DEVELOPMENT AND EVALUATION OF A NURSE LEADER-DRIVEN

TELEPHONE APPOINTMENT REMINDER PROTOCOL

An Evidence-Based Scholarly Project

Submitted to the College of Health Professions and Natural Sciences

in Partial Fulfillment of the

Requirements for the Degree

Doctor of Nursing Practice

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        Nurse Leader-Driven Telephone Reminder Protocol

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No-show appointments are challenging throughout the healthcare system, indicating multiple implications impacting patients, providers, and practices. Overwhelmingly, the literature agrees on the burden of decreased staff productivity, squandering of physical and human resources, and the devastation of the financial impact no-show appointments have on the healthcare system (Lance et al., 2021). National no-show and missed appointment rates are highly variable, with estimates ranging from 10%-40% and 5%-55%, respectively (Penzias et al., 2019; Smith, 2018). The monthly no-show rate of one provider at a primary care practice within a tertiary healthcare system on the East Coast was 38%, which is above the national benchmark for no-show rates. The intervention for this project provided patients with a live telephone reminder call, including the date, time, and location of their appointment, approximately 24 hours in advance.

Keywords: appointment reminders, ambulatory care, no-show appointments, nonattendance, telephone reminders, missed appointments.

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ABBREVIATIONS

AACN:	American Association of Colleges of Nurses
AONL:	American Organization for Nursing Leadership
ARCC:	Advancing Research and Clinical Practice through Close Collaboration Model
CITI:	Collaborative Institutional Training Initiative
CNO:	Chief Nursing Officer
DNP:	Doctor of Nursing Practice
EHR:	Electronic Health Record
EMR:	Electronic Medical Record
FIT:	Fecal Immunochemical Testing
HIPPA:	Health Portability Act
HPM:	Health Promotion Model
HSRC:	Human Subjects Review Committee
IRB:	Institutional Review Board
PHI:	Personal Health Information
PICOT:	Population, Intervention, Comparison, Outcome, and Time
SMS:	Short Message System

CHAPTER ONE

INTRODUCTION

Problem Description

The ripple effect created by no-show appointments throughout the healthcare system has a far-reaching impact, indicative of multiple implications impacting patients, providers, and practices. No-show appointments differ from appointment cancelations because, unlike the latter, there is no advance notice of the patient's nonattendance (Marbouh et al., 2020). This lack of notice creates an unproductive gap in the practice schedule, inspiring a cascade of consequences on patient care and the practice as a whole.

On a global scale, Dantas et al. (2018) found the worldwide average no-show rate to sit at approximately 23%, with Africa experiencing the highest rate at 43%, trailed by South America at 27.8%, Asia at 25.1%, North America at 23.5%, Europe at 19.5%, and finally, Oceania at 13.5%. Likewise, the no-show benchmark data within the United States is widely variable and influenced by geographic factors, social factors, and type of practice. With a 50-point variability, Penzias et al. (2019) estimated no-show appointments to range from 5%-55%, while another study found benchmark data to lie between 12%-80% (Marbouh et al., 2020).

The consequences of a health system struggling and overburdened with no-show appointments included decreased staff productivity and wasted resources (Lance et al., 2021). Wasting resources resulted in overall inefficiency within the practice due to the common practice of overbooking patients, resulting in longer wait times. (Wegrzyniak et al., 2018). Furthermore, scheduling appointments that patients ultimately vacate wastes staff time. Not only the staff who schedule patient appointments experienced decreased

efficiency, but also the physicians in the form of lost time (Kumthekar & Johnson, 2018). Time then became but one wasted resource with unused equipment, unnecessary use of electricity, and staff wages, incurring costs and accounting for collateral damage (Stormon et al., 2021). No-show appointments are a system-wide inefficiency, further reaching the patients in the form of deteriorated health outcomes, and therefore, an increase in the necessity of patients seeking acute care in the emergency department and, ultimately, increasing the likelihood of hospitalization (Wolff et al., 2019).

Brown et al. (2020) found that patients who no-show for their scheduled primary care appointments tend to have decreased access to healthcare, resulting in poorer health outcomes, decreased chronic disease treatment, and are ultimately associated with higher mortality. Sabah et al. (2019) reinforced this with the assertion that communication with a patient and their family was but one of the responsibilities of the healthcare provider. Furthermore, this accountability was to convey the diagnosis, prognosis, treatment options, and follow-up care. The sole burden of this communication did not fall entirely on the provider but also rested with the patient on whom the success of care depended on compliance. When a patient did not show up for an appointment, compliance of care failed, and communication between provider and patient suffered. Missing appointments and poor compliance ultimately negatively impacted the patient's health outcomes. Initiating preventative protocols could not happen if patients were absent from their appointments, resulting in uncontrolled chronic diseases (Lance et al., 2021). According to Sabah et al. (2019), only about 40%-50% of the population complies with their chronic disease treatment, and 70%-80% for more acute needs. Therefore, lack of follow-up results in healthcare ineffectiveness.

Not only people who did not attend this appointment were at risk for poorer health outcomes. Other patients in the practice were also at risk resulting from decreased access to available appointments and increased patient dissatisfaction (Lagman et al., 2021). When patients occupied appointment time slots but did not ultimately attend their appointments, other patients waited prolonged periods of time for an appointment (Shahab & Meili, 2019). As a result, no one addressed their immediate health complaints. Patients not receiving timely preventative care had undiagnosed and untreated conditions, resulting in deteriorated health conditions within the community.

By not addressing health conditions in the ambulatory setting, people sought healthcare elsewhere, resulting in a higher demand for emergency services and increased hospitalization rates (Lance et al., 2021). By natural extension, increased hospitalizations, and use of acute care services such as the emergency department for non-acute needs caused an increase in healthcare costs. Patients with chronic illnesses, such as high blood pressure and diabetes, who did not attend their primary care appointments, were more likely to report health issues related to these diseases (Mehra et al., 2018). According to a study by Boshers et al. (2021), low-income patients were at a higher risk of lacking health insurance and access to healthcare and experiencing disproportionately worse health outcomes.

Finally, no-show appointments impacted the financial factors of revenue and cost (Dantas et al., 2018). The financial implications for patients who failed to attend their appointments were staggering without calculating the loss in resources such as staff and provider productivity, utilities, and supplies. Another study by Lance et al. (2021) estimated the financial loss per primary care consultation in the United States was $274,

with an estimated gross revenue loss estimated by Lagman et al. (2021) to be $84,000-$384,000.

This performance improvement project occurred over 6 weeks in one residency-based, urban, primary care practice in a large tertiary healthcare system in the Northeastern United States. Due to the volume of patients seen in the practice every month, the patients of one advanced practice nurse received intervention. In the fourth quarter of 2022, the no-show rates of the overall practice were 29.04%, 30.36%, and 30.83% for October, November, and December, respectively. The no-show data for one advanced practice nurse for the same quarter were 25.0%, 14.79%, and 27.59%.

Prior to this timeframe, the healthcare system migrated to a standard process of reminding patients of their appointments, transitioning from automated telephone appointment reminder calls in July 2022 and August 2022 to a text messaging appointment reminder system in September 2022. With the text messaging platform, patients received their first reminder notification 14 days before their scheduled appointment with a reminder text message one to 2 days before the appointment. If scheduling the appointment less than 2 days from the date of the appointment, the patient received a confirmation reminder on the day of the appointment. All other patients also received this day of appointment reminder as well. The text messaging appointment reminder system includes intake forms the patient will fill out 14 days before the appointment, receiving additional prompts at 7 and then 2 days prior.

Rationale

Recognizing the multifaceted burden of no-show appointments in clinical practices, especially teaching practices, this Clinical Practice Change Project used Pender's Health Promotion Model (HPM) as its theoretical framework (Smith, 2018).

Aqtam and Darawwad's (2018) explanation of HPM tied directly to examining the no-show rates of practices, revealing the reason for patients' health behaviors, and even assisted practices in anticipating these behaviors. The more that is known about the patients not attending their scheduled appointments, the more health system leaders can anticipate this behavior.

The HPM addressed three areas in which nurses can assess health promotion behaviors. First, through personal characteristics and behaviors. Each patient is unique and shaped by their personal environment (Aqtam & Darawwad, 2018). If healthcare providers want to decrease the no-show rate and increase patient access to healthcare, the practice must know their patients and how to reach them effectively. The healthcare system could use a best practice, such as text-message appointment reminders, to notify patients of their appointments, yet still have a high no-show rate due to the personal characteristics and experiences of the patient population the practice serves.

Second, health-promoting behavior should be assessed regarding how practices facilitate patient appointment attendance. Although this project focused on nursing, improving the population's no-show rate is also heavily dependent on operations, requiring effective communication and collaborative skills as outlined in DNP Essential VI, *Interprofessional Collaboration for Improving Patient and Population Outcomes* (American Association of Colleges of Nurses [AACN], 2006). Additionally important was the application of DNP Essential VII, *Clinical Prevention and Population Health for Improving the Nation's Health* (AACN, 2006). These processes pulled together the patients' psychosocial aspects, such as their personal characteristics and experiences, to develop, implement, and finally, evaluate gaps in care, such as no-show behavior, and

why those gaps occurred. Third and finally, the HPM assessed the behavioral outcome. It examined if patients attended their scheduled appointments and the presence of a correlation between the no-show rate and the intervention.

Project variables for this Clinical Practice Change Project included patient demographics, such as patient age, gender, and race. These variables came from the electronic health record (EHR). The variables were analyzed at the conclusion of the project for their correlation to which patients exhibited no-show behavior despite the project intervention and which patients attended their scheduled appointment.

There were multiple potential contributing factors to no-show behavior. Dantas et al. (2018) and Boshers et al. (2021) found strong predictive factors of no-show behavior to include race and ethnicity; lower socioeconomic status, prior no-show history; and lead time between scheduling the appointment and the actual appointment date. Additional barriers and other demands patients face include transportation and family issues, as cited by Penzias et al. (2019), Shahab and Meili (2019), and Kumthekar and Johnson (2018).

Specific Aims

The goal of this Evidence-Based Clinical Practice Change Project was to identify the impact of live telephone appointment reminder calls on patient no-show rates. Additionally, the project analyzed patient demographics contained in the EHR, such as gender, age, and race, as well as confirmation, cancelation, or rescheduling of the appointment.

The PICOT question for this Clinical Practice Change Project was: In a primary care practice, how do live telephone appointment reminders compared to current practice affect no-show rates over a 6-week time period?

Population: Primary care practice

Intervention: Live telephone appointment reminders

Comparison: Current practice

Outcomes: No-show rates

Time: Six weeks

Definition of Terms

The following conceptual and operational definitions of terms occur throughout the project:

- *No-show* means a patient missed a scheduled appointment in which no advance notice of the patient's nonattendance is provided to the practice (Marbouh et al., 2020).

Chapter Summary

Chapter One reflects the wide-reaching ripple effect of no-show appointments and their impact on the patient, practice, and provider levels. A discussion of the significance of the burden revealed benchmark data at the global, national, and local levels, as well as the intended Evidence-Based Clinical Practice Change intervention. The chapter also included an explanation of the problem and proposed intervention pertaining to the HPM theoretical framework. Chapter Two comprises a detailed analysis and synthesis of the available knowledge.

CHAPTER TWO

LITERATURE REVIEW

Search Strategy

A thorough literature search and review obtained evidence on best practices

impacting no-show rates in primary care clinics. As evidenced in the search strategy

schematic (see Appendix A), a search of databases, including Medline, PubMed,

CINAHL Complete, EBSCOHost, Academic Search Premier, and the Cochrane

Methodology Register identified a total of 118 articles. Using other resources helped find

additional records. Keywords included primary care, live telephone reminders, and no-

show rates. Secondary search terms were appointment reminders, ambulatory care,

telephone reminders, outpatient, no-show appointments, nonattendance, and missed

appointments. The articles found were published between 2018-2022.

Articles included in the databases were peer-reviewed, full-text, and written in

English. Articles not included were those deemed to be of low quality and unrelated to

interventions impacting the no-show rate in clinical practices. These articles focused

specifically on outpatient surgery, telemedicine, the inpatient clinical environment,

medication management, and transition of care follow-up compliance.

EBP Model

Included articles met the rigorous requirements set forth by the Ohio State

University Advancing Research and Clinical Practice through Close Collaboration Model

(ARCC), designed as a framework meant to sustain evidence-based practices in

healthcare systems. The foundation of this model was upon the belief that clinicians who

can practice evidence-based care will experience greater job satisfaction and, as a result,

less staff turnover and better patient outcomes (Melnyk et al., 2021). Furthermore, this project found that implementing the ARCC Model resulted in increased evidence-based practice among the clinicians who participated in the project and that mentors experienced in evidenced based practice are critical in establishing and implementing a culture of evidence-based care.

Available Knowledge

It is indisputable that missed appointments without prior notice pose an opportunity for improvement in the global healthcare environment. Improvement opportunities are evidenced by national benchmarks of no-show rates covering a broad breadth of 5%-55% and 12%-80% (Marbouh et al., 2020; Penzias et al., 2019). The reasons why this failure to show up exists for scheduled appointments are complex and multifaceted. How to solve this high-stakes healthcare industry-wide enigma is just as mysterious.

In this Evidence-Based Clinical Practice Change Project, 29 screened, peer-reviewed, and eligible articles included: two randomized control trials, three controlled trials without randomization, six case-control studies, and three systematic reviews of qualitative studies. The majority, 15, qualified as quality improvement projects. Overall, five primary themes emerged from the literature:

1. The effect of live telephone appointment reminders on the no-show rate

2. The effect of SMS reminders on the no-show rate

3. The impact of forgetfulness on the no-show rate

4. The impact of missed appointment interventions on operating costs

5. The impact of gender, age, ethnicity, and race on the no-show rate.

Effect of Live Telephone Appointment Reminders

Information from 10 studies in the literature review addressed the effect of live telephone appointment reminders on the no-show rate. These studies included Lance et al. (2021); Adams et al. (2019); Wegrzyniak et al. (2018); Penzias et al. (2019); Lagman et al. (2021); Kumthekar and Johnson (2018); Weaver et al. (2019); Saeed et al. (2018); Nielson et al. (2018); and Kiruparan et al. (2020). They conclusively concurred that live telephone appointment reminders decrease the no-show rate in practices.

Through random assignment, Lance et al. (2021) found that patients who received a live telephone appointment reminder had the lowest no-show rate compared to the SMS reminder intervention or the option of no intervention. At the conclusion of the project, patients who received the live telephone appointment reminder had a no-show rate of 9.5%. Patients who received the SMS reminder intervention had a no-show rate of 21%, and patients who received no intervention had a resulting no-show rate of 22.8%. For consistency, the authors used a script for phone call appointment reminders. Phone calls and SMS reminders were initiated 2 days before the patient's appointment.

Saeed et al. (2018) published plans for a mixed methods study measuring the effectiveness of an SMS reminder intervention compared to telephone reminders. Saeed et al. reviewed the attendance of patients who received reminders using both methods and was set in an outpatient pediatric practice. Additionally, the team administered a survey to patients' parents and caregivers inquiring about mobile phone access and use. Finally, the team conducted interviews with parents/caregivers and staff. The study cites mobile devices as being convenient and allowing patients to not only communicate with healthcare providers at the patient's convenience but also allowing providers to have

increased engagement with their patients as more individuals have access to these devices despite socioeconomic status.

Adams et al. (2019) support the concept of live telephone contact as more effective than a telephone message. Traditionally, patients in this HIV clinic had the choice of receiving appointment reminders via phone or email. This project added the option of text messaging to the patient-centered reminder approach. Ultimately, the authors concluded that the 48-hour timing of the appointment reminder played a critical role in patient attendance more than the mode of appointment reminder delivery, such as telephone, email, or text messaging reminders. The practice's overall no-show rate decreased from 30.3% in the first 5 months of 2016 to 26.5% during the same timeframe in 2017. The no-show rate of leaving an appointment reminder voicemail for a patient reached 68%, whereas speaking directly with the patient reflected a no-show rate of 38%. Patients who did not answer the phone and did not receive a voicemail had a no-show rate of 48%.

On the contrary, Nielson et al. (2018) found no difference between live and automated calls. The authors compared these two telephone reminder methods, calling patients who received a mailed fecal immunochemical testing (FIT) kit to screen for colorectal cancer. There was no difference in the return rate between patients who received automated telephone call reminders only versus those who received both automated telephone call reminders as well as live telephone call reminders.

The intervention of live telephone appointment reminder calls has proven effective in both primary care and specialty care practices. Across primary care patients in a large multidisciplinary adolescent and young adult practice, there was a significant

decrease in missed appointments from 25% to 22.4% (Penzias et al., 2019). In the same study, specialty practice patients experienced a lesser no-show rate, which dropped from 14.7% to 13.1%. Interestingly, although the greatest improvement occurred in primary care, Penzias et al. (2019) found that patients in this setting were 1.71 times more likely to miss their appointment than specialty care patients.

Throughout the studies, the timeframe for calling patients ranged from 24 hours prior to the scheduled appointment to 48 hours (Adams et al., 2019; Lagman et al., 2021). When called 24 hours prior to their appointment, patients at the outpatient clinic were associated with a lower no-show rate of 6.9% (Lagman et al., 2021). The results show an almost 5-point decrease from the previous no-show rate of 11.8%. Additionally, the authors noted a trend in which the no-show rate was lower for patients who had scheduled their appointment within 30 days of the visit than a longer timeframe. Therefore, the longer the lead time between scheduling an appointment and the date of the appointment, the more likely the patient was to be a no-show for the appointment.

In another study, a retrospective quality improvement project, the live telephone appointment reminder call went out to patients 2 to 3 days before their appointment (Kumthekar & Johnson, 2018). This retrospective quality improvement project occurred in a New York lupus clinic where patients' preferred reminder method was overwhelmingly telephone calls, with a 76.79% preference. The results reflect the effectiveness of this patient choice evidenced by an increased appointment show rate of 58.8% to 74.8%. These findings are the opposite of patient choice in another retrospective case study in which the lowest preference was for telephone reminder calls at 8% compared to email at 53.6% and SMS at 38.3% (Wegrzyniak et al., 2018). With

the lowest preference percentage, live telephone calls also had the highest no-show rate at 3.4% compared to email and SMS at 2.68% and 1.90%, respectively.

Additional studies were also associated with a decrease in no-show rates as a result of live telephone calls. The dramatic decrease reflected was from a free diabetes clinic quality improvement project noting a 17.7% decrease from 42.7% pre-intervention to 25% post-intervention (Weaver et al., 2019). In addition to reminding the patient about their appointment, these phone calls also provided support and navigation for the patients and performed weekly. The first appointment attendance of patients who completed navigation phone calls was 72%, while those who did not participate in the calls had a first appointment attendance rate of 43%.

Kiruparan et al. (2020) examined the "Did Not Attend" rate of patients in a rapid-access breast clinic. There were three layers of interventions. These included a live telephone patient appointment confirmation, an appointment confirmation sent via traditional mail, and a confirmation SMS. The authors discovered a statistically lower "Did Not Attend" rate when live telephone appointment reminders worked in tandem with the appointment reminders sent via traditional mail and SMS. Therefore, findings from this study also demonstrated the effectiveness of layered appointment reminder methods.

Effect of SMS Reminders

Either in tandem with other types of appointment reminders, such as telephone calls, or independently, SMS appointment reminders also proved an effective intervention in decreasing the no-show rate. Saeed et al. (2018) discussed the health literacy of the targeted population as being a potential limitation to using SMS appointment reminders.

Studies that found this reminder method to be effective, however, include Lance et al.

(2021); Adams et al. (2019); Wegrzyniak et al. (2018); Sabah et al. (2019); Anthony et al.

(2019); and Moran et al. (2018). Lance et al. (2021) showed that telephone appointment

reminders and SMS appointment reminders are both effective, despite an 11.5%

difference. Telephone appointment reminders decreased the no-show rate to 9.5%,

whereas SMS accounted for a no-show rate of 21%.

The only study in the literature review in which SMS appointment reminders were

more effective in reducing the no-show rate than live telephone reminders was also a

study in which patients had the choice of which type of appointment reminder they

preferred to receive (Wegrzyniak et al., 2018). The most popular choice of the three types

was email, with a 53.6% preference, followed by SMS at 38.3%, and telephone reminders

at 8%. Their respective no-show percentages where SMS outperformed telephone

reminders were 2.68%, 1.90%, and 3.49%.

Adams et al. (2019) concluded that out of a total of 623 participants, SMS

reminders were just as effective as live telephone appointment reminders. In this HIV

clinic, SMS was as an intervention added to the normally offered email or telephone

reminder. Although a new alternative, telephone reminders remained the most popular

choice with 54%, followed by SMS with 35%, and email with 11%.

In a 2018 study by Moran et al., SMS appointment reminders were initially

significantly effective in reducing the no-show rate in a single-site mental healthcare

clinic from 22.2% to 13.9% in the 6 months immediately following the intervention

implementation. Although sustainability is not addressed in this literature, after 2.5 years

of using SMS appointment reminders, no-show rates in the practice trended higher to 19.3%.

In another study, Sabah et al. (2019) revealed SMS appointment reminders were the sole intervention used during three different times in the timeline of appointment scheduling. In this study, Sabah et al. implemented a pre-intervention, intervention, and post-intervention SMS. In the pre-intervention phase, the patient received a "Thank You" text on the same day following their initial consultation. For subsequent appointments, patients received an intervention text in which an appointment reminder went out one day before the appointment and a final post-intervention reminder text the day of the appointment. The results were an overall increased follow-up in consultation visits from 70% to 81%. Anthony et al. (2019) also found an increase in appointment attendance rate with SMS appointment reminders. In this Texas HIV clinic, appointment attendance increased significantly by 7.15%. Overall, the practice showed a decreased no-show rate from 24.85% to 17.7% post-intervention.

Impact of Forgetfulness on No-show Rates

The aforementioned, as well as additional interventions that practices have tried, are aptly called appointment reminders. Studies, including Penzias et al. (2019); Shahab and Meili (2019); Kumthekar and Johnson (2018); Marbouh et al. (2020); Briatore et al. (2019); and Smith (2018) name forgetfulness as one of the most common reasons for failing attend an appointment. Penzias et al. (2019) found that 39% of their patients who had missed an appointment, named the most common reason for missing that appointment as forgetting. The live telephone intervention reflected in the literature effectively decreased the missed appointment rate from 23.3% to 20.8%. Pointing to the

age of the population in this study, adolescents and young adults, the authors credit their patients' no-show rate to possible challenges transitioning to adulthood and taking responsibility for oneself and one's appointments.

In a telephone survey of patients who had not previously exhibited no-show behavior by Shahab and Meili (2019), 32.6% of respondents said they missed an appointment due to forgetfulness. Additional reasons for missed appointments included feeling too ill to attend the appointment with 23.3% of respondents and transportation-related issues at 11.6%. This study, set in an urban primary care clinic in Canada, also reflected the patients' top three ways to reach their appointments: walking at 37.6%, public transportation at 23.39%, and taxi at 11.6%. Overwhelmingly, in this population with an average age of 46.6 years, patients stated they preferred telephone appointment reminders with 62.8% preference opposed to text reminders at 18.6%, email reminders at 11.6%, automated voice messages at 7.0%, and no appointment reminders at 11.6%.

Additional studies had similar findings, regardless of setting. Patients in a lupus clinic reported forgetting as their most common reason for no-show appointment behavior at 45.5% (Kumthekar & Johnson., 2018). This study refers to appointment compliance as a nationwide problem. Briatore et al. (2019) found that no-show patients had reported a higher percentage of mistaking the date and time of their appointment. As a result, consistent with the other studies, forgetfulness ranked as the most common reason, 44%, for not attending a scheduled appointment. Marbouh et al. (2020) grouped common reasons for no-show appointments into four categories. They included patient-related issues, environmental, financial, and scheduling issues. Forgetfulness, accompanied by fear and anxiety, childcare, and language barriers fell in the patient-

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related issues category. Environmental issues included factors such as lack of transportation, weather, and parking, while financial issues encompassed the high cost of care and inadequate insurance coverage for the care provided. Scheduling issues included increased lead time between appointment scheduling and appointment date as well as the inconvenience of the appointment time. Similarly, Smith (2018) found forgetfulness to be the most common reason for missed appointments, with 50%, a challenge that was effectively remedied by providing live telephone reminder calls to patients confirming the appointment and verifying their planned attendance.

Impact of Missed Appointment Interventions on Operating Costs

Unfortunately for medical practices, no-show appointment attendance incurs high costs for forgetfulness. The studies addressing the financial impact of no-show rates on practices include Lance et al. (2021); Lagman et al. (2021); Smith (2018); and Stormon et al. (20210). Lagman et al. (2021) estimated the annual gross revenue loss for medical specialty practices in the United States was $84,000-$380,000. The numbers are staggering and are consistent across the literature.

Also consistent with the aforementioned annual gross revenue loss, Smith (2018) estimated a loss of 80 established patient appointments and 43 new patient appointments per month. The costs translate into an average net monthly loss of $9,500, equaling $114,000 annually. These losses are only a snapshot of the financial hemorrhaging healthcare practices experience due to patients missing their appointments. No-shows leave the practices with the disadvantage of the clock running out before even having an opportunity to fill the appointment slot with another patient.

The remaining issue considers the cost of no-show patients and vacant appointments versus the cost of an intervention. The uncertainty lies in that the invested intervention may or may not prompt patients to attend their appointments or, at the very least, cancel them with advance notice. Canceling an appointment would allow another patient to have an appointment. When comparing the total cost of SMS versus live telephone calls, including the labor needed to make them, the price per SMS costs less at $0.18 opposed to the price per telephone call at $0.24 (Lance et al., 2021). Despite this slightly higher initial cost, the study found the return per dollar invested for each SMS was $2.67. The return per dollar invested for each telephone call was $15.24, a $12.57 difference. Lagman et al. (2021) also espoused the effectiveness of live telephone appointment reminder calls with an estimated cost savings of $79,200 following this intervention when calling patients 24 hours in advance.

Impact of Ethnicity, Race, and Gender on No-show Rates

The influence of patient demographics on the no-show rate is another way to address the costliness of no-show appointments. Using intervention resources smartly to predict which patients are at higher risk for missing their appointments could mitigate costs and decrease the no-show rate. Studies in the literature review, including Lance et al. (2021); Penzias et al. (2019); Brewster et al. (2020); Shahab and Meili (2019); and Dantas et al. (2018) sought patterns across the demographics of the participating patients. Among the data collected, patterns of ethnicity and race, as well as gender, emerged.

Lance et al. (2021) found a greater no-show rate among males at 25.89% than females at 14.3%. In this study, the three randomly assigned patient groups comprised similar demographics. The majority were Caucasian females with an average age of 50

years and in a stable relationship. Findings from Brewster et al. (2020) supported these results, with males ranking as more likely not to attend a scheduled appointment. A different study concluded the opposite, with females accounting for a higher no-show rate of 65.3% versus males with a rate of 34.7% (Shahab & Meili, 2019). In this study, females again accounted for the majority of participants at 65.3% and males at 34.7%. The average age of participants, however, was lower at 36.9 years. The question of gender significance impacting the no-show rate is unclear. Despite subsequent studies, in a 2018 literature review by Dantas et al., about 77.89% of the studies examined found that gender was not a strong predictor of patient no-show behavior.

The consensus regarding the impact of race and ethnicity on no-show rates was more conclusive. Racial and ethnic minorities were at higher risk for no-show behavior (Penzias et al., 2019). As a natural extension, this information is consistent with the same high risk associated with vulnerable populations. Additionally, the findings align with other high-risk factors, including patients with public insurance who speak English as a second language. Previously, Dantas et al. (2018) found race and ethnicity to be strong predictors. Race represented as a strong predictor of now show behavior in 56.7% of the studies reviewed, and ethnicity as a strong predictor in 52.4% of studies.

Chapter Summary

Chapter Two reviewed the search strategy for the Evidence-Based Clinical Practice Change Project and the evidence-based practice model used. Following the overview was a review of the literature and a synthesis of five outcomes found throughout the studies. Finally, Chapter Three will address the ethical considerations of the project as well as its context and measures.

CHAPTER THREE

METHODOLOGY

Organizational Structure and Culture of the Organization

The Clinical Practice Change Project and intervention of providing live telephone appointment reminders to patients was conducted over 6 weeks from January 30, 2023, to March 13, 2023, at a single residency-based, urban, primary care practice. One of approximately 30 primary care offices belonging to a large, tertiary healthcare system in the Northeastern United States, this office is one of three residency-based programs within the organization. The principal focus of the practice is adult medicine, encompassing interdisciplinary care, including behavioral health, women's health, social work services, diabetic foot and retinal exams, palliative care, health guides, community health, vaccine clinics, and clinical pharmacy services. Depending on diagnosis and reason for seeking medical care, patients are scheduled for 20- or 40-minute visit types, including acute, annual, annual wellness, follow-up appointments, nurse visits, and Pap tests.

With a capacity to schedule approximately 100-150 patients daily, providers include nine attending physicians, three nurse practitioners, and three rotating cohorts of about 20 residents each. Providers receive support from an interdisciplinary complement of office assistants, medical assistants, registered nurses, referral processors, and administrative assistants. The organizational structure receives support by a clinical lead and operationally, by a practice supervisor and practice manager, fostering an environment of teaching, transparency, and a just culture. Due to the size of the practice

and the volume capacity of patients, this project focused on the schedule of one nurse practitioner.

Barriers and Facilitators

Initial project barriers included a lack of available data and metrics on no-show rates for practices across the organization. Between the time to identify the subject of no-show appointment rates as a project topic and organizational opportunity to the time of project planning and implementation, the organization embarked on a dashboard redesign. Additionally, a new text-message-based appointment reminder system was implemented. Combined, these factors rendered any historical data on appointment no-show rates unavailable and obsolete.

Due to the absence of dashboard data, no-show rate data were obtained and reviewed from individual practices. Once no-show appointment data were obtained and a practice identified, staffing became the next barrier to project implementation. Staffing challenges did not allow for more than one caller to implement the intervention. Furthermore, the practice chosen had a large patient profile. As a result, the selected patients of one nurse practitioner received the intervention. Approximately one week prior to project implementation, it was necessary to re-evaluate the providers' schedules and availability. An alternate nurse practitioner, with appointment no-show rates above national benchmarks, was whose patients received the call for the intervention.

Additional staffing challenges impacted communication during project implementation. The decision was that the names of patients who wished to alter their original appointment time, either by canceling or rescheduling, would receive a secure communication from a pre-determined, designated office assistant. Prior to project

implementation, the practice experienced staffing challenges. To ensure consistency with follow-up, rescheduling, and potential project recovery, the project supervisor acted as the designated contact, with support from the practice manager as needed.

The final barrier experienced included obtaining secure, mobile, and cost-effective technology to make live appointment telephone reminder calls. When calling the patient, it was important that the caller identification reflected the organization's name and not the caller's personal information. Additionally, it was important for the caller to have access to mobile and flexible technology, with the ability to make calls from different locations instead of a land-line phone at one location. The contact protocol was integral to the success of the intervention as the project required patients to be called 24 hours before their scheduled appointment, which could include calls on weekends. Primarily due to the flexibility of the workforce required during the COVID-19 pandemic, a computer application installed on the caller's laptop, and used by work-from-home triage nurses, was available without incurring additional costs.

Despite these barriers, project facilitators included a comprehensive list of primary care practices and contacts. Individual monthly reports reflecting practice no-show rates were also available. Although data were unavailable on one dashboard, combining the current and historical data of multiple primary care practices, individual data were obtained.

Project Team

The organization was supportive of project planning and implementation. Positions actively supporting and participating in project facilitation included the Chief Nursing Officer (CNO), operational leadership, practice leadership, and project advisors.

The CNO and operational leadership provided permission and recommendations, facilitating communication. Practice leadership furnished reports and provided background on office scheduling workflow. Project advisors provided guidance with data collection design and script development.

<div align="center">**Interventions**</div>

Patient no-show appointments present a challenge throughout the healthcare system and have multiple implications impacting patients and providers. The practice receives no advance notification when a no-show appointment occurs, despite many healthcare systems employing various reminder modalities (Bhat et al., 2021). Due to the lack of advance notice, offices are often unsuccessful at filling vacant no-show appointments. This non-productive time impacts patients by limiting access, extending appointment unavailability, and ultimately resulting in dissatisfaction with the care received. Furthermore, the disruption to providers and medical staff results in stunted productivity and decreased quality of care (Fiori et al., 2020; Marbouh et al., 2020).

Additionally, this disruption stresses the practices' financial resources, resulting in potential patient attrition and underutilizing space and human resources, which continue to incur costs despite lost revenue. As a whole, no-show appointment rates indicate the financial stress impacting the entire health system. The higher financial cost is evidenced as no-show appointments in primary care offices increase, as do lower acuity ambulatory visits to the emergency department (Fiori et al., 2020).

Seeking care for low-acuity needs in a high-acuity setting has a two-fold impact. First, the cost associated with the visit increases. Second, while meeting the patient's immediate needs occurs in the higher acuity setting, addressing preventative measures is

difficult (Chaiyachati et al., 2018; Marbouh et al., 2020). Therefore, by decreasing the no-show rate at the urban, residency-based primary care practice, the organization could expect to see more appropriately placed patients, less financial loss, more provider and staff productivity, an increase in patients' access, and overall improved health of the population.

Study of the Interventions

The Human Subjects Review Committee (HSRC) at Wilmington University approved this performance improvement project. Conducting the project did not require Institutional Review Board (IRB) approval from the participating healthcare organization, as it was deemed a quality improvement activity. Before intervention implementation, the monthly no-show rate data were reviewed for the chosen practice and the provider whose patients were chosen to be called.

The population sample for the project was adults with any type of appointment scheduled with the selected provider within the project timeframe. Inclusion criteria comprised patients 18 or older with a 10-digit telephone number in their electronic medical record (EMR). Exclusion criteria was patients were under 18, were adult patients with guardians, were incarcerated, had a preferred language other than English listed in the EMR, and were unwilling to speak to the caller.

The project occurred over 6 weeks from January 30. 2023 to March 13, 2023. Once the project commenced, the provider's schedule was accessed daily, and appointments scheduled to occur in the next 24 hours were viewed. Appointment types included primary care adult follow-up, primary care telephone visit, primary care adult

acute, primary care adult annual, primary care extended visit, and primary care procedure long. Appointments varied depending on the type, from approximately 20 to 40 minutes.

Adult patients with a 10-digit phone number, preferred language listed as English, and a scheduled appointment within the specified project timeframe received a live telephone appointment reminder 24 hours prior to their appointment. Phone calls were made between the hours of approximately 3:00 pm to 7:00 pm Sunday, Monday, Tuesday, and Thursday, the evening prior to the days the provider was scheduled to see the patients. To complete the intervention of a live telephone appointment reminder call, the caller used the secured phone application, Avaya One-X Communicator, installed on an organization computer. The caller read from a pre-written, pre-approved script, approximately 10 seconds long.

Upon receiving a live answer, the caller first verified the recipient's identity. If the recipient was not the patient and the patient was unavailable, the caller politely disengaged and terminated the call. If the recipient affirmatively answered that they were the intended patient, the caller then introduced themselves, the organization's name, and stated the reason for the call as an appointment reminder. The caller then provided the date, time, location of the patient's scheduled appointment, and the provider the patient would see.

Measures

The caller maintained a live appointment telephone reminder log (see Appendix B) in which patients were de-identified and assigned a number. The caller then indicated if the patient answered the phone, using "y" for "yes" and "n" for "no." If the patient was unavailable to speak with the caller or did not answer the phone, the appointment status

was documented as "not applicable" or "n/a." Additional response options included "confirmed," "cf;" "rescheduled," "re;" and "canceled," "cx." Patient demographics collected from the EMR included gender, age group, and race. Within the gender category, the organization documented males and females. Age groups were divided into years as follows: 18-28, 29-38, 39-48, 49-58., and 59+. Options for race were "American Indian or Alaska Native," "A;" "Asian," S;" "Black or African American," "B;" "Native Hawaiian or Other Pacific Islander," "P:" "White," "W;" "Other," "O;" and "Declined to Answer," "D." After the day in which the appointments occurred, the caller completed the final column of the codebook (see Appendix C), indicating if the patient attended the appointment, using "y" for "yes" and "n" for "no."

The DNP student was responsible for project design, including garnering stakeholder approval to proceed with the Clinical Practice Change Project from the nursing leadership, operational leadership, and practice leadership. Additionally, the DNP student recruited a team of project leaders, including a DNP mentor and team member. This team formed because of their identified credentials as DNP-prepared nurses, prior experience, and affiliation with the organization where the project was implemented. The DNP student developed the standardized script used during the live appointment telephone reminder calls as well as the codebook used to document patient demographics and results. Finally, the DNP student was responsible for obtaining HSRC and IRB approval prior to project implementation.

Analysis

Data collection for this quality improvement project measured the effect of live telephone appointment reminders on the no-show rate of a primary care practice

compared to the current intervention over 6 weeks between January 30, 2023, to March 13, 2023. A data collection tool was designed to log caller information and demographics and identify trends. Nominal data were collected indicating if the patient answered the phone, followed by their appointment status of "confirmed," "rescheduled," or "canceled." Demographic information on gender, race, and age were also collected. The Pearson chi-square test was used as the evaluation method to compare the observed frequencies to the expected frequencies. The Pearson chi-squared results indicated if there was a difference between the primary care practice's current use of appointment reminders and the intervention of live appointment telephone reminders on the no-show attendance rate.

Using the Pearson chi-square test was the most appropriate because the variables measured in the intervention are categorical. Patients attended their appointments, or they did not attend their appointments. There was no ranking or natural order within these groups. The Pearson chi-square test indicated if the results of the intervention were significant by producing a number referred to as the "*p-value*," a number between 0 and 1. The smaller the *p-value*, the more statistically significant the relationships between the pre-intervention and post-intervention no-show rates. The value, indicated by the *p-value*, is important because if there was statistical significance, it indicated that the live telephone appointment reminder calls impacted the no-show rate. Depending on the nature of the impact, this could cause the organization to reexamine its current practice regarding patient appointment reminders. Ultimately, such a clinical practice change could lead to improved patient appointment access and increased preventative care and

screenings for patients. If no statistical significance was indicated, the live telephone appointment reminders did not impact the no-show attendance rate.

Budget

Should a provider implement this Clinical Practice Change Project, budget and sustainability would be an essential consideration, given that the intervention of live telephone calls heavily depends on personnel to call patients. Additionally, staffing was a barrier initially encountered immediately prior to project implementation and would require ongoing evaluation. The budget was based on an office suite with seven exam rooms, one nurse practitioner, one medical assistant, and one registered nurse. There were no capital budget items; however, office expenses included computers, office consumables, utilities, and insurance.

Expenses

Personnel and staffing were the largest expenses considered for this project. The caller for this project was a registered nurse; however, the caller does not have to be a licensed healthcare professional in the future. As a potential cost savings measure, alternate office personnel, such as a medical or office assistant, could call patients to provide appointment reminders if implementing the project. According to the U.S. Bureau of Labor Statistics (2022a), the average hourly wage for a medical assistant was $17.88. Additionally, the average hourly wages for a registered nurse and nurse practitioner were considered as this project was based on a nurse practitioner's schedule. The wages according to the U.S. Bureau of Labor Statistics were $37.32 and $59.52, respectively (2022b; 2022c). Other expenses include an average of approximately $1,000 per year allocated to the cost of computers and approximately $636 for office

consumables or supplies (Bean-Mellinger, 2019). Furthermore, insurance was budgeted

for $1,000 per year, and utilities and maintenance of the suite at $2,000 (Palmer, 2020).

Naturally, this depends on whether the organization owns or leases the suite. Income was

calculated based on the organization's most current charges for six different types of

office visits. Income was calculated per office visit based on 1,000 office visits a year or

approximately 83 visits per month by the nurse practitioner.

The current intervention did not pose a cost to the organization. The caller was a

salaried employee who called patients after scheduled business hours. Additionally, a

company laptop already in service was used. The organization already used the

computer-based calling application the caller used to reach patients and did not incur

additional costs. If a provider implements the project in the future, the cost of personnel

and a laptop, as described above, would require consideration.

Ethical Considerations

During the project intervention planning phase and prior to project

implementation, Wilmington University as well as the organization and practice in which

the project occurred approved the project. A certificate of completion from the

Collaborative Institutional Training Initiative (CITI) in Human Subjects Research was

provided on July 10, 2022 (see Appendix D and Appendix E). The clinical lead and

practice manager of the primary care practice provided signed permission on October 14,

2022 (see Appendix F), followed by permission from the organization's Institutional

Review Board (IRB) on November 4, 2022 (see Appendix G). The project was

determined to be a quality improvement activity, not requiring IRB approval. Final

permission was received by Wilmington University HSRC on November 21, 2022 (see

Appendix H and Appendix I). The quality improvement project recognized the

importance of protecting the patients' Personal Health Information (PHI) and remaining

compliant with the Health Portability Act (HIPPA). Patient information was de-identified

and logged into a data collection tool in Excel.

<div align="center">**Chapter Summary**</div>

Chapter Three reviews the setting where the intervention occurred and discusses

the barriers and facilitators encountered and the relevant stakeholders. Additionally, the

project intervention and study of the intervention are reviewed in detail. The IRB process

of approval is also included. In the next chapter, the sample characteristics and results of

the intervention will be discussed.

CHAPTER FOUR

RESULTS

Sample Characteristics

This Clinical Practice Change Project took place over 6 weeks. The patient profile

for the project sample included adults 18 years or older with a 10-digit telephone number

listed in the EMR and a scheduled appointment with the identified nurse practitioner at

the selected primary care practice. A total of 259 patients meeting these criteria were

called. Ten appointments were disqualified due to the primary care practice unexpectedly

canceling appointments due to the provider's unavailability. Patients with these

appointments were rescheduled by the office for a later date with their provider or

received an appointment time with a different provider. As a result of the office initiating

the appointment cancelations, there was no method to measure if the patients would have

attended their scheduled appointment as planned or if they would have been a no-show.

Of the 10 appointment cancelations initiated by the office, 30% (3) did not answer the

phone when called for the intervention 24 hours prior, 30% (3) requested to reschedule,

and 40% (4) confirmed their appointment. Excluding these 10 patients, the total sample

size was 249 patients. Of the total 249 patients called, 45.8% ($n = 114$) did not answer the

phone, 49.4% ($n = 123$) answered the phone and confirmed they intended to attend their

appointment, 3.2% ($n = 8$) requested to be rescheduled, and 1.6% ($n = 4$) canceled (see

Table 1).

Various demographic information was collected and evaluated, including patient

gender, age, and race, retrieved from the EMR. Patients were called 24 hours prior to

their appointments on the days that the nurse practitioner had scheduled patient

31

appointments. Demographic data, if the patient answered the phone, and appointment status were collected in tandem with calling. Follow-up data, including if the patient attended their appointment or was a no-show, was collected at the end of the business day during which the appointments were scheduled. Data were collected and tracked over 6 weeks.

The demographics of gender, age, and race were calculated using frequency and percentage. The total population ($n = 249$) was primarily composed of female (F) patients ($n = 181$, 72.7%). Males (M) accounted for less than half of the patient profile ($n = 68$, 27.3%; see Table 3). Patients were divided by the age categories of 18-28 ($n = 30$, 12.0%), 29-38 ($n = 55$, 22.1%), 39-48 ($n = 34$, 13.7%), 49-58 ($n = 44$, 17.7%), and 59+ ($n = 86$, 34.5%; see Table 4). The greatest cohort of patients was in the 59+ category. Racially, the patient profile was composed of Black or African American (B; $n = 157$, 63.0%), White (W; $n = 84$, 33.7%), Other (O; $n = 7$, 2.8%), and Pacific Islander/Hawaiian (P; $n = 1$, 2.5%; see Table 5).

Results

Although 259 patients were called over the 6-week course of the Clinical Practice Change Project, 10 patients were excluded due to unforeseen appointment cancelation by the practice. As a result, the final sample size was 249 patients. The focus of this project was to answer the PICOT question: In a primary care practice, how do live telephone appointment reminders compared to current practice affect no-show rates over a 6-week period? During the course of the project, patients scheduled with a pre-determined nurse practitioner in a selected primary care practice received a live telephone call reminding them of their appointment 24 hours prior to the scheduled appointment.

The impact of the intervention on the no-show rate in this primary care practice for this specific nurse practitioner was calculated using a Pearson chi-square analysis of whether patients answered the phone and attended or were a no-show to their scheduled appointment. Significance was set at $p = 0.05$. Of the total sample of patients ($n = 249$), 53.8% ($n = 134$) answered the phone. Subsequently, 60.8% ($n = 115$) of patients who answered the phone and received the live telephone appointment reminder attended their appointment. In contrast, 31.7% ($n = 19$) of patients who answered the phone did not attend their scheduled appointment. Among patients who did not answer the phone, 46.2% ($n = 15$) and only 39.2% ($n = 74$) attended their appointment (see Table 1 and Figure 1).

Table 1

Patient Telephone Answer & Appointment Attendance

| | | | Attended Appointment | | | | |
			Yes	No	Total	χ^2	p
Patient Answered	Yes	Count (n)	115	19	134		
Telephone		% Attended	60.8	31.7	53.8	15.602[a]	.000*
	No	Count (n)	74	61	115		
		% Attended	39.2	68.3	46.2		
	Total	Count (n)	189	60	249		
		% Attended	100.0	100.0	100.0		

*Note: *Level of significance p <.05.*

The majority of patients who did not answer the phone, 68.3% ($n = 41$), did not attend their appointment (as shown in Table 1). A comparison was run to determine if the live telephone appointment reminder call impacted patients' appointment attendance. The Pearson chi-square analysis results indicate a significant correlation between the patients who answered the phone for the live telephone appointment reminder and who attended their appointment with $p = .000$.

Figure 1

Patient Telephone Answer and Appointment Attendance
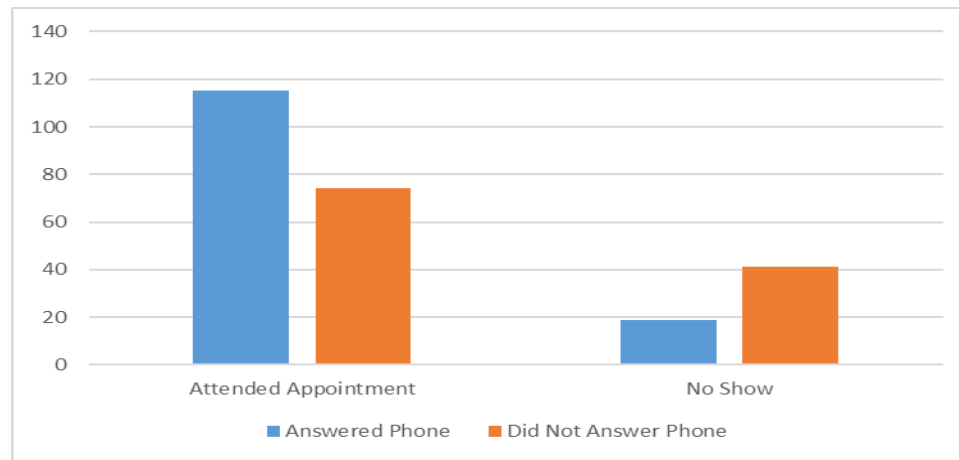
Three options were documented out of 134 patients who answered the phone, having received the live telephone appointment reminder. The patients confirmed their intention to attend the appointment, requested to reschedule the appointment, or canceled the appointment with no intention of rescheduling. Most of the people who confirmed their appointment, 59.3% ($n = 112$), attended their appointment. Those who answered the phone and confirmed their appointment yet were no-shows accounted for 18.3% ($n = 11$; see Table 2).

Of the 3.2% ($n = 8$) patients who requested to reschedule their appointments, 1.6% ($n = 3$), actually attended. The remaining 8.3% ($n = 5$) did not show up for their appointments. Finally, 1.6% ($n = 4$) of all patients called requested to cancel their appointments completely and did not want a return call from the primary care office to reschedule the appointments (see Table 2). These patients were thanked for their time, and the call was terminated. The patients' reasons for cancelation without rescheduling were not collected.

Category data counts were required to be at least 5 to run the Pearson chi-square test accurately and reliably. Due to small data counts equaling less than 5 in the categories of patients who requested to reschedule or cancel, an analysis was not performed. The data suggests, however, that patients who answered the phone and confirmed their appointments were more likely (*n* = 112, 59.3%) to attend their scheduled appointments than patients who did not answer the phone but still attended their appointments (*n* = 74, 39.2%; see Table 2).

Table 2

Patient Appointment Status & Appointment Attendance

			Attended Appointment		
			Yes	No	Total
Patient Appointment Status	No Answer	Count (n)	74	40	114
		% Attended	39.2	66.7	45.8
	Confirmed	Count (n)	112	11	123
		% Attended	59.3	18.3	49.4
	Rescheduled	Count (n)	3	5	8
		% Attended	1.6	8.3	3.2
	Canceled	Count (n)	0	4	4
		% Attended	0.0	6.7	1.6
	Total	Count (n)	189	60	249
		% Attended	100.0	100.0	100.0

Additional analyses were conducted to determine the impact patient demographics had on patient appointment attendance. The three demographics measured were gender, age, and race. The majority, 72.7% (*n* = 181) of the total patients called (*n* = 249), were female (F). Including both genders who attended their appointments (*n* = 189), 72.5% (*n* = 137) were female (see Table 3). Using the Pearson chi-square test and a significance of *p* = .05, there was no relationship between gender and appointment attendance (*p* = .898).

Table 3

Appointment Attendance by Gender

			Attended Appointment		
			Yes	No	Total
Gender	Female	Count (n)	137	44	181
		% Attended	72.5	73.3	72.7
	Male	Count (n)	52	16	68
		% Attended	27.5	26.7	27.3
	Total	Count (n)	189	60	249
		% Attended	100.0	100.0	100.0

For the demographic age, patients were divided into five groups: 18–28, 29–38, 39–48, 49-58, and patients over the age of and including 59. Approximately one-third, 34.5% (n = 86), of patients called were 59 years or older. Of those 86 patients, approximately one-third, 33.9% (n = 64), attended their appointments (see Table 4). When calculated using the Pearson chi-square test, p = .087, the results indicate no significant relationship between the age of the patient and the likelihood they would attend their appointments or be a no-show to their appointments.

Table 4

Appointment Attendance by Age

			Attended Appointment		
			Yes	No	Total
Age	18-28	Count (n)	19	11	30
		% Attended	10.1	18.3	12.0
	29-38	Count (n)	39	16	55
		% Attended	20.6	26.7	22.1
	39-48	Count (n)	28	6	34
		% Attended	14.8	10.0	13.7
	49-58	Count (n)	39	5	44
		% Attended	20.6	8.3	17.7
	59+	Count (n)	64	22	86
		% Attended	33.9	36.7	34.5
	Total	Count (n)	189	60	249
		% Attended	100.0	100.0	100.0

Finally, considering the demographic of race, the majority, 63% (n = 157), of patients called were Black or African American (B), followed by White (W) 33.7% (n =

84), Other (O) 2.8% (n = 7), and Pacific Islander/Hawaiian (P) 2.5% (n = 1). Out of these three groups, 70.1% (n = 110) of Black or African American patients attended their appointments, 71.4% (n = 5) of patients who identified as Other attended their appointments, and 100% (n = 1) of the patient who identified as Pacific Islander/Hawaiian attended their appointment. The group with the greatest compliance of appointment attendance and lowest no-show rate were White (W) patients, with 86.9% (n = 73) appointment attendance and a 13.1% (n = 11) no-show rate. No-show rates for Blacks or African Americans (B) were 29.9% (n = 47), and for Other (O), they were 28.6% (n = 2; see Table 5). The significance of the relationships could not be calculated due to groups within the category not having the threshold necessary to run the Pearson chi-square test. The data, however, suggests a higher show rate with White (W) patients compared to Black or African American (B) and Other (O) patients.

Table 5

Appointment Attendance by Race

| | | | Attended Appointment | | |
			Yes	No	Total
Age	Black	Count (n)	110	47	157
		% Attended	70.1	29.9	100.0
	White	Count (n)	73	11	84
		% Attended	86.9	13.1	100.0
	Other	Count (n)	5	2	7
		% Attended	74.4	28.6	100.0
	Pacific Islander/Hawaiian	Count (n)	1	0	1
		% Attended	100.0	0	100.0
	Total	Count (n)	189	60	249
		% Attended	75.90	24.1	100.0

Figure 2

Appointment Attendance by Race
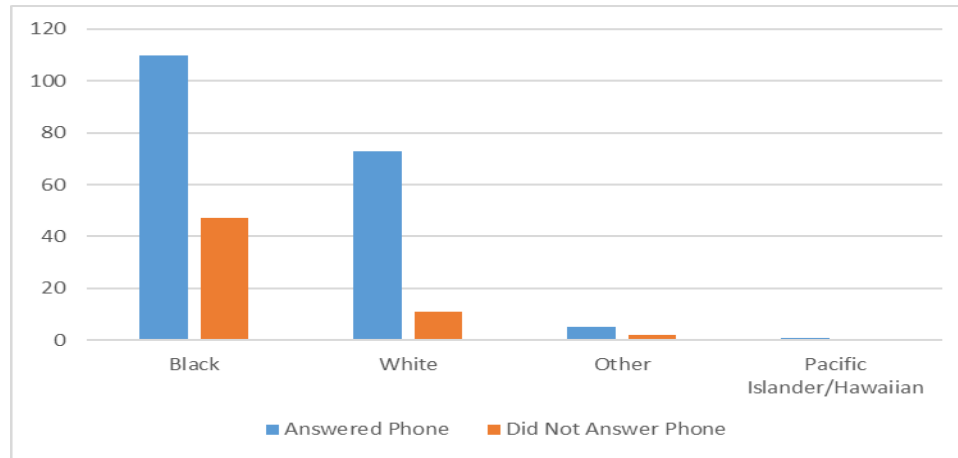
Chapter Summary

The patient profile of the Clinical Practice Change was those who were over the age of 18 years, had a 10-digit telephone number listed in their EMR, and had a scheduled appointment with the identified primary care nurse practitioner. Due to the unexpected practice-initiated cancelation of 10 appointments, the sample size decreased to 249 patients. Data on the patients called were if the patient answered the phone, appointment status, and demographics, including gender, age, and race. The data collected suggests that patients who answered the phone and subsequently confirmed their appointments were likelier to attend their scheduled appointments.

CHAPTER FIVE

DISCUSSION AND IMPLICATIONS

Interpretation

This Clinical Practice Change Project included 249 patients in an adult primary

care practice aged 18 years and older with a 10-digit phone number on record in the EMR

and English listed as a preferred language. Data collected were based on a live telephone

appointment reminder made to the patient 24 hours prior to their scheduled appointment.

Data were collected from the EMR, including gender, race, and age group, regardless of

whether the patient answered the live telephone appointment reminder call.

Out of 189 patients who attended their appointments, 60.8% ($n = 115$) personally

answered the phone. The remainder, 39.2% ($n = 74$), did not answer the phone to receive

the live telephone appointment reminder call; however, these patients did attend their

scheduled appointments. Out of a total of 53.8% ($n = 134$) patients who answered the

phone, the majority, 85.8% ($n = 115$), attended their appointments, and 14.0% ($n = 19$)

did not attend their appointments. Based on their response, the patients who answered the

live telephone appointment reminder call ($n = 115$) were assigned the confirmed,

rescheduled, or canceled appointment status. Approximately 97.4% ($n = 112$) confirmed

their appointment. Therefore, the data suggest that patients who answered live telephone

appointment reminders and confirmed their appointments were more likely to attend their

scheduled appointments than patients who did not answer the phone.

Throughout the intervention of live telephone appointment reminder calls,

patients continued to receive the intervention of SMS appointment reminders already in

place within the organization. This project did not consider if the patients in the sample

received and/or responded to the SMS appointment reminder. The outcome of the live telephone appointment reminder call with patients attending their appointments is consistent with the literature. Multiple studies, including Lance et al. (2021); Adams et al. (2019); Wegrzyniak et al. (2018); Penzias et al. (2019); Lagman et al. (2021); Kumthekar and Johnson (2018); Weaver et al. (2019); Saeed et al. (2018); Nielson et al. (2018); and Kiruparan et al. (2020) agreed on the effectiveness of live telephone appointment reminders impacting appointment attendance rates.

Additionally, the literature supports lower no-show rates among patients who received a live telephone appointment reminder than those who received SMS reminder interventions, no intervention, or a telephone message (Lance et al., 20221; Adams et al., 2019). Another study by Nielson et al. (2018) could not report a difference in appointment attendance based on whether the patient received a live telephone or automated telephone appointment reminder.

Considering the demographic data retrieved from the EMR on the sample of patients called ($n = 249$), 72.7% ($n = 181$) were female, as opposed to 27.3% ($n = 68$) of whom were male. Of patients who attended their appointments, 72.5% ($n = 137$) and 27.5% ($n = 52$) were male. Alternately, of patients who did not attend their scheduled appointments ($n = 60$), 73.3% ($n = 44$) were female, and 26.7% ($n = 16$) were male. Therefore, there was no significant correlation between gender and appointment attendance. This result is consistent with a 2018 literature review by Dantas et al., in which most studies found that gender was not a strong predictor of patient appointment attendance. Additional study findings concluded one gender had a higher no-show rate than the other and vice versa. For example, Shahab and Meili (2019) and Lance et al.

(2021) had a higher demographic of females participating in the studies. Furthermore, Shahab and Meili (2019) found females accounted for a higher no-show rate. Findings from as study by Brewster et al. (2020) showed males were less likely to attend a scheduled appointment. Similar to the gender data, there was no significant relationship between appointment age and appointment attendance.

The average age of participants in the study by Shahab and Meili (2019) was 36.9 years. In the study by Lance et al. (2021), participants were an average age of 50 years. Similarly, the average age of participants in this Clinical Practice Change Project was 49.6 years, with the highest percentage of participants who answered the phone and attended their appointments being over 59 years.

Significance between race and appointment attendance was not calculated due to small sample sizes; however, the data reflects a higher appointment attendance rate among White patients, 86.9% ($n = 73$), than Black or African American patients, 70.1% ($n = 110$). These data align with the literature, which found racial minorities are more at risk, a stronger predictor of no-show behavior (Dantas et al., 2018; Penzias et al., 2019).

The potential impact of this Clinical Practice Change Project in demonstrating the correlation between appointment attendance and patient response to a live telephone appointment reminder is far-reaching. The data suggests that this project had an impact on decreasing the no-show rate of the overall practice and the no-show rate of the nurse practitioner whose patients were called. The overall no-show rates of the practice for the first quarter of the calendar year 2023 were 27.34%, 25.74%, and 29.41%. for January, February, and March, respectively. The overall no-show rate of the practice for April 2023 was 28.51%. The no-show rates of the nurse practitioner for the first quarter of the

calendar year 2023 were 23.16%, 17.22%, and 23.44% for January, February, and March, respectively. The no-show rate of the nurse practitioner for April 2023 was 23.23%. The intervention of providing live telephone appointment reminder calls to patients spanned one full month, February 2023. This timeframe correlates to the lowest no-show rate experienced by both the overall practice and the provider in 2023. Therefore, as evidenced by the data, the intervention's implications for practice are promising and multifaceted. No-show rates impact patients, providers, and entire practices, resulting in broad-reaching workflow inefficiency, decreased staff productivity, wasted resources, and longer wait times (Lance et al., 2021; Wegrzyniak et al., 2018). Furthermore, patients who do not show up for their scheduled appointments experience poorer outcomes, decreased treatment of chronic diseases, and higher mortality (Brown et al., 2020). It can be concluded that by implementing an intervention, such as live telephone appointment reminders, health systems could seize the opportunity to improve patient and employee outcomes.

Limitations

The limitations of this project included its small sample size and short completion timeframe of 6 weeks. Due to the small sample size of patients, the Pearson chi-square test could not be run to determine the significance of appointment status and race. If the sample size had been larger by calling patients of multiple providers or if the intervention time had been longer, significance might have been correlated.

An additional concern and limitation identified is the concern of staffing. Considering the large volume of patients seen in this one practice and the consistent staffing challenges experienced, there is no consistency of staff needed to make daily

phone calls to remind patients of their scheduled appointments and take the necessary administrative steps to reschedule or cancel an appointment.

Implications for Advanced Nursing Practice

The Clinical Practice Change Project has multiple implications for advanced nursing practice. The first opportunity is creating and increasing access to patient appointments within primary care and other practices. When patients do not attend their appointments or have longer wait times to schedule an appointment, healthcare providers cannot initiate preventative protocols (Lance et al., 2021). As a result, patients experience uncontrolled chronic diseases, leading to a more acutely ill population. When patients are seen in a timely manner and preventative screening measures can be applied, the advanced practice nurse then has the opportunity to develop a partnership and forge a therapeutic relationship with the patient, facilitating improved patient care and outcomes due to having the opportunity to educate and guide individuals and groups (AACN, 2006).

Plan for Sustainability

Budget considerations and staffing are the two largest barriers to project sustainability. Considering this, the plan for project sustainability is to start at the individual practice level with a defined workflow, training module, and script for designated staff to use. Considering the deficit of human resources within many practices, it is recommended to expand the responsibility of calling patients beyond the scope of the nurse to an interdisciplinary team composed of clinical and operational staff. Leadership could consider live telephone appointment reminder calls to patients at higher risk of displaying no-show behavior to impact patient access while being mindful of financial

and staffing constraints more effectively, such as those who have previously not shown up for appointments (Dantas et al., 2018). Both clinical and operational leadership should then meet monthly to review the financial and accessibility impact of the intervention.

Application of the AACN DNP Essentials

According to the American Association of Colleges of Nursing (AACN), eight DNP Essentials must be met in the DNP Curriculum to prepare nurses to practice and contribute to the profession at the doctorate level. Throughout this project, each of the eight DNP Essentials was satisfied.

DNP Essential I: Scientific Underpinnings for Practice

Serving as the foundation for the project, the first DNP Essential calls for the DNP-prepared nurse to use science-based theories to examine healthcare delivery and take action to identify and improve areas of opportunity, considering and integrating background from a broad spectrum of knowledge. Identifying no-show patients as a global issue spanning continents and cultures was the first step in aligning the project with this DNP Essential (Dantas et al., 2018). Next, the significance of the problem within the organization was determined. The significance was identified by examining dashboards, analyzing reports, and speaking to operational and clinical leaders while considering current and evolving interventions, such as SMS reminders. The subsequent literature search and use of Pender's HPM as a theoretical framework shaped the foundation of the intervention and project.

DNP Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement and Transformation of Health Care

The fourth DNP Essential surrounding technology was heavily integrated into the project. The intervention of making live telephone calls to patients and collecting their corresponding demographic information required using the EMR and a computer-based telephone application. In addition to referring to the EMR for patient demographic information, including gender, age, and race, the EMR was also used to view the nurse practitioner's schedule, determine the patients' identities, view the patients' telephone numbers and preferred languages, and ensure inclusion criteria was met. Choosing a mobile, cost-effective, computer-based application currently available within the healthcare system was integral to project implementation, allowing for patient phone calls to be made securely from different locations while identifying the healthcare organization's name to the patient receiving the call. Together, these two systems demonstrate using technical skills to gather and use the necessary data to implement the project and evaluate and monitor outcomes.

DNP Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

Also integral to the implementation of the project was the application of DNP Essential VI. Clinical and operational teamwork across the health system occurred to determine the complexity and extent of no-show rates as a challenge across ambulatory and primary care practices. Furthermore, without comprehensive dashboards, extensive collaboration and effective communication were required to accurately identify a primary care practice aligned with national data benchmarks. Finally, additional communication

was required and used to ensure patients who requested to be rescheduled and/or canceled were communicated to practice leadership promptly. Increased communication would allow the patient to be removed from the schedule and prevent them from being documented as a no-show patient. It also allowed additional patients to be added to the schedule, creating better access to care.

<div align="center">**Application of the AONL Nurse Executive Competencies**</div>

According to the American Organization for Nursing Leadership (AONL, 2015), the five nurse executive competencies are useful in providing knowledge and guidance to nurse leaders and apply to improving the patient care experience.

AONL Competencies: Communication and Relationship Building

The first AONL Competency was integral to project conception, planning, and integration. Effective communication and relationship management were required to establish collaborative relationships and create and sustain an environment of trust. The nurse practitioner's schedule had to be made available to the caller to execute the project successfully. This meant another party, now representing the practice, was introduced into the provider-practice-patient relationship triad. Therefore, group discussions and written materials needed to occur for concerns and decisions to be consistently communicated.

AONL Competencies: Knowledge of the Healthcare Environment

Additionally, the second competency was met. Knowledge of the current practice of reminding patients of appointments was required to effectively implement the project, as well as the roles of various practice staff in checking in and documenting patient arrival or no-show to an appointment. Understanding current practices and setting

realistic expectations from knowledge of known barriers was important in developing the proposed new appointment reminder delivery model. Furthermore, adherence to ensuring the patients' human subjects' rights and safety during project implementation was paramount.

Conclusion

No-show appointments have a far-reaching impact at the local and global practice levels. This lack of notice to the practice of a patient's intention to not attend an appointment can profoundly affect the patient, resulting in poorer health outcomes, decreased chronic disease treatment, and even higher mortality (Brown et al., 2020). At the practice level, staff experience decreased productivity and wasted resources, including staff time, electricity, and unused supplies and equipment (Lance et al., 2021; Stormon et al., 2021). Ultimately, inefficiency within the practice occurs, resulting in overbooking, longer wait times, and patient dissatisfaction (Wegrzyniak et al., 2018). Suggested next steps include forming an interdisciplinary team to examine the potential of long-term project implementation within one primary care practice. The purpose of the multidisciplinary team would be to continue to monitor the effectiveness and return on investment of the intervention, both financially and through patient access.

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Appendix A

Search Strategy Schematic

EBP question: How do we decrease no-show appointments in ambulatory care?

Keywords: primary care, live telephone reminders, no show rates

Secondary search terms: appointment reminders, ambulatory care, telephone reminders, outpatient, no show appointments, nonattendance, missed appointments

Years: 2017-2022   Limiters: English, peer reviewed, full text

IDENTIFICATION

Records identified through database search:

Medline (n= 3)   PubMed (n= 62)   CINAHL Complete (n= 1) Ebsco Host (n=50) Academic Search Premier (n=0) Cochrane Methodology Register (n=0)

n = 116

Additional records identified through other sources

(n=24)

Records excluded

Reasons: Inpatient, transportation availability, telemedicine, outpatient surgery, vaccine compliance, transition of care follow-up compliance, medication management, disease screening compliance

(n=74)

SCREENING

Total Records Screened (n = 134)

Duplicate Records (n = 5)

Records remaining after de-duplication

(n=135)

ELIGIBILITY

Full-text articles assessed for eligibility

(n=61)

Full-text articles excluded for reasons:

HIV treatment compliance (3), preventative health checks (5), contact tracing (5), alcoholic patients (2), insufficient data (2), behavioral economics (4), predictive behavioral models (5), dissimilar populations (6)

(n= 32)

INCLUDED

Studies summarized in tables:

Studies summarized in tables:

Primary source (n=_26__)

Summary source (n=_3__)

(n= _29__)

Live Telephone Appointment Reminder Log

Live Telephone Appointment Reminder Log
Date: 1/30/2023 - 3/13/2023

Patient ID #	Patient Answered	Appointment Status	Patient Demographics			Attended Appointment
			Gender	Age	Race	
1	n	n/a	F	48	B	y
2	y	cf	F	39	B	y
3	n	n/a	F	57	W	y
4	n	n/a	M	44	W	y
5	n	n/a	F	55	W	n
6	y	cf	F	66	W	y
7	n	n/a	M	68	B	n
8	n	n/a	M	35	B	y
9	y	re	F	25	B	n
10	y	cf	F	31	B	y
11	y	re	M	25	B	y
12	y	cf	M	37	B	y
13	n	n/a	F	29	W	y
14	n	n/a	F	77	B	n
15	y	cf	M	33	O	y
16	y	cf	F	65	B	y
17	y	cf	F	73	B	y
18	n	n/a	F	32	B	y
19	n	n/a	F	20	W	y
20	y	cf	F	32	B	y
21	n	n/a	M	56	B	y
22	y	cf	M	89	B	y
23	n	n/a	M	78	B	y
24	n	n/a	F	42	B	y
25	n	n/a	F	46	O	n
26	y	cf	F	18	B	y
27	y	cf	M	20	O	n
28	y	re	F	45	B	y
29	y	cf	F	59	B	y
30	y	cf	M	57	W	y
31	y	cf	M	55	W	y
32	n	n/a	F	57	W	y
33	y	cf	F	60	B	y
34	n	n/a	F	76	B	y
35	y	cf	F	53	B	y
36	n	n/a	F	19	B	n
37	n	n/a	F	36	W	y
38	y	cf	F	32	W	y
39	n	n/a	F	60	B	y
40	y	cf	M	81	B	y
41	n	n/a	F	31	W	y
42	y	cf	M	70	W	y

43	y	cf	F	60	W	y
44	y	cf	F	53	B	y
45	n	n/a	F	64	B	n
46	y	cf	F	32	W	y
47	y	cf	F	69	B	y
48	n	n/a	F	58	B	y
49	y	cf	F	21	B	y
50	n	n/a	F	37	B	y
51	y	cf	F	68	B	y
52	n	n/a	F	52	B	y
53	n	n/a	F	37	B	n
54	y	cf	F	68	W	y
55	y	cf	M	55	W	y
56	y	cf	F	43	W	y
57	n	n/a	M	67	B	y
58	y	cx	F	36	B	n
59	y	cf	F	62	B	y
60	y	cf	M	39	W	y
61	y	cf	M	36	W	y
62	y	re	F	88	B	n
63	y	cf	F	27	B	y
64	y	cf	F	79	B	y
65	n	n/a	M	66	W	y
66	y	cf	F	35	W	y
67	n	n/a	F	69	B	n
68	y	cf	F	87	O	y
69	n	n/a	M	60	B	y
70	y	cf	F	40	B	y
71	y	cf	F	56	B	y
72	n	n/a	M	42	W	y
73	n	n/a	M	30	W	n
74	y	cf	M	66	W	y
75	y	cf	M	60	B	y
76	y	cf	F	75	B	y
77	y	cf	F	82	W	y
78	n	n/a	M	45	W	n
79	y	re	F	67	B	n
80	n	n/a	F	68	W	y
81	y	cf	M	37	B	y
82	n	n/a	F	59	B	y
83	n	n/a	F	44	B	n
84	y	cf	F	53	B	y
85	y	n/a	F	76	B	y
86	y	cf	M	45	W	y
87	n	n/a	M	67	O	y
88	n	n/a	M	34	B	n
89	y	cf	F	51	B	y

90	y	cf	F	84	W	y
91	n	n/a	F	33	W	n
92	n	n/a	F	33	B	y
93	n	n/a	M	33	W	y
94	y	cf	F	25	W	y
95	y	cf	F	47	B	y
96	y	cf	F	53	B	y
97	y	cf	M	44	W	y
98	y	cf	F	55	B	y
99	n	n/a	F	56	B	y
100	n	n/a	F	27	W	y
101	y	cf	F	36	W	y
102	y	cf	F	53	B	y
103	y	cf	F	46	B	n
104	n	n/a	M	51	W	n
105	y	cf	F	56	B	y
106	n	n/a	F	34	B	n
107	Y	cf	F	53	W	y
108	y	cf	M	67	W	n
109	n	n/a	M	57	W	y
110	y	cf	F	41	B	y
111	n	n/a	M	51	B	y
112	y	cf	F	84	B	y
113	n	n/a	F	18	B	n
114	n	n/a	F	26	W	appts. Canceled
115	y	re	F	55	W	appts. Canceled
116	y	re	F	37	B	appts. Canceled
117	y	cf	F	68	W	appts. Canceled
118	n	n/a	F	77	B	appts. Canceled
119	y	re	F	64	B	appts. Canceled
120	y	cf	F	39	B	appts. Canceled
121	y	cf	F	23	B	appts. Canceled
122	y	cf	F	59	B	appts. Canceled
123	n	n/a	M	48	B	appts. Canceled
124	n	n/a	M	35	W	y
125	y	cf	M	55	B	y
126	y	cf	M	34	B	n
127	y	cf	F	53	B	y
128	y	cf	F	66	B	y
129	y	cf	F	60	O	y
130	y	cf	M	56	W	y
131	y	cf	F	30	W	y
132	y	cf	M	36	B	n
133	n	n/a	F	62	W	y
134	n	n/a	F	67	B	y
135	y	cf	F	33	B	y
136	n	n/a	M	56	B	n

137	y	cf	M	74	W	y
138	n	n/a	M	44	B	y
139	y	cf	M	61	B	y
140	y	cf	F	26	B	n
141	y	cf	F	39	W	y
142	y	cf	F	33	W	y
143	y	cf	F	38	B	y
144	y	cf	F	31	B	y
145	n	re	F	40	W	y
146	y	cf	M	62	W	y
147	y	cf	F	72	B	y
148	n	n/a	F	64	B	n
149	y	cf	F	27	B	y
150	y	cf	F	23	B	y
151	n	n/a	F	70	B	y
152	y	cf	F	36	B	y
153	y	cf	F	69	W	y
154	n	n/a	F	59	W	n
155	n	n/a	F	25	B	n
156	n	n/a	F	37	B	y
157	n	n/a	F	33	W	y
158	y	cf	F	25	B	y
159	y	cf	F	53	B	y
160	n	n/a	F	37	W	n
161	y	re	F	65	B	n
162	n	n/a	F	71	B	n
163	y	cf	F	41	B	y
164	y	cf	F	40	B	y
165	y	cf	F	36	W	y
166	y	cf	F	57	B	y
167	n	cx	M	62	B	n
168	y	cf	F	42	B	y
169	y	cf	F	35	B	y
170	y	cf	F	18	B	y
171	n	n/a	F	81	B	y
172	y	cf	F	84	B	y
173	n	n/a	F	25	W	y
174	y	cf	F	22	B	n
175	y	cf	M	70	W	y
176	n	n/a	F	48	B	n
177	n	n/a	M	33	B	n
178	y	cx	F	62	B	n
179	n	n/a	F	54	W	y
180	n	n/a	F	65	B	n
181	n	n/a	F	65	B	n
182	n	n/a	F	30	B	n
183	y	cf	F	62	B	y

184	y	cf	F	24	B	n	
185	n	n/a	M	62	W	y	
186	n	n/a	F	78	B	y	
187	n	n/a	F	32	W	y	
188	n	n/a	M	78	B	n	
189	n	n/a	M	57	W	y	
190	y	cf	F	46	B	y	
191	y	cf	M	81	B	y	
192	y	cf	M	51	B	y	
193	n	n/a	F	26	W	y	
194	y	cf	F	29	W	y	
195	n	n/a	F	57	B	y	
196	n	n/a	F	27	B	y	
197	n	n/a	F	68	W	y	
198	y	cf	F	26	W	y	
199	y	cf	M	43	B	y	
200	y	cf	F	52	B	y	
201	y	cf	F	47	O	y	
202	n	n/a	F	56	P	y	
203	n	n/a	F	52	B	n	
204	n	n/a	M	39	W	y	
205	y	cf	F	34	B	y	
206	n	n/a	M	40	W	y	
207	n	n/a	F	54	B	y	
208	n	n/a	M	52	B	y	
209	n	n/a	F	24	W	y	
210	y	cf	F	37	B	n	
211	n	n/a	M	31	B	n	
212	y	cf	F	27	B	y	
213	n	n/a	F	65	W	n	
214	n	n/a	F	29	W	y	
215	y	cf	F	63	B	y	
216	n	n/a	F	58	B	n	
217	n	n/a	F	59	B	y	
218	y	cf	F	52	B	y	
219	y	re	F	35	B	n	
220	y	cf	M	70	W	y	
221	n	n/a	F	19	W	y	
222	y	cf	F	49	B	y	
223	n	n/a	F	57	B	y	
224	y	cf	F	55	B	y	
225	y	cf	F	41	B	y	
226	n	n/a	F	64	B	y	
227	n	n/a	F	82	B	y	
228	y	cf	F	42	B	y	
229	n	n/a	F	60	B	n	
230	n	n/a	F	33	B	y	

231	n	n/a	M	56	W	y
232	n	n/a	M	64	W	y
233	n	n/a	F	18	B	n
234	n	n/a	F	52	W	y
235	n	n/a	F	32	W	y
236	y	cf	M	32	W	y
237	n	n/a	F	69	B	n
238	n	n/a	F	65	B	n
239	n	n/a	M	62	B	y
240	n	n/a	F	66	B	y
241	y	cf	F	46	B	n
242	n	n/a	F	32	W	y
243	y	cf	F	71	B	y
244	m	n/a	F	36	B	n
245	n	n/a	F	60	B	y
246	y	re	M	70	W	n
247	y	cf	F	71	B	y
248	y	cf	M	59	B	y
249	n	n/a	M	38	B	n
250	y	cf	F	57	W	y
251	y	cf	M	64	W	y
252	y	cf	F	23	B	n
253	n	n/a	F	61	B	y
254	n	n/a	F	67	W	n
255	n	n/a	F	22	B	n
256	y	cf	F	37	B	y
257	n	n/a	M	33	W	y
258	n	n/a	F	62	W	y
259	y	cf	F	28	W	y

Code Book

Variable	Response	Code	Type
Patient ID #			Nominal
Patient Answered	Assigned Number		Nominal
yes	y	1	
no	n	2	
Appointment Status			Nominal
Confirmed	CF	1	
Cancelled	CX	2	
Rescheduled	RE	3	
Patient Demographics			
Gender			Nominal
Male	M	1	
Female	F	2	
Other	O	3	
Age Group (yrs.)			Nominal
18-28		1	
29-38		2	
39-48		3	
49-58		4	
59+		5	
Race			Nominal
American Indian or Alaska Native	A	1	
Asian	S	2	
Black or Aftrican American	B	3	
Native Hawaiian or Other Pacific Islander	P	4	
White	W	5	
Other	O	6	
Declined to Answer	D	7	
Attended Appointment			Nominal
yes	y	1	
no	n	2	

Appendix D

CITI Program Completion

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)
COMPLETION REPORT - PART 2 OF 2
COURSEWORK TRANSCRIPT**

** NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Tara Woodside (ID: 11319733)
- **Institution Affiliation:** Wilmington University (ID: 5867)
- **Institution Email:** twoodside0311@my.wilmu.edu
- **Institution Unit:** Nursing

- **Curriculum Group:** Human Subjects Research
- **Course Learner Group:** HSRC Members - Human Subjects Research
- **Stage:** Stage 1 - Basic

- **Record ID:** 50059234
- **Report Date:** 10-Jul-2022
- **Current Score**:** 100

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT	SCORE
Defining Research with Human Subjects - SBE (ID: 491)	10-Jul-2022	5/5 (100%)
The Federal Regulations - SBE (ID: 502)	10-Jul-2022	5/5 (100%)
Assessing Risk - SBE (ID: 503)	10-Jul-2022	5/5 (100%)
Informed Consent - SBE (ID: 504)	10-Jul-2022	5/5 (100%)
Privacy and Confidentiality - SBE (ID: 505)	10-Jul-2022	5/5 (100%)
Internet-Based Research - SBE (ID: 510)	10-Jul-2022	5/5 (100%)
History and Ethical Principles - SBE (ID: 490)	09-Jul-2022	5/5 (100%)
Conflicts of Interest in Human Subjects Research (ID: 17464)	10-Jul-2022	5/5 (100%)
The IRB Member Module - What Every New IRB Member Needs to Know (ID: 816)	10-Jul-2022	5/5 (100%)

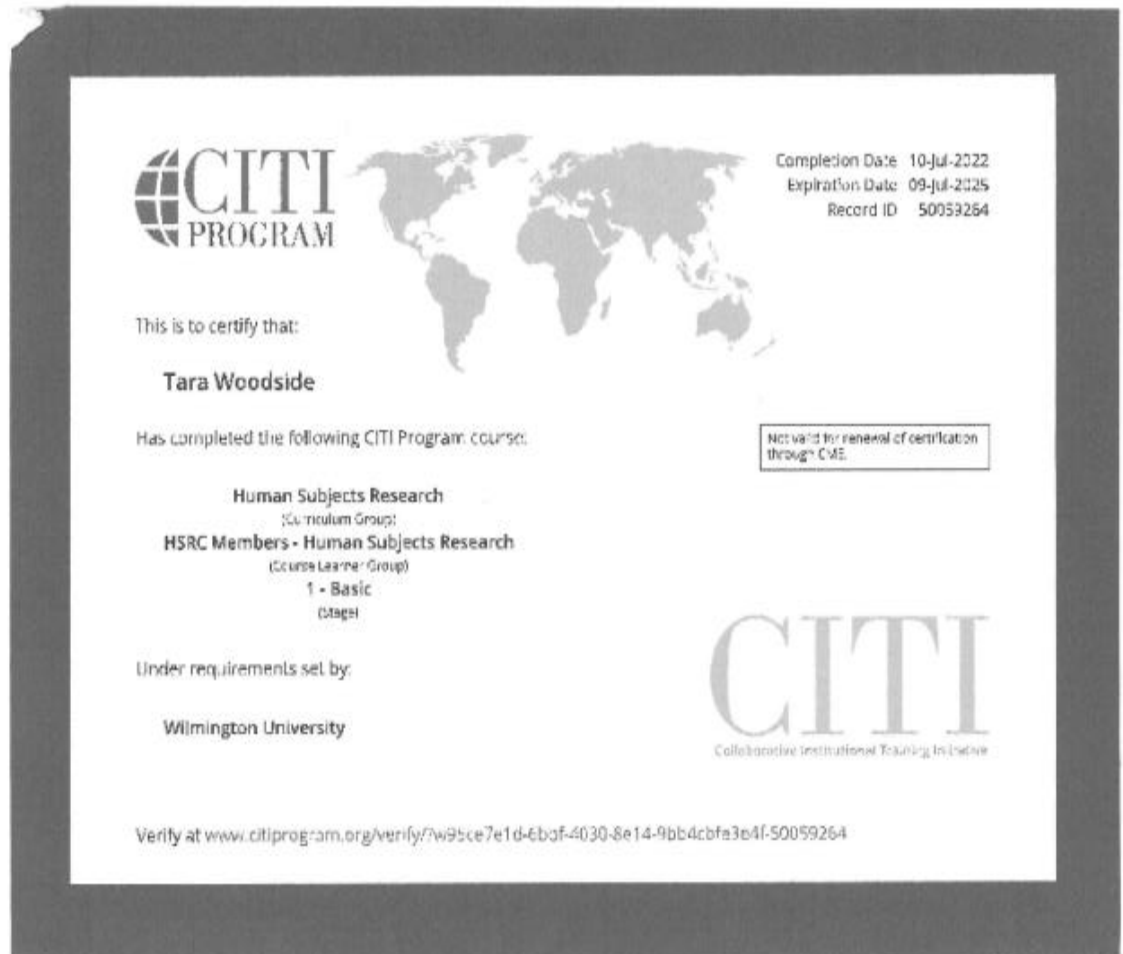For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

Verify at: www.citiprogram.org/verify/?kc31122041-5611-4123-9b68-a77d1bdecc13-50059264

Collaborative Institutional Training Initiative (CITI Program)
Email: support@citiprogram.org
Phone: 888-529-5929
Web: https://www.citiprogram.org

Appendix E

CITI Program Certificate

Completion Date 10-Jul-2022
Expiration Date 09-Jul-2025
Record ID 50059264

This is to certify that:

Tara Woodside

Has completed the following CITI Program course:

Not valid for renewal of certification through CME.

Human Subjects Research
(Curriculum Group)
HSRC Members - Human Subjects Research
(Course Learner Group)
1 - Basic
(Stage)

Under requirements set by:

Wilmington University

Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w95ce7e1d-6b3f-4030-8e14-9bb4cbfa3e4f-50059264

Appendix F

Practice Permission

October 7th, 2022

Tara L. Woodside, MSN, RN has permission to complete her DNP project titled, "Development and Implementation of a Nurse Leader Driven Telephone Reminder Protocol" at Wilmington Adult Medicine.

Steven Rybicki, MD   10/14/22

Dr. Steven Hughes Rybicki, MD   Date

Jonah Kauffman-Epstein, M.S.

                                10/11/22

Jonah Kauffman-Epstein, M.S., BSL   Date

Firstname Lastname
CREDENTIALS
Title

email@christianacare.org
P 302-123-4567
C 302-123-4567
F 302-123-4567

Street Address | Street Address 2 | City, State Zip

65

Appendix G

Organization IRB

ChristianaCare

November 4, 2022

To: Tara Woodside, MSN, RN, CALA, CDP
        Patient Safety & Accreditation Manager
        The Medical Group of ChristianaCare

Re: Development and Implementation of a Nurse Leader Driven Telephone
        Appointment Reminder Protocol in a Primary Care Practice

Dear Tara,

We have reviewed the information you submitted to the IRB Office regarding the above referenced project.

Based on the information you provided, the research project as submitted on November 1, 2022, is a quality improvement activity that does not meet the federal definition of research in accordance with 45 CFR 46.102(l) and therefore does not require review by the ChristianaCare Institutional Review Board (IRB).

In the future, if changes are made to the above referenced project, please notify the IRB immediately so a determination can be made if IRB review is necessary at that time.

If you have any questions, please call the IRB Office at 302-623-4983 or email IRBOffice@christianacare.org

Sincerely,

Heidi Derr, BA, CIP
Research Compliance Administrator
ChristianaCare Institutional Review Board
Helen F. Graham Cancer Center & Research Institute

ChristianaCare Institutional Review Board
Helen F. Graham Cancer Center & Research Institute
4701 Ogletown-Stanton Road
West Pavilion Suite 2350
Newark, DE 19713

Appendix H

HSRC Letter

WILMINGTON
UNIVERSITY

November 21, 2022

Tara Woodside

Dear Tara,

Wilmington University's Human Subjects Review Committee (HSRC) is pleased to inform you that your Doctor of Nursing Practice project proposal *Development and Implementation of a Nurse Leader Driven Telephone Appointment Reminder Protocol in a Primary Care Practice* was reviewed on *November 18, 2022*. The project was categorized as **Exempt** and meeting the requirements of a quality improvement intervention. Your signed HSRC form is attached.

Now that your DNP project has been approved by the HSRC, there are multiple elements with which you must comply. Wilmington University adheres strictly to these regulations:

1. You must conduct your DNP project <u>exactly as it was approved</u> by the HSRC.
2. Any <u>additions or changes</u> in procedures must be approved by the HSRC before they are implemented.
3. You must notify the HSRC promptly of <u>any</u> events that affect the safety or well-being of subjects.
4. You must notify the HSRC promptly of any modifications to your DNP project or other responses that are necessitated by any events reported in items 2 or 3.
5. Your approval is provisional if you require Institutional Review Board approval from your organization. Once organizational approval has been obtained, please submit your signed approval and completed IRB application to DNP Administrative Assistant via email.

The HSRC may review or audit your project at random or for cause. In accordance with Wilmington University policy, the HSRC may suspend or terminate your DNP project if your project has not been conducted as approved and/or if other difficulties are detected.

While not under the purview of the HSRC, DNP students are responsible for adhering to US copyright law when using existing scales, survey items, and other works in the conduct of research/DNP projects.

In conclusion, you have developed an interesting evidence-based practice project aligned with the AACN DNP Essentials (2006). This is an important project for healthcare practices now and in the future. Best wishes for continued success.

Sincerely,

Melody D Randle

Melody Randle, DNP, NP-C, RN, CNE
HSRC Committee Representative
Assistant Professor, FNP Program
College of Health Professions and
Natural Sciences

Kathryn Leach

Kathryn Leach, DNP, CPNP-BC
Chair, DNP Program
College of Health Professions and Natural Sciences

COLLEGE OF HEALTH PROFESSIONS AND NATURAL SCIENCES
320 N DuPont Hwy, New Castle, Delaware 19720

Appendix Il

HSRC

WILMINGTON UNIVERSITY
HUMAN SUBJECTS REVIEW COMMITTEE (HSRC)   HSRC-1

RECORD AND REVIEW OF DOCTOR OF NURSING PRACTICE (DNP) PROJECT

Student: _____ Woodside _____ Tara _____ L._____
                        (Last)   (First)   (Middle Initial)

Student ID: W 00331455 _____

DNP Project Chair: Dr. Joanne Fletcher _____

Academic Level

☒ 1. DNP Project

Forms Check List

☒ 1. DNP Project Protocol

☒ 2. CITI Training Certificate*

* Check with the DNP Program Chair for training requirements
* Training certificate cannot be older than 3 years

☐ 3. Instrument(s) *(as needed)*

☒ 4. Other   Script for telephone reminder calls; approval letter from practice

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This section is to be completed by the HSR Committee

Archive Number:	Click here to enter text.
DNP Category:	Choose an item.
Final Approval Date:	Click here to enter a date.