Synthesis Table: PICO Question 1

Articles	1	2	3	4
Telemedicine	✓	✓	✓	✓
Telemedicine Interventions	✓	✓	✓	✓
Telephonic Outreach	↑	↑	NE	↑
Text Messaging	↑	✓	NE	NE
Telehealth educational intervention	NE	NE	NE	↑
Chronic Diseases and medication nonadherence	↓	↓	—	↓
Telemedicine and chronic diseases interventions	✓	✓	✓	✓
Medication adherence after telemedicine interventions	↑	↑	—	↑

Symbol Key:
↑ = Increased, ↓ = Decreased, — = No Change, NE = Not Examined, NR = Not Reported, ✓ = applicable or present

Recommendations Based on Evidence

The level of evidence for the different studies consisted of level 1, 2 and 4. The use of telemedicine and telemedicine interventions such as telephonic outreach and text messaging associated with an increase in medication adherence among patients with chronic medical conditions. These interventions addressed barriers to medication nonadherence and also the patient's health literacy. Utilization of telemedicine for medication adherence in chronic medical conditions is recommended based on the evidence.

Appendix D

Implementation Timeline for DNP Project: The use of Telemedicine in Primary Care to improve Medication Adherence: A Quality Improvement Project.

PICOT Question: In patients with chronic diseases (P), does the utilization of telemedicine (I) compared to no intervention (C) improves medication compliance/adherence (O) over a three-month period (T)?
Team Leader: Chadae Haffenden-Morrison, BSN, RN
Team Members: Practice Mentor, Office Manager, Medical Assistant, Dr. Constance Glenn
Pilot site: ACS, Bridgeport, CT

Pre-Implementation	Topic	Notes	Actions	Outcome/Status
A	Finalized patient selected for project	Reviewed selected patients with Practice Mentor and Office Manager.	Final approval received from Practice Mentor and Office Manager.	Draft approved on 6/21/21 for implementation of project.
B	Permission to review charts for data collection			Approved by Practice Mentor and Office Manager 6/21/21
C	Drafted educational presentation for staff at ACS	Reviewed with Practice Mentor on 07/16/21 Assessed the use of telemedicine within the practice.	Review with Practice Mentor before providing staff education	Staff education provided on telemedicine. Flyers made available in staff lounge.
D	Telemedicine Medication Adherence Monitoring Tool	Reviewed draft of tool with Practice Mentor and Office Manager on 08/03/2021	Awaiting approval from Practice Mentor	Approval received. Implementation dates being selected.

Pre-Implementation	Topic	Notes	Actions	Outcome/Status
E	Data collection plan ideas	Provided plan for data collection to Practice Mentor and Office Manager	Awaiting any changes to plan from Practice Mentor	Data Collected plan approved on 08/26/2021. Project implementation finalized for 90-day period starting in October to January.
Implementation				
A	Collection of pre-implementation data	Collect data on each patient- ER visits, hospitalizations. Measurable factors such as BP, weight, hemoglobin A1C.	Organize data on spreadsheet.	
B	Implementation of project started in October 2021.	Organize patients and retrieve data from EPIC. Information only accessible to Project Manager and Practice Mentor.	Patients contacted on a weekly basis. Telemedicine Medication Adherence Monitoring tool used for assessment.	Tracked any ER visits and hospitalizations for each patient Data reviewed at the end of the month.
C	Project Implementation Ongoing- November 2021	Data retrieved from EPIC	Patients contacted on a weekly basis. Telemedicine Medication Adherence Monitoring	Tracked any ER visits and hospitalizations for each patient Data reviewed at the end of the month.

Pre-Implementation	Topic	Notes	Actions	Outcome/Status
			tool used for assessment.	
D	Project Implementation Ongoing- December 2021	Data retrieved from EPIC	Patients contacted on a weekly basis. Telemedicine Medication Adherence Monitoring	Tracked any ER visits and hospitalizations for each patient Data reviewed at the end of the month.

Appendix E

Approval

1

DR. SUSAN L. DAVIS, R.N.,
& RICHARD J. HENLEY
COLLEGE OF NURSING
Sacred Heart University

DNP Project Proposal Rubric

Rubric Process:

1. This rubric is to be distributed to the DNP project team members by the project lead or student immediately following the scheduling of the proposal presentation.
2. The DNP project lead or designee will record applicable team discussion in the comments column.
3. Criteria scored as acceptable or unacceptable will need student revisions and the DNP project team may require the student to present their revised proposal to the team.
4. The final scored proposal rubric should be submitted to Graduate Administrative Assistant or Program Director within 1-week of the proposal presentation with the final written proposal.
5. Students required to do revisions and not present again should submit their revised written proposal to the Graduate Administrative Assistant or Program Director and identify the areas that were revised. Students must also show DNP project lead approval of the revised proposal that can be in the form of an email. Students required to present again should follow #4 and should have 2 written proposals and 2 scored rubrics on file with Graduate Administrative Assistant or Program Director.

Student Name: Chadae Haffendon-Morrison

The use of Telemedicine in Primary Care to improve Medication Adherence

Criteria	Well Done	Above Average	Acceptable	Unacceptable	Comments
Description of Problem & Significance & Organizational priority	Describes the phenomena, its importance to healthcare and affected stakeholders and the organization.	Mostly describes the phenomena, its importance to healthcare and affected stakeholders and the organization.	Partially describes the phenomena, its importance to healthcare and affected stakeholders and the organization.	Fails to describe the phenomena, its importance to healthcare and affected stakeholders or establish	Cite 1st sentence, slide 2.

January 2018; REV May 2019; REV March 2020

Criteria	Well Done	Above Average	Acceptable	Unacceptable	Comments
				it is an organizational priority.	
Question in searchable format	Using structured method for searchable question (e.g. PICO or PSCO(T).	Mostly uses structured method for searchable question (e.g. PICO or PSCO(T).	Partially uses structured method for searchable question (e.g. PICO or PSCO(T).	Does not use structured method for searchable question (e.g. PICO or PSCO(T).	
Methods for gathering external and internal evidence and tools used for critical appraisal	Detailed description of methods for gathering external and internal evidence and tools used for critical appraisal	Mostly provides a description of methods for gathering external and internal evidence and tools used for critical appraisal	Partially provides a description of methods for gathering external and internal evidence and tools used for critical appraisal	Missing or includes little bits of methods for gathering external and internal evidence and tools used for critical appraisal	Pt. identified by PM, names given to PI and MA, Pt. consent Requested by, and Given (attach consent form to paper) and ability to conduct (internet access, knowledge re: platform, etc.,
Evidence Review	Provides an organized, integrated summary of the quality and strength of evidence on solutions to practice problem with evidence tables in appendices. Recommendations are clear and supported by the evidence review.	Mostly provides an organized, integrated summary of the quality and strength of evidence on solutions to practice problem with evidence tables in appendices. Recommendations are clear and supported by the evidence review.	Partially provides an organized, integrated summary of the quality and strength of evidence on solutions to practice problem with evidence tables in appendices. Recommendations lack some clarity and support from the evidence.	Provides single source summaries of the literature that minimally addresses quality and strength. Recommendations lack clarity and support from evidence.	evidence tables in appendices of paper
Project goals	States project goals using SMART criteria.	Mostly states project goals using SMART criteria.	Partially states project goals or goals partially follow SMART criteria.	Fails to provide appropriate project goals using SMART criteria.	

January 2018; REV May 2019; REV March 2020

Criteria	Well Done	Above Average	Acceptable	Unacceptable	Comments
Framework (s)	Provides appropriate framework to guide project implementation.	Provides mostly appropriate framework to guide project implementation.	Provides a partially appropriate framework implementation.	Fails to provide appropriate framework implementation.	
Context	Describes project setting and participants or population; or other elements that are central to where the change will happen	Mostly describes project setting and participants or population; or other elements that are central to where the change will happen	Partially describes project setting and participants or population; or other elements that are central to where the change will happen	Fails to provide description of the context or is missing description of elements central to where the change will happen	
Intervention/practice change	Provides a detailed description of intervention or practice change	Mostly provides a description of intervention or practice change	Partially provides a description of intervention or practice change	Does not provide a description of intervention or practice change or is missing most of the details.	
Key Personnel and Stakeholders	Identify agencies, departments, individuals needed to complete the project, affected by project, and strategies for buy-in.	Mostly identifies agencies, departments, individuals needed to complete the project, affected by project, and strategies for buy-in.	Partially identifies agencies, departments, individuals needed to complete the project, affected by project, and strategies for buy-in.	Does not identify needed key personnel or stakeholders	
Evaluation plan	Includes a detailed summary of: Data collection with outcomes and tracking tools Data analysis plan Possible barriers to implementation and sustainability and	Includes a summary of: Data collection with outcomes and tracking tools Data analysis plan Possible barriers to implementation and sustainability and	Includes a summary of the following but may be missing some details: Data collection with outcomes and tracking tools Data analysis plan	Does not include a summary of the following and/or missing many details: Data collection with outcomes and tracking tools Data analysis plan	Potential

January 2018; REV May 2019; REV March 2020

Criteria	Well Done	Above Average	Acceptable	Unacceptable	Comments
	plans for addressing both	plans for addressing both	Possible barriers to implementation and sustainability and plans for addressing both	Possible barriers to implementation and sustainability and plans for addressing both	
Timeline	Provides realistic timeline for project implementation.	Mostly provides realistic timeline for project implementation.	Partially provides realistic timeline for project implementation.	Does not recognize potential impact of project Timeline. Does not provide, or provides unrealistic, timeline.	
Resources	Identifies all resources (e.g. indirect and direct) needed to complete the project and to be able to calculate the return on investment	Identifies the majority resources (e.g. indirect and direct) needed to complete the project and to be able to calculate the return on investment	Partially identifies resources (e.g. indirect and direct) needed to complete the project and to be able to calculate the return on investment	Does not provide all required resources and/or costs.	
Approvals for Implementation	Identifies required approvals needed for implementation (cooperating agencies, IRB, etc.)	Mostly identifies required approvals needed for implementation (cooperating agencies, IRB, etc.)	Partially identifies required approvals needed for implementation (cooperating agencies, IRB, etc.)	Does not identify required approvals.	
Dissemination Plan	Identifies an appropriate local and regional forum for disseminating results in poster or oral presentation, and potential journals for manuscript submission	Identifies a local and regional forum for disseminating results in poster or oral presentation. Identifies potential journals for manuscript submission	Partially identifies (or there is a better choice) a local and regional forum for disseminating results in poster or oral presentation and potential journal for manuscript submission	Dose not identify a local and regional forum for disseminating results in poster or oral presentation not . potential journal for manuscript submission	
References	Current state of the science references	Mostly current state of the science references	Partial current state of the science references	Missing key citations.	

January 2018; REV May 2019; REV March 2020

5

Criteria	Well Done	Above Average	Acceptable	Unacceptable	Comments
	including all appropriate disciplines.	including all appropriate disciplines.	including all appropriate disciplines.		
Clarity of Writing and Writing Technique	Writing is crisp, clear, and succinct.	Writing is mostly crisp, clear, and succinct.	Writing is partially crisp, clear, and succinct.	Writing is convoluted and/or unnecessary words are used. Misspelled words, incorrect grammar, and improper punctuation are evident.	
APA format	Follows all APA paper formatting rules	Minor APA errors in formatting rules	Some APA errors in formatting rules	APA not consistent in formatting rules	
Presentation Format Elements include: text/font, text alignment/direction, color/design, layout, transition/animation, smart art, shapes, tables/charts, graphics	Format is clear, succinct and demonstrates professional quality.	Format is mostly clear, succinct and demonstrate adequate professional quality.	Format is generally clear, succinct and demonstrate adequate professional quality.	Format is unclear and poorly designed.	
Oral Presentation	Presenter has professional appearance and demeanor, is well-prepared and answers questions skillfully.	Presenter has professional appearance and demeanor, is prepared and answers to questions are mostly incomplete.	Presenter has professional appearance and demeanor, is somewhat prepared and answers to questions are incomplete.	Presenter has unprofessional appearance and demeanor, is somewhat prepared and answers to questions are incomplete.	
APA format (presentation)	Follows APA presentation formatting rules	Minor APA errors in formatting rules	Some APA errors in formatting rules	APA not consistent in formatting rules	

Approved as is _____ **Needs revisions without presentation** **X** _____ **Needs revisions and presentation** _____

January 2018; REV May 2019; REV March 2020

DNP Project Lead signature/date: C. Daffron /6-21-2021

DNP Project Team Member signature/s/date: 6/29/21

Appendix F

Telemedicine Medication Adherence Monitoring Tool

Assessment Question	Patient Response
Do you always take your medication at the appropriate time?	
When you feel bad, have you ever discontinues taking your medication?	
Have you ever forgotten to take your medication?	
Have you ever forgotten to take your medications during the weekend?	
In the last week, how many times did you fail to take your prescribed dose?	
Since your last in office visit, how many days have gone by in which you did not take your medications?	
Do you have any side effects from any medication?	
When you feel like your health is under control, do you sometimes stop taking your medicine?	
Do you ever feel hassled about sticking to your blood pressure treatment plan? (If applicable)	
Have you had any ER or urgent care visits in the past week?	
Have you had any hospitalizations in the past week?	
Do you have any questions as it relates to your health or medications?	

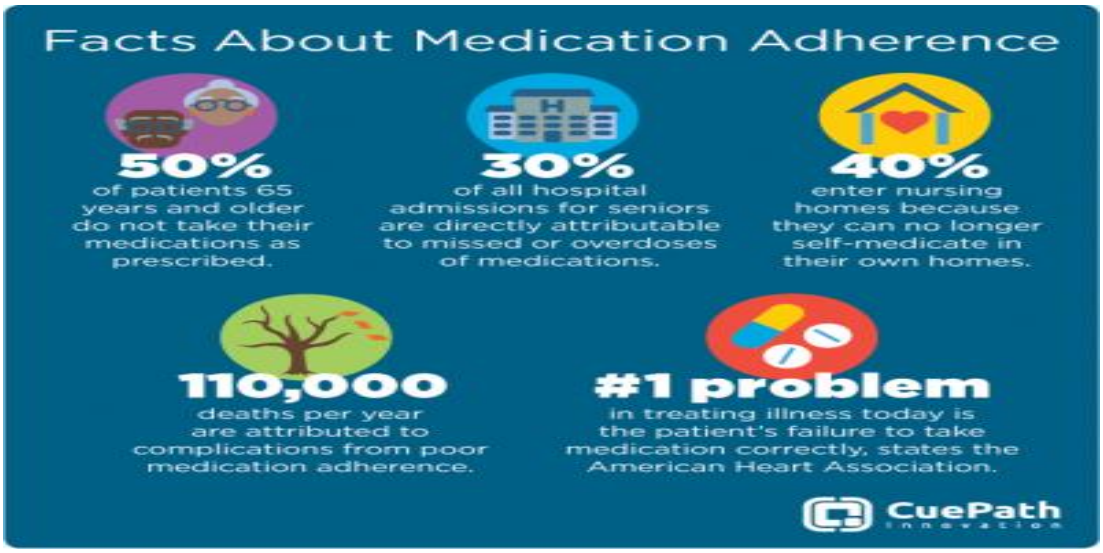
Appendix G

Staff Education Flyer on Telemedicine and Medication Adherence

Telemedicine and Medication Adherence

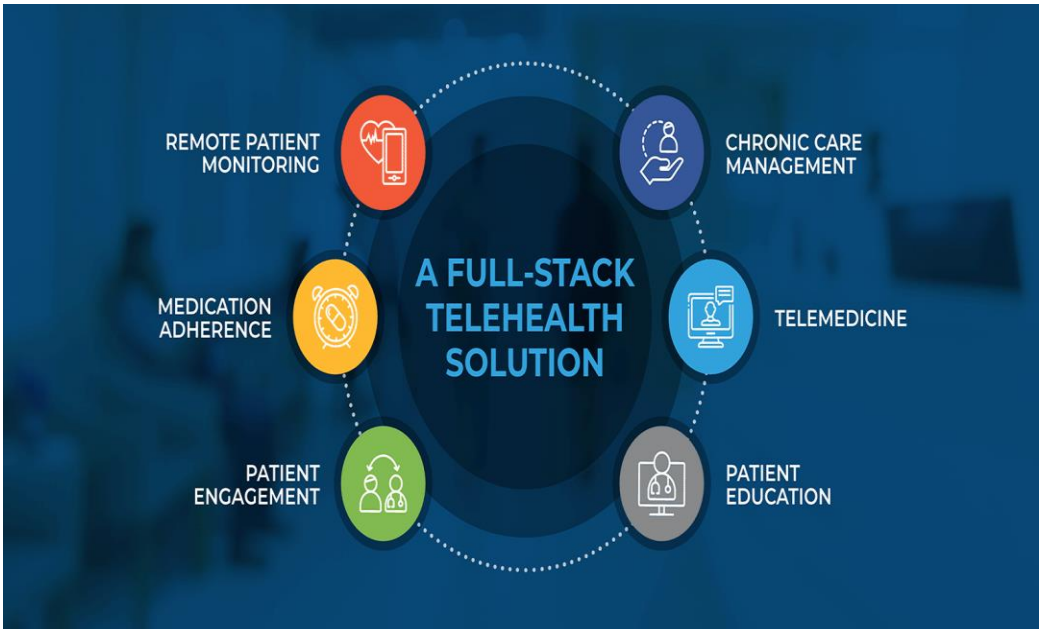
Did you know?

- 125,000 Americans die annually due to poor medication adherence
- Half of patients do not take medications as prescribed
- 50% of people taking a chronic medication stop taking it within the first year
- Poor medication adherence costs the US $100 billion per year in hospital admissions



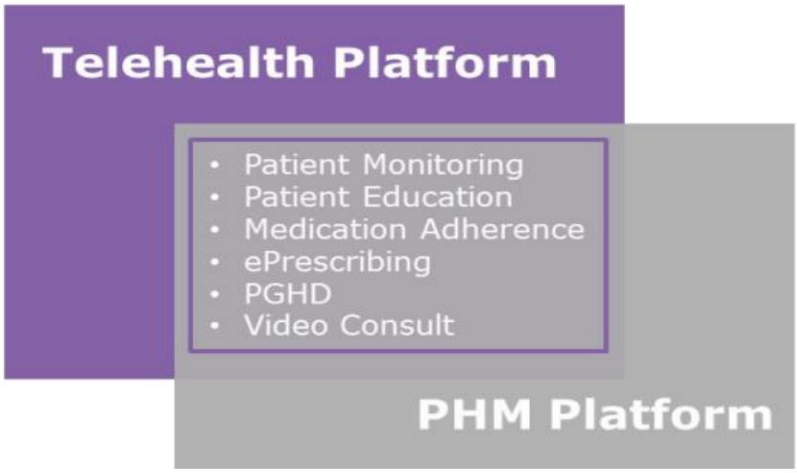
How can we use Telemedicine to improve Medication Adherence?

- Telemedicine allows the healthcare provider, a physician, a nurse practitioner, or physician assistant, to contact the patient electronically, through mobile phones or computers to provide education and reinforcement regarding medication adherence.
- It allows for faster medication refills
- It allows patients to communicate effectively with their health care provider
- Providers can emphasize medication review and education
- Decreases ER visits and hospitalizations
- Overall improvement in health and quality of life



How can Medication Adherence improve at Advanced Cardiovascular Specialists?

- Implementation of a Quality Improvement Project on Telemedicine and Medication Adherence
- Telemedicine Medication Adherence Monitoring Tool will be created
- Patients will be selected based on their medical history, ER visits and hospitalizations
- Patients will be selected from the Chronic Care Management System (CCM)
- Project will be implemented over a 90-day period
- Results and trends will be tracked during implementation
- Dissemination of results will be shared with practice



Apendix H

DNP Poster Presentation

DR. SUSAN L. DAVIS, R.N., & RICHARD J. HENLEY COLLEGE OF NURSING
Sacred Heart University

The use of Telemedicine in Primary Care to improve Medication Adherence: A Quality Improvement Project

Chadae Haffenden-Morrison, BSN, RN, Dr. Constance Glenn, DNP, MSN, APRN,FNP -BC, CNE, DNP Project Advisor
Luis Rojas, DNP, APRN, DNP Project Practice Mentor

BACKGROUND/EVIDENCE

- Lack of medication adherence, a major issue in healthcare, can be costly to the healthcare system and result in poor patient outcomes.
- Noncompliance is common among patients who suffer from chronic conditions such as diabetes, hypertension, and cardiovascular conditions.
- Wong et al (2020) noted that enhanced involvement with health care professionals using the Telemedicine platform can improve a patient's medication adherence as well as decreasing emergency services and hospitalizations.

PROJECT GOALS

1. Improve communication and coordination of care between the patient and the provider.
2. Improve medication adherence in adults with chronic diseases by implementing the use of telemedicine to provide and reinforce education and reminders.

PICO QUESTION

- In patients with chronic diseases (P), does the utilization of telemedicine (I) compared to no intervention (C) improves medication compliance/adherence (O) over a three-month period (T)?

METHODS

Design: Evidence-Based Practice Quality Improvement Project

Setting/Population: Advanced Cardiovascular Specialists (ACS) in the primary care department.

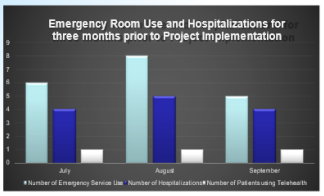
PDSA Cycle

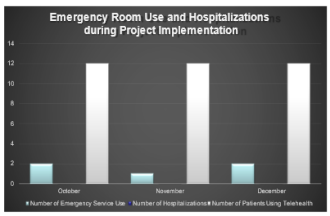
Plan: Practice Manager and staff expressed concerns about patients who frequently used emergency services. Implement the use of Telemedicine for medication management over a 90 -day period.
Do: Educated patients, providers, and nurses on the importance of medication compliance with use of telemedicine specific to this project regarding medication adherence.
Study: Data was collected on a monthly basis with trends from 10/01/2021 – 01/01/2022.
Act: Interventions throughout the study was modified based on patient and provider feedback.

IMPLEMENTATION PLAN

- A staff meeting was held and evidence from clinical guidelines and research was presented to encourage buy in.
- Posters were made available in the staff lounge as well as work areas that showed the content and development of this project as it relates to telemedicine and medication management.
- Frequent meetings were held with the DNP project manager, practice mentor, office manager and the medical assistant who assisted with patient care.
- Patients who participated in this QI project have three or more co -morbid conditions. The patients were contacted on a weekly basis by the project manager, in between scheduled appointments to address medication compliance, health concerns or any ER visits.

RESULTS





EVALUATION

- A total of 12 patients were tracked using telemedicine from October to January.
- Over the 90-day period there was a decline of emergency services use and an increase in medication adherence. Eight of the twelve patients had a decrease in hemoglobin A1C, blood pressure readings and weight.
- Audits were done for the previous months before the implementation of the project in October in order to provide comparison data.
- Throughout the progress of the project none of the participants who used emergency services were hospitalized. Prior to the implementation of the project based on medical records, eight of the patients within the study had hospitalizations in the past when visiting the ER.
- Overall use of telemedicine increased for all participants in the study by 80%.

SUSTAINABILITY PLAN

- One strategy in achieving sustainability is personalizing the messages to staff based on actual improvement data. .
- Run charts will be used to demonstrate the progress towards the use of telemedicine within the practice and how each patient has benefitted from the program.
- Audit and feedback.

Barrier to sustainability:

- ACS uses a system called Chronic Care Management (CCM) for patients who need additional monitoring based on their medical conditions.
- This system has existed within the practice for over 10 years and has associated policies and procedures.
- CCM has goals like this DNP project.

LESSONS LEARNED

- Medication nonadherence can increase patient morbidity and mortality.
- Telemedicine is another modality to increase patient access and communication between the patient and provider.
- Telemedicine drives revenue within the practice by decreasing "no shows"
- Every patient stated how satisfied they were with using telemedicine for medication reminders and being able to use this modality with improved access to care.

Contact: Chadae Haffenden-Morrison, BSN, RN, DNP Student
haffendenc@mail.sacredheart.edu

Appendix I

ACS Practice Poster

The use of Telemedicine in Primary Care to improve Medication Adherence: A Quality Improvement Project

Chadae Haffenden-Morrison, BSN, RN, Dr. Constance Glenn, DNP, MSN, APRN FNP -BC, CNE, DNP Project Advisor

BACKGROUND/EVIDENCE

PROJECT GOALS

1. Improve communication and coordination of care between the patient and the provider.
2. Improve medication adherence in adults with chronic diseases by implementing the use of telemedicine to provide and reinforce education and reminders.
3. To decrease emergency service use and hospitalizations

PICO QUESTION

- In patients with chronic diseases (P), does the utilization of telemedicine (I) compared to no intervention (C) improves medication compliance/adherence (O) over a three-month period (T)?

METHODS

Design: Evidence-Based Practice Quality Improvement Project

Setting/Population: Advanced Cardiovascular Specialists (ACS) in the primary care department.

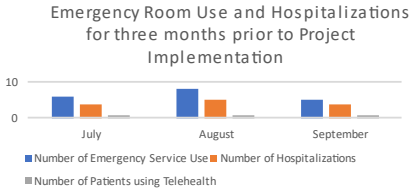
PDSA Cycle

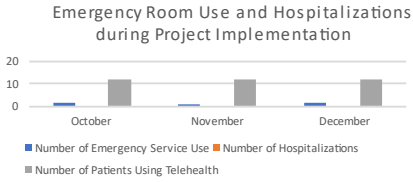
Plan: Practice Manager and staff expressed concerns about patients who frequently used emergency services. Implement the use of Telemedicine for medication management over a 90-day period.
Do: Educated patients, providers, and nurses on the importance of medication compliance with use of telemedicine specific to this project regarding medication adherence.
Study: Data was collected on a monthly basis with trends from 10/01/2021- 01/01/2022.
Act: Interventions throughout the study was modified based on patient and provider feedback.

IMPLEMENTATION PLAN

- A staff meeting was held and evidence from clinical guidelines and research was presented to encourage buy in.
- Posters were made available in the staff lounge as well as work areas that showed the content and development of this project as it relates to telemedicine and medication management.
- Frequent meetings were held with the DNP project manager, practice mentor, office manager and the medical assistant who assisted with patient care.
- Patients who participated in this QI project have three or more comorbid conditions. The patients were contacted on a weekly basis by the project manager, in between scheduled appointments to address medication compliance, health concerns or any ER visits.

RESULTS





RESULTS

- ER usage decreased by 73.7 % during the implementation of the project.
- Hospitalizations were a 100 % decrease.
- Overall use of telemedicine for medication adherence increased for all patients included in the project.
- Over the 90-day period there was a decline of emergency services use and an increase in medication adherence. Eight of the twelve patients had a decrease in hemoglobin A1C, blood pressure readings and weight.

EVALUATION

- A total of 12 patients were tracked using telemedicine from October to January.
- Audits were done for the previous months before the implementation of the project in October in order to provide comparison data.
- Throughout the progress of the project none of the participants who used emergency services were hospitalized. Prior to the implementation of the project based on medical records, eight of the patients within the study had hospitalizations in the past when visiting the ER.

LESSONS LEARNED

- Medication nonadherence can increase patient morbidity and mortality.
- Telemedicine is another modality to increase patient access and communication between the patient and provider.
- Telemedicine drives revenue within the practice by decreasing "no shows"
- Every patient stated how satisfied they were with using telemedicine for medication reminders and being able to use this modality with improved access to care.

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