

12-2023

Improving Screening Mammography Recommendation and Referral in Primary Care Through Implementation of a Provider Prompt

Christon Elfring

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IMPROVING SCREENING MAMMOGRAPHY RECOMMENDATION
AND REFERRAL IN PRIMARY CARE THROUGH
IMPLEMENTATION OF A PROVIDER PROMPT

by

Christon Elfring

A Doctoral Project
Submitted to the Graduate School,
the College of Nursing and Health Professions
and the School of Leadership and Advanced Nursing Practice
at The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Nursing Practice

Committee:

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December 2023

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2023

Published by the Graduate School



ABSTRACT

In the United States, breast cancer has been established as the second most prevalent cancer among women (Centers for Disease Control [CDC], 2022a). There may be no symptoms present in the early stages of breast cancer and a low potential to spread during the early phases (World Health Organization [WHO], 2021). Mammography is the only test that has been shown to reduce deaths from breast cancer as it allows for early detection when cancer is in its most treatable stage improving survival and lessening the need for extensive treatment (American College of Radiology [ACR], n.d.). While the effectiveness of screening mammography in decreasing the risk of mortality has been proven, regular screening mammography is not achieved by all of those who are eligible (Jain et al., 2019).

Primary care providers play a distinctive role in the delivery of preventive care and early detection of cancer with provider recommendation being a consistent predictor of participation in cancer screening that includes mammography (Jain et al., 2019). The implementation of a provider prompt for mammography screening in the primary care setting assists providers in identifying women who need screening and improves their ability to provide recommendations and referrals for mammography that is essential to providing early detection resulting in early treatment and improved prognosis.

ACKNOWLEDGMENTS

I would like to express my deepest appreciation to Dr. Lisa Morgan for all of the encouragement she provided throughout the Doctor of Nursing Practice Program at The University of Southern Mississippi in addition to serving as my DNP chair. I would also like to express my gratitude to Dr. Lakenya Forthner for her service as a committee member and the support she provided through her instruction over the course of my studies. A special thanks also goes to Jeanne Stewart who provided many encouraging words and diligent guidance through the graduate school proceedings. I would also like to express my gratitude to Linda Farmer, MSN, ACNP, for her encouragement from the beginning of my career and throughout my education serving as a mentor and serving as an example through her unmatched professionalism and practice knowledge.

DEDICATION

Foremost, I would like to thank God for placing this calling on my life and for providing every provision to complete this journey. This project is dedicated to my family, without your support and sacrifices this would not have been possible. I would like to thank my husband for loving and encouraging me through all the difficult times. To my sons, Landon and Jase, you are my greatest blessings and you provided motivation to overcome any struggle that I encountered. I would also like to dedicate this project to all the women and families that I have encountered that have been affected by breast cancer, you are the reason for this project.

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LIST OF ABBREVIATIONS

<i>CDC</i>	Centers for Disease Control
<i>DNP</i>	Doctor of Nursing Practice
<i>EBP</i>	Evidence-based practice
<i>EHR</i>	Electronic health record
<i>IRB</i>	Institutional Review Board
<i>PICO</i>	Population, Intervention, Comparison, Outcome
<i>USM</i>	The University of Southern Mississippi
<i>WHO</i>	World Health Organization

CHAPTER I – INTRODUCTION

Background

In the United States, breast cancer has been established as the second most prevalent cancer among women (Centers for Disease Control [CDC], 2022a). The occurrence of breast cancer is not confined to any geographic location with 2.3 million women receiving the diagnosis of breast cancer and 685,000 deaths occurring worldwide in 2020 (WHO, 2021). There may be no symptoms present in the early stages of breast cancer and has a low potential to spread during the early phases the main risk factors are being a woman and aging (WHO, 2021). The use of mammography is the only test that has been shown to reduce deaths from breast cancer (ACR, n.d.). Screening mammography allows for early detection of breast cancer when it is at its most treatable stage, improving survival and lessening the need for extensive treatment (ACR, n.d.).

Significance

The providers within the primary care setting have significant roles in identifying women who need screening mammography and facilitating referrals. Provider recommendation can be an important factor in a patient receiving their screening. Patients may not be aware of the need for mammography or know its value without provider recommendation as lack of provider recommendation has been noted to be a barrier to obtaining breast cancer screening (Susan G. Komen Breast Cancer Foundation, 2023). Primary care provider recommendations for cancer screening are a consistent factor in patients participating in screening mammography (Jain et al., 2019).

If opportunities are missed for initiating mammography, breast cancer may be undiagnosed and be left untreated allowing for advanced disease to present. If death

occurs due to breast cancer it is from metastasis, which is the invasion of the cancer spreading to nearby breast tissue then lymph nodes, and later to other organs in the body (WHO, 2021). Mammography has been noted to be an effective measure in reducing mortality with a 40% reduction noted in those who screen regularly and while advances have been made in treatment, they may not be successful in conquering advanced-stage tumors (Monticciolo et al., 2021).

The use of provider prompts/reminders and screening protocols/tools have been measures that have been utilized to help providers with cancer screening practices. Implementing provider prompts or reminders may help the provider identify patients who are eligible for screening, make recommendations to patients, and facilitate the need by providing referrals for the service. Improving the provider's ability to recognize the need for screening will help initiate mammography which may be essential to providing early detection of breast cancer that may in turn result in early treatment and improved prognosis.

PICO

The PICO question used for this DNP project was: Does the use of provider prompts for mammography screening increase the number of recommendations/referrals for mammography screening for women 40-75 years old compared to no provider prompts in the primary care setting?

Needs Assessment

Healthy People 2030 notes that cancer objective C-04 to Reduce the Female Breast Cancer Death rate is improving but there is still a need for interventions to increase breast cancer screening to decrease deaths from breast cancer (U.S. Department

of Health and Human Services [USDHHS], n.d.). In the United States, only 69.1% of women who were 40 and older received a mammogram within the last two years (CDC, 2023). When comparing the breast cancer screening rates nationally, Mississippi has one of the lowest for older women and more than one-quarter of women in Mississippi do not receive regular screenings (Mississippi State Department of Health [MSDH], 2022). Among cancers in Mississippi breast cancer has the highest incidence and second highest mortality rates for women (MSDH, 2022).

While there have been attempts to further awareness surrounding breast cancer and the importance of screening there are still women who are not participating in regular screening mammography. The Centers for Disease Control and Prevention (CDC) acknowledge the use of provider reminders as an intervention to help inform providers that patients are due for screenings and noted that a study identified more than a 7% improvement in screening and testing with the use of this intervention (CDC, 2023b). Improving the provider's recommendation and referral practices may positively impact the health of women with early detection providing a reduction in mortality, quality of life, less extensive treatment, and a reduction in the cost of treatment. Breast cancer is responsible for 14% of all cancer treatment costs and has the highest cost among all cancers, and treatment costs are substantially less when diagnosed at an early stage compared to costs associated with advanced treatment (CDC, 2022c).

Literature Search

An evidence-based literature search was conducted using online resources that included *Google Scholar*, *CINAHL*, *PubMed*, *PubMed Central Journals*, *Cochrane Library*, U.S. government websites, professional practice websites, and nonprofit

websites. The search terms included key terms including mammography screening, screening tools, nudges, provider reminders, predictors of mammography adherence, primary care, mortality, advanced stage cancer, point of care reminders, EHR reminder provider recommendation of mammography, unscreened versus screened, screening protocols and barriers to mammography. Articles were reviewed from 2013-2023.

Google Scholar and PubMed generated the most results. Articles were reviewed and narrowed down by reviewing abstracts to meet criteria related to the PICO question.

Synthesis of Evidence

Benefits of Early Detection

Breast cancer screening mammography provides the benefit of early detection of disease and prognosis. The stage at which breast cancer is diagnosed is a crucial element in the prognosis of breast cancer, the effectiveness of treatment is on average better with cancer that is less advanced (American Cancer Society, 2022). The American Cancer Society (2022) notes that the 5-year survival rate for localized cancer is 99%, regional 86%, and for distant disease 30%. While the benefit of early detection is noted there may also be further benefits provided by differing treatment options. The range of treatments is expanded when breast cancer with early diagnosis with the possibilities of less extensive surgical treatment in conjunction with or without chemotherapy at times, both resulting in diminished side effects (American Cancer Society, 2022).

Mammography Effects on Mortality and Advanced Cancer Incidence

The effectiveness and importance of regular mammographic screening were recognized in a large study in Sweden that included 549,091 women to estimate the effects of participation in mammography screening and the incidence of advanced and

fatal breast cancer in comparison to women who chose not to screen (Duffy et al., 2020). The results of the study showed that women who participated in regular screenings had a 41% reduction in the risk of death occurring from breast cancer within 10 years and a 25% reduction in the occurrence of advanced cancer (Duffy et al., 2020). While changes have been made in the way breast cancer is treated, Duffy et al. (2020) noted that the benefits associated with participation in mammography screening appeared to be independent of treatment modifications.

Impact of Providers' Recommendation

The benefits of mammography are evident and there is a need to offer the screening to all women who may be eligible for screening. The role of a primary care provider is an integral part of a patient's understanding of the need for screening and their recommendation serves as a facilitator for many who choose to screen. There are many factors associated with cancer screening rates including health literacy, being uninsured, and social influence but one of the most powerful adaptable positions that affects screening habits is communication between providers and patients (Peterson et al., 2016). The role of provider recommendation in improving screening rates has vast evidence to support the practice with a positive association noted between provider recommendation and patient screening compliance (Peterson et al., 2016). For some populations, the recommendation for screening may hold more value than others as a predictor of adherence to screenings. Doctor recommendation served as a unique predictor for low-income women with adherence to mammography in a study that compared factors that predicted mammography adherence across differing income groups (Gaithirua-Mwangi et al., 2018).

Improving Recommendations with Provider Reminders

The recommendation of mammography screening by physicians may be improved with prompts or reminders to assist providers in recognizing patients who need screening. Oversight that is unintentional and being overwhelmed by information may be related to providers not using the best evidence when providing care (Pantoja et al., 2019). The use of a reminder can help providers move past circumstances that cause omissions of aspects of care by serving to help them recall their knowledge and by arranging information in ways that it is accessible (Pantoja et al., 2019).

Reminders are delivered on paper or implemented within the electronic health record. The use of manually generated paper reminders was evaluated and the use of a single intervention is likely responsible for small to moderate increases in recommended practice compliance and may be utilized as a single intervention for quality improvement. (Pantoja et al., 2019) The use of provider reminders is effective in increasing mammography recommendations. Reminders are incorporated within the patient encounter to serve as a notification to providers that there is a need for screening and prepare them to initiate a preventative care discussion (Siembida et al., 2017). The use of reminders for providers to provide recommendations for mammography screening has been found to have a significant association with increased provider recommendations independent from which screening guidelines are chosen to follow for screening (Siembida et al., 2017).

Model

The Stetler model was developed by Cheryl Stetler and was one of the first models that gained popularity for its use in nursing evidence-based practice (EBP)

(White, 2021). The introduction of the model was necessitated by the need for a realistic approach to applying research evidence into practice (Melnyk & Fineout-Overholt, 2019). This focus of the model is the use of critical thinking and the use of research findings and is tailored to advanced practitioners with emphasis on application being at individual levels that include patients, staff, and other participants or areas of interests (Melnyk & Fineout-Overholt, 2019).

The steps in the usage of the model are preparation, validation, comparative evaluation/decision-making, translation/application, and evaluation. Preparation involves identifying the need, how it would be used, coordination of work for the accommodation of more than one practitioner and finding relevant evidence through a systematic approach (Melnyk & Fineout-Overholt, 2019). Validation as a step in the process is the assessment of evidence with careful critique with utilization as a key element being recognized in the process (Melnyk & Fineout-Overholt, 2019). Comparative evaluation/decision-making is the step that is used to review findings or evidence using utilization criteria and what should be used (Melnyk & Fineout-Overholt, 2019). Translation/application takes the findings that have been generated forms the change that is needed and puts the plan into use. The step of evaluation is the final step that evaluates how the plan was implemented as well as the extent of implementation and if the goals were met (Melnyk & Fineout-Overholt, 2019).

This model has many features that make it unique and beneficial. The major features that make it an asset for practitioners are the use of critical thinking as a key component and the usage of findings on an individual level. The use of evidence and how it is defined is also a major feature as it includes two types of evidence that may be

utilized. External and internal evidence are both recognized as sources that have value with external coming from research and internal being generated from facts or information that are systematically obtained at local levels. The model targeting advanced practitioners in assisting with the application of EBP in practice at individual levels is also a key feature of this particular model. The features combined can help identify needs as well as applicable solutions that have a diverse body of evidence with both external and internal evidence that may help facilitate the individualization of the best practice.

Doctor of Nursing Practice Essentials

The Essentials of Doctoral Education for Advanced Nursing Practice were published in 2006 by the American Association of Colleges of Nursing. The essentials include eight competencies that are necessary for all DNP program graduates without regard to their focus or specialty. (American Association of Colleges of Nursing [AACN], 2006) This DNP project to implement a provider prompt to increase screening mammography recommendations and referral address multiple DNP Essentials.

Essential I: Scientific Underpinnings for Practice: This essential was met by evaluating the current data and using a literature review to guide an evidence-based intervention to improve current practices and care delivery.

Essential II: Organizational and Systems Leadership for Quality Improvement and Systems Thinking: This essential was met by recognizing that there was a need for an intervention to improve the delivery of care with the use of a provider prompt aimed at improving screening recommendation and referral.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice: An area in need of improvement was identified in current practice and literature

was critically reviewed to assist with designing of project focusing on the improvement of care delivery that accommodated the current workflow of the facility while meeting the improvement needs.

Essential IV: Information Technology and Patient Care Technology for Improvement and Transformation of Healthcare: Information was obtained for this project utilizing online databases. The research identified evidence-based practices as well as current population problems to support decision-making.

Essential V: Healthcare Policy for Advocacy in Healthcare: The DNP project raised awareness about the need for an intervention to improve breast cancer screening recommendations among providers to improve care provided to patients.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes: Interprofessional collaboration was utilized in this DNP project with communication among providers and other professionals in the healthcare team.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health: The focus of the DNP project to improve provider recommendation and referral for mammography aims at improving healthcare delivery for preventative services which may impact the health of the population with improved uptake of screening mammography.

Essential VIII: Advanced Practice Nursing: The essential was achieved through the identification and utilization of an evidence-based intervention to improve care delivery. Advanced practice skills were utilized throughout the design, data collection,

evaluation of EBP interventions, and analysis of data to render results that will positively impact healthcare providers and patients.

Goals and Expected Outcomes

The goal of this DNP project was to improve the delivery of preventative care among providers aimed at improving the recommendation and referral for mammography among women. The intervention of a provider prompt was used as a single intervention aimed to assist providers in recognizing women who need mammography and applying their knowledge base to provide recommendations and referrals for services. The goal of this project was to improve the number of recommendations or referrals initiated by the provider.

Summary

Breast cancer is a common cancer affecting women in the United States and the use of mammography is a valuable tool in providing early detection. Screening mammography has notable benefits of providing early detection and reducing mortality. The recommendation for mammography from a provider may influence a patient's participation in mammography making it imperative for providers to make recommendations and referrals for patients for screening. The use of a reminder or prompt assists providers in recognizing the need for a screening test and has been noted to improve provider recommendations.

CHAPTER II – METHODOLOGY

Introduction

The setting used to conduct this DNP project was a primary care setting that is owned by a larger healthcare system in Meridian, Mississippi. This primary care clinic offers primary care services, occupational health services, and drug screening. The facility is also owned by a healthcare system that houses a breast imaging center within its main facility that specializes in radiologic breast care and serves as a resource for providers within the primary care clinic. The primary care clinic currently does not have an electronic medical record prompt for notifying providers of a patient's mammography status. The clinic sees a variety of patients who are established with providers and some who do not have a regular provider for care to initiate cancer screenings. The goal of the DNP project is to establish a reminder or prompt to assist providers in recognizing individuals who need mammography and making recommendations or referrals.

Intervention

The intervention for this DNP project was designed to meet the needs of a clinical reminder while also acknowledging the current processes, workflow, and limitations within the clinical setting. The design integrated a reminder into current clinical processes with limited disturbance and without increasing the workload of clinical staff or providers substantially while at the same time being beneficial towards gaining improvements for providers and the patients they serve. The prompt or reminder was integrated into the current intake form that is used by clinical staff to triage patients that will address the age of the patient and current mammography status. The ages of the patients ranged from 40-75 years of age. Multiple guidelines exist that recommend

starting at different ages and frequencies of mammography for average-risk women and the age of 40 was chosen as a starting point and 75 as a stopping point for this intervention as the purpose of the intervention is to address providers' recommendation and referral improvement with the use of a reminder instead of when to screen.

The thought for this DNP project arose from previous clinical experience in other specialties recognizing that many women were not receiving mammography screening and were only being screened diagnostically after problems presented. This led the DNP student to question what factors were associated with patients being seen in primary care facilities not receiving proper screening. Within the primary care clinic where the project was conducted it was observed that there was a lack of a provider prompt and the mammography status of all the eligible women who were presenting in the clinic were not being assessed. The system did not identify women who were eligible for screening and a prompt was not available to the providers, without a prompt all eligible women may not be receiving the recommendation and referral for mammography that is needed.

The first phase of the DNP project was to create awareness among the providers that there was a need for a prompt to assist them in identifying women who needed mammographic screening. The providers within the clinic accepted that there was a need for the intervention and that it may provide benefits and were agreeable to the intervention for improvement. A retrospective chart and referral log review were conducted to analyze the number of recommendations and referrals that had been made for women ages 40-75 years for a two-week timeframe. This data analysis was used to determine how many patients were receiving recommendations and referrals for screening without the use of a provider prompt.

The second phase consisted of a meeting to introduce the project to the clinical staff and providers. This phase required individual meetings with staff members related to absences at the time of meetings related to illnesses and personal obligations. The meeting consisted of providing information regarding findings obtained through the retrospective analysis in addition to explaining the need for a provider prompt. A revised intake sheet that included the prompt was then distributed to providers and staff with an explanation of who would be assessed and an explanation of the roles of clinical staff and providers.

Clinical staff who triage patients including RNs, LPNs, medical assistants, and clinic manager were instructed to identify patients who were within the age range of 40-75 years old and place the patient's age in the space next to the heading, after age was identified the clinical staff were the masked to obtain the date of last mammogram and placed the information in the space provided. The intake form was then copied, and one copy given to the provider along with other pertinent clinical information, the other was attached to a clipboard with the charge ticket and placed in the chart slot next to the door where the patient was roomed per normal facility protocol and a third secured for review to verify the intervention was utilized for the investigators review.

Intake sheets were kept in a locked drawer within the facility. The provider reviewed the intake form as per the normal process with the inclusion of a newly placed prompt. The provider used their knowledge base to assess whether the patient is due for screening and ordered screening as desired. The provider documented that a recommendation and/or referral is made in the chart and a referral request was given to the medical assistant who makes all referrals unless she was not available and then the

task was delegated to nursing staff if needed. The person who scheduled mammography documented the referral in the log that is used by the clinic to track all referrals.

The clinical staff were instructed of the need to document any screening mammography that was ordered in the referral log and the need to retain intake sheets for review. The providers were informed of the need to provide documentation in the EHR of the mammography status or recommendation for referral for screening.

Study of Intervention

The intervention was studied using a comparison of data from before and after the implementation of a provider prompt. The comparison was made using a retrospective review of data from the EHR and referral log, in addition to this, a review of intake sheets was conducted to ensure that the prompt had been utilized during the visit. If implemented and documented correctly increased recommendation and referral should be seen in eligible patients and results should indicate that the use of a provider prompt improves care delivery with mammographic screening.

Population of Interest

The population of interest were the advanced practice providers within the clinic as this is a provider-focused intervention. The population of interest identified for improving screening mammography recommendation and referral are women who are 40-75 years old through improving provider delivery of care using provider prompts. The ages of women were chosen surrounding the American College of Obstetricians and Gynecologists with the recommendation to begin offering screening mammography at age 40 for those of average risk and to continue until age 75. This intervention focused on improvement that is provider-based and requires their participation. The providers must

be 18 years old to participate and hold an advanced practice degree being a nurse practitioner or physician's assistant and be employed full-time or part-time within the primary care clinic where the project is being conducted.

Measures and Data Collection

The DNP project used data collected from completed intake forms, referral logs, and EHRs. The data collection included the number of eligible women seen along with the number of recommendations and referrals made over the two-week time frame. The completed intake forms were assessed to provide data that the intervention was utilized, if the intervention was not utilized the patient was excluded from the study and documented. Data collected after implementation was compared to data obtained before the intervention through the retrospective chart review.

Ethical Considerations

Ethical considerations of the participants in this DNP project were supported in conducting this DNP project. Providers and staff members were the participants in this DNP project and participation was voluntary. Participants in the study were required to sign an informed consent before participation. Incentives or direct benefits were not provided in exchange for participation in this study. Information and data collected during this DNP project were used for research purposes only and remained anonymous and private with data results being displayed as group results. Personally identifiable information was not obtained in this project and confidentiality was maintained.

Project Timeline

The timeline for this project began with obtaining IRB approval from the health system that owns the facility used for the project setting on June 7, 2023, and a letter of

support was obtained from the facility on July 12, 2023. The proposal for the DNP project was approved by USM faculty on June 21, 2023. A request for permission to submit an IRB approval application was submitted to Dr. Baskin on July 19, 2023, and permission was granted to submit an IRB application on August 3, 2023. The IRB application was submitted on August 4, 2023, and approval was granted on August 15, 2023 (IRB Protocol 23-0672).

Data collection began August 16, 2023, with a retrospective chart review and a meeting with staff was conducted on August 17, 2023, that included a discussion of the use of the provider prompt and each staff member's role in utilizing the prompt along with answering any questions regarding the new process. Several staff members were not present due to illness and prior engagements and separate information sessions were provided. The DNP project intervention was implemented on August 21, 2023, and was concluded on September 1, 2023. Post-implementation data was collected beginning on September 4, 2023, and concluded on September 8, 2023, and analyzed in the following week. The DNP project, PowerPoint[®], and poster were submitted to the faculty in September and concluded the project.

Summary

Implementing a screening mammography prompt in this setting will assist providers in identifying women who may need mammography. Currently, there is no EHR prompt available for use and the use of a paper-based prompt will serve as a reminder for providers to initiate their recommendation for screening mammography. The prompt will be incorporated within the current work processes, does not increase the workload of staff members significantly, and does not require deviation from normal

processes. Through providing a simple intervention to improve provider recommendation and referral more women may gain access to mammography as well as gain knowledge of the need for mammography screening.

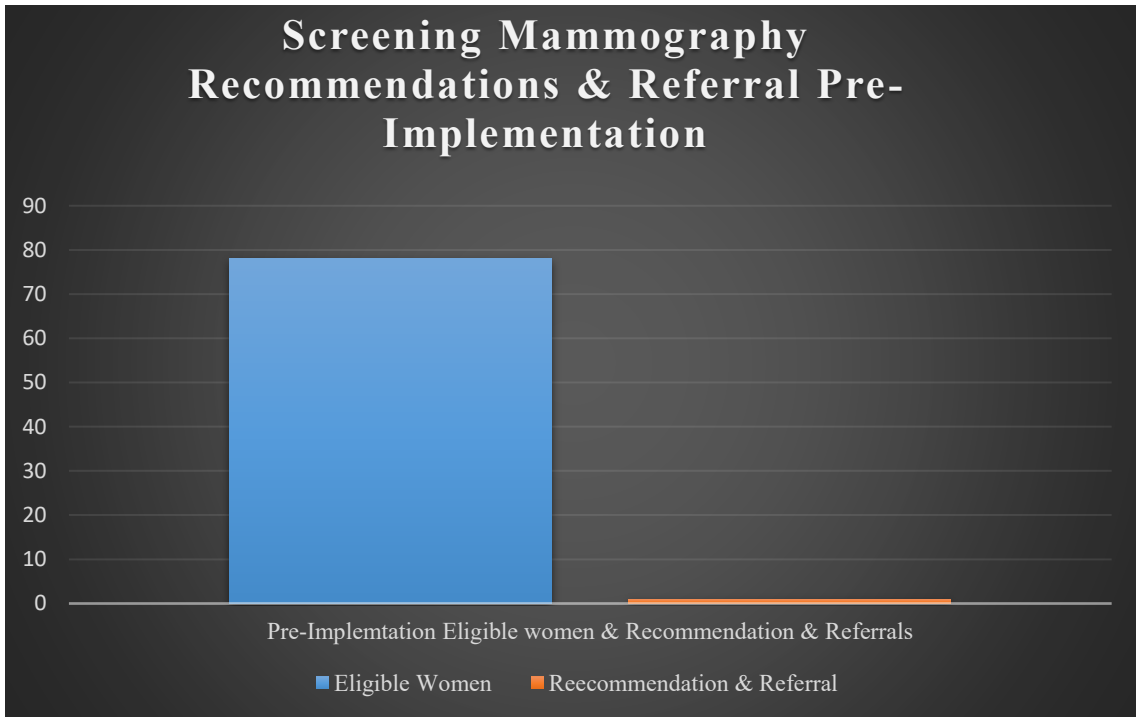
CHAPTER III – RESULTS

The DNP project of improving screening mammography recommendation and referral in primary care through the implementation of a provider prompt was carried out through phases. The first phase of the project began with a retrospective chart review and referral log review that assessed the number of women who were 40-75 years of age who were eligible for screening mammography and the number of recommendations made for mammography from providers. The second phase of the DNP project consisted of meeting with providers and staff members regarding the implementation of the intervention and identifying the roles and responsibilities as well as the importance of following guidelines. The last phase of the DNP project was data collection after the implementation of the intervention.

Data obtained before the implementation of the intervention was through a retrospective chart and referral log review that provided data from a two-week time frame. The number of encounters for women ages 40-75 seen in the clinic during the two weeks assessed was found to be 96. The number of women who were found to have up-to-date screening mammography was 18 leaving 78 eligible for screening mammography recommendation. After reviewing the charts and referral log there was one recommendation found and zero referrals made for screening mammography (see Table 1).

Table 1

Screening Mammography Recommendations and Referral Pre-Implementation



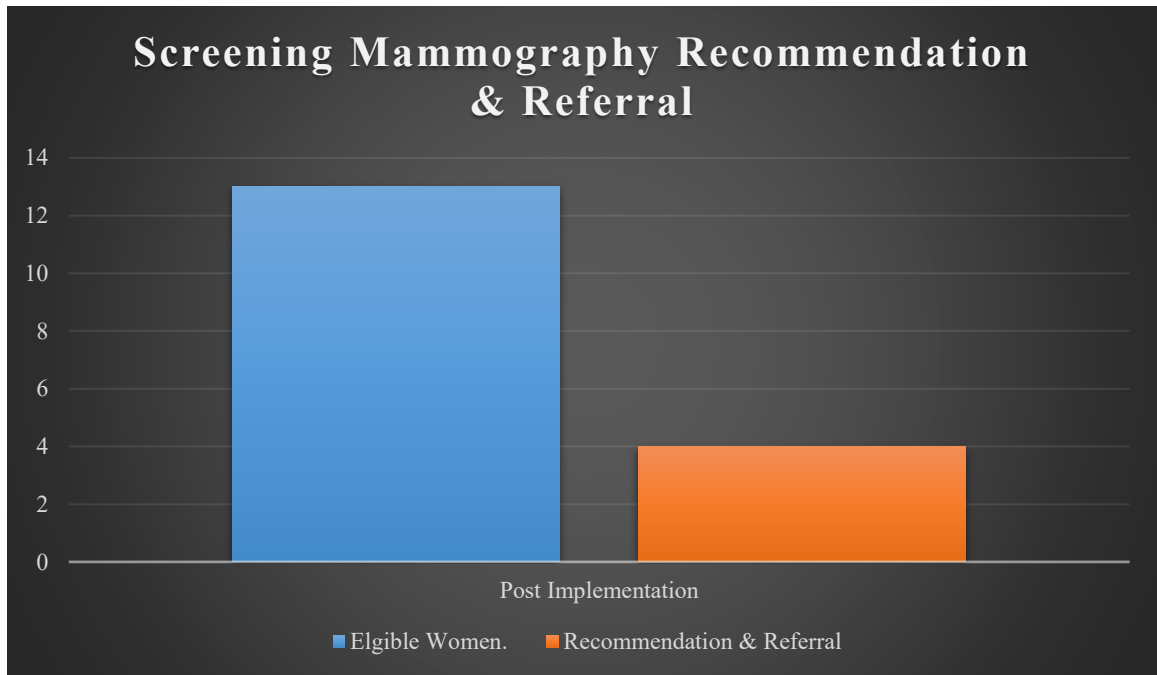
The intervention was implemented for two weeks followed by one week for post-implementation retrospective review and the analysis revealed that the intervention was utilized for 68 patients. Of the 68 times the intervention was used, 43 women were identified as having current screening mammograms and 25 were identified as patients who needed screening mammography. While conducting the review 12 patients had incomplete documentation and were excluded from the total number of women who qualified for mammography leaving the number of eligible women at 13.

Recommendation for mammography was noted in four patients' electronic health records with one of the four having a referral order for scheduling the mammogram that was recorded in the referral log per protocol (see Table.2). The review of the referral log

revealed no other requests for scheduling screening mammography. The number of patients for which no action was taken was found to be nine.

Table 2

Screening Mammography Recommendation and Referral Post-Implementation



The number of recommendations and referrals pre-implementation was one compared to four that were found upon post-implementation data collection (see Table. 3). Analysis of the data revealed that only 1.2% of those who were eligible for screening mammography were receiving recommendations or referrals before implementation. Data obtained after the implementation showed an improvement with 30.8% of eligible women receiving recommendations and/or referrals for screening mammography (see Table. 4). The percentage of improvement for recommendation or referral for screening was 300% when comparing the number of referrals and recommendations made before the intervention and post-implementation.

Table 3

Screening Mammography Recommendations Pre-Implementation and Post-Implementation

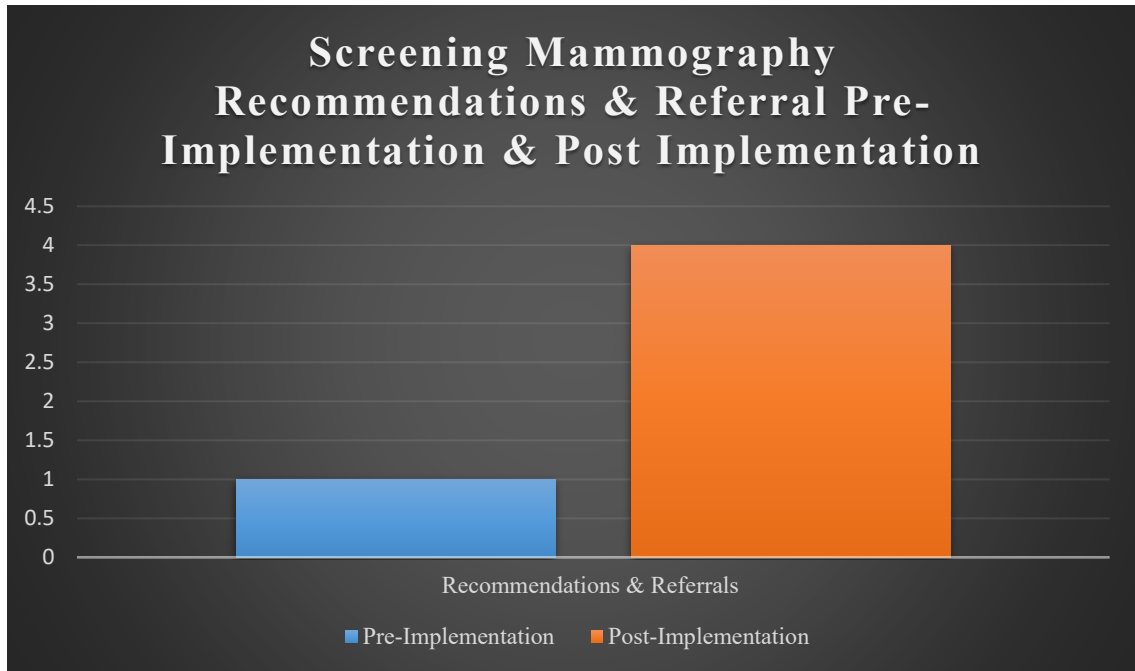
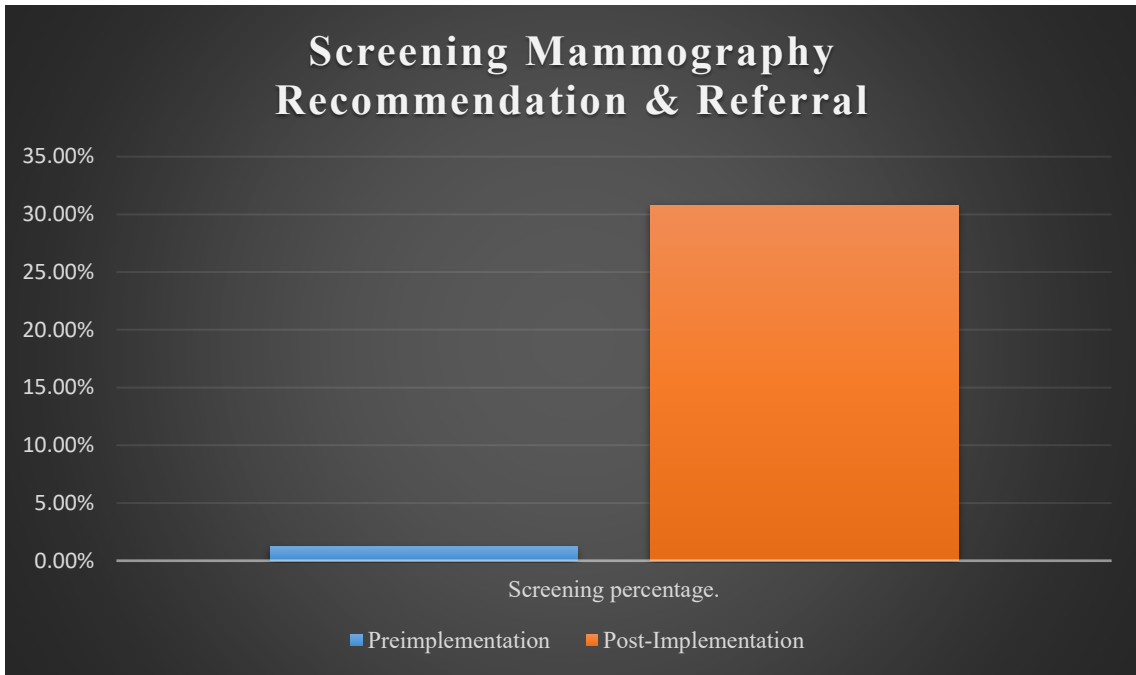


Table 4

Screening Recommendation and Referral Percentage Rates



Summary

In conclusion, there was an improvement in recommendations and referrals for screening mammography with the implementation of a provider prompt. The DNP project findings revealed an increased number of recommendations and referrals with the implementation of the provider prompt compared to the number of recommendations and referrals obtained from pre-implementation data. The intervention was successful in improving screening recommendation and referral in the primary care setting through implementing a provider prompt and may help identify women who need screening and assist with the provider's ability to recognize the need.

CHAPTER IV – DISCUSSION

The objective of this DNP project was to produce evidence that the implementation of a provider prompt could improve screening mammography recommendations and referrals initiated by providers in the primary care setting. The uptake of screening mammography is essential to early detection and treatment that may affect the overall health outcomes of women. The provider's recommendation for preventative screening care is an important aspect of the patient's awareness and willingness to participate in screenings. Interventions that prompt providers to use their knowledge assist them in improving care delivery by allowing them to have key information provided within processes that are consistently viewed by the provider.

Key Findings

The study identified 25 women who needed screening mammography, 12 of those identified were excluded due to incomplete documentation at the end of the post-implementation data collection phase of the project. The number of recommendations and referrals made to the remaining 12 patients was four. The percentage of women who received recommendations or referrals with the implementation of the prompt was 33.3% compared with the recommendation and referral rate of 1.4%. The overall percentage of improvement from pre-implementation to post-implementation was 300%. The findings of the project will hopefully bring increased awareness for the need to assess mammography status and possibly other preventative services as well as willingness to implement interventions that will assist providers with improving the delivery of preventative services.

Strengths and Limitations

There were several limitations within this study. One limitation of this study was the time frame in which the intervention of the prompt was implemented. A longer duration of utilizing the prompt may have provided participants more time to become familiar with the new process and reviewing the prompt may have become more habitual leading to further improvement. Another limitation was the need to adjust the number of eligible women from the study due to incomplete documentation in the allotted time frame of 1-week post-implementation. The strengths this study possessed were the ease of use and awareness provided through identifying the mammography status of women who visited the clinic in addition to identifying the need for an area of documentation of the last mammogram within the electronic health record.

Implications for Future Practice

The use of a provider prompt did increase the number of screening recommendations and referrals within the facility with the identification of the screening status of women and providing a source of recognition for the providers. This intervention was simplistic in design and easily incorporated within the normal workflow without the need for substantial increased time expenditure for participants. There was limited literature available that targeted provider recommendations for screening mammography and further studies could be useful in identifying practices that improve provider recommendations of screening care by identifying whether prompts in the electronic medical record are more effective than paper based. There could also be further inquiry with a patient-focused study to identify self-knowledge and barriers associated with screening mammography practices that may lead to a lack of screening

mammography participation. While the intervention provided improvement there were nine occurrences in which there was no recommendation or referral given, this creates an area of inquiry into identifying further factors that may be associated with lack of recommendation. Gaining knowledge from both the patient's and provider's perspectives is imperative in understanding where the focus should lie in future improvement quests.

Summary

The resulting outcome of implementing a provider promptly to improve screening mammography recommendation and referral in primary care displayed that improvement could be gained by instituting interventions that assist providers' ability to recognize patient needs. The benefits of early detection and treatment of breast cancer have been recognized but to obtain those benefits screening mammography must first be utilized. To increase the number of women who participate in screening mammography there is still a need to increase the awareness of the importance of the provider's role in the recommendation of the screening as well as establishing further practices that assist providers in improving their screening recommendation practices.

In conclusion, while the outcome reflects a successful use of the intervention, we must also recognize the fact that nine eligible women did not receive a screening recommendation. Patients seek guidance surrounding their health from providers and are dependent on providers to guide them to practices that produce the best outcomes. There is a need to question why recommendations or referrals were not provided and how we can improve provider practices with care delivery through further research inquiry. The goal of providers is to provide care that produces the best outcomes for patients and there must be continual commitment to recognize areas of care delivery that are not optimal

and diligently strive for improvement to ensure patients are receiving the highest quality care.

APPENDIX A – USM IRB Approval Letter

Office of Research Integrity



118 COLLEGE DRIVE #5116 • HATTIESBURG, MS | 601.266.6756 | WWW.USM.EDU/ORI

NOTICE OF INSTITUTIONAL REVIEW BOARD ACTION

The project below has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services regulations (45 CFR Part 46), and University Policy to ensure:

- The risks to subjects are minimized and reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered involving risks to subjects must be reported immediately. Problems should be reported to ORI using the Incident form available in InfoEd.
- The period of approval is twelve months. If a project will exceed twelve months, a request should be submitted to ORI using the Renewal form available in InfoEd prior to the expiration date.

PROTOCOL NUMBER: 23-0672
PROJECT TITLE: Improving Screening Mammography Recommendation and Referral in Primary Care Through Implementation of a Provider Prompt
SCHOOL/PROGRAM: School of Leadership & Advance Nursing Practice
RESEARCHERS: PI: Christon Elfring
Investigators: Elfring, Christon-Morgan, Lisa-
IRB COMMITTEE ACTION: Approved
CATEGORY: Expedited Category
PERIOD OF APPROVAL: 15-Aug-2023 to 14-Aug-2024

Donald Sacco

Donald Sacco, Ph.D.
Institutional Review Board Chairperson

APPENDIX B – Facility IRB Approval



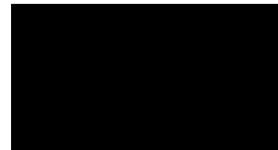
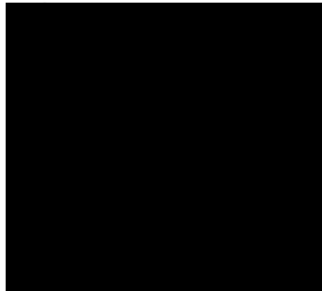
June 7, 2023

Christon Elfring, BSN, RN
University of Southern Mississippi

Approval Date: June 7, 2023

After review of your requested study, in consultation with other members of the Institutional Review Board at Anderson Regional Health System, your Doctoral Research Study entitled "Improving Screening Mammography Recommendation and Referral in Primary Care through Implementation of a Provider Prompt" is approved to be conducted at Anderson Regional Medical Center. This approval expires 365 days from the date of this letter.

Sincerely,



APPENDIX C – Letter of Support



July 12, 2023

RE: Letter of Support for Christon Elfring, BSN, RN

Attn: Faculty Nursing Research Council Application Process-DNP BSN-DNP Student

To: Nursing Research Council Chair and Committee

I have discussed the topic with Christon Elfring and support and recommend the need for Improving Screening Mammography Recommendation and Referral in Primary Care Through Implementation of a Provider Prompt. After data analysis, I understand that Christon will present her findings to the Express Care team/Anderson Regional Health System.

I understand that following approval by the Nursing Research Council, she will seek approval from The University of Southern Mississippi Institutional Review Board (IRB) for final approval of her Clinical Doctoral project proposal. At present, I understand that Christon Elfring is a full-time BSN-DNP (family nurse practitioner) student at the University of Southern Mississippi, Hattiesburg campus.

I am the Chief Nursing Officer at Anderson Regional Health Systems, Meridian, Mississippi. I am offering this letter of support of the doctoral student, Christon Elfring, in her doctoral project and look forward to hearing her findings. I understand the project will begin after the USM IRB approval is received.

I understand that participation by the Express Care team members is completely anonymous and voluntary, there is no compensation for their participation.

I understand that letter of support will be included in the University of Southern Mississippi Review Board (IRB) application.

Her Chair contact is Dr. Lisa Morgan, DNP, FNP-BC

Lisa.d.morgan@usm.edu or office (601) 266-6087

As CNO of Anderson Regional Health Systems, I would like to fully support Christon Elfring to achieve her academic goal in this clinical practice project. I look forward to hearing the results of this study and the implications on clinical practice.

If there is any other information you should need, please do not hesitate to contact me.

Sincerely,

A large black rectangular box redacting the signature of the Chief Nursing Officer.

Vice President / Chief Nursing Officer
Anderson Regional Health System

APPENDIX D – Intake Form

Patient Check-In Sheet

Patient Information		Clinic Use Only	
Date:		Check-In Time:	
Name:		Room Number:	Triage Start Time:
Date of Birth:		Nurse:	Triaged by:
Work Ext:		FNP to Room:	
Contact Number:		Check Out Time:	

Vital Signs			
Height:	Weight:	Temp:	Pulse:
BP:	Arm:	BP:	Arm:
Respirations:	O2 Sat:	Pain Score:	Pain Location:

Visit Information	
Chief Complaint:	
Pertinent Information: (Recent Hospitalizations, ER Visits, PCP Visit, New Dx)	
Past Surgeries:	
Family History:	
Last Menstrual Cycle:	Female 40-75: Last mammogram:
Do you use Tobacco:	Type/Amount:
Do you use Alcohol:	Type/Amount:
PCP Of Choice:	Pharmacy of Choice:
Current Medications:	Allergies:
_____	_____
_____	_____
_____	_____

Orders			
<input type="checkbox"/> Flu Swab	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative	
<input type="checkbox"/> Strep Swab	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative	<input type="checkbox"/> Culture sent to lab
<input type="checkbox"/> COVID Swab	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative	<input type="checkbox"/> PCR send out
<input type="checkbox"/> Pregnancy Test	<input type="checkbox"/> Positive	<input type="checkbox"/> Negative	
<input type="checkbox"/> Urinalysis	<input type="checkbox"/> Normal	<input type="checkbox"/> Abnormal	<input type="checkbox"/> Culture sent to lab
<input type="checkbox"/> Accu Check:			
<input type="checkbox"/> X-ray/CT/MRI/Ultrasound:			
<input type="checkbox"/> Medications to be Given:			
<input type="checkbox"/> Work/School Excuse: Return to work:			

APPENDIX E – Consent Form

Standard (Signed) Informed Consent

Standard (signed) Consent Procedures
<ul style="list-style-type: none">• Use of this template is optional. However, by federal regulations (45 CFR 46.116), all consent documentation must address each of the required elements listed below (purpose, procedures, duration, benefits, risks, alternative procedures, confidentiality, whom to contact in case of injury, and a statement that participation is voluntary).• Signed copies of the consent form should be provided to all participants.

Today's Date: _____

Project Information

Project Title: Improving Screening Mammography Recommendation and Referral in Primary Care Through Implementation of a Provider Prompt.

Protocol Number: 23-0672

Principal Investigator: Christon Elfring

Phone: (601)917-5728

Email: Christon.elfring@usm.edu

College: Nursing and Health Professionals

School and Program: The University of Southern Mississippi Hattiesburg, Mississippi and BSN-DNP program.

Research Description

1. Purpose:

The purpose of this project is to improve provider recommendation and referral of screening mammography in women ages 40-75 years of age through the implementation of provider prompt. Improving recommendations for screening mammography has significant value for individuals and the population. Mammography provides early detection of breast cancer before symptoms may be present and is beneficial to reducing mortality and producing favorable outcomes.

2. Description of Study:

The study involves using a single intervention as a provider prompt that is paper-based and incorporated into the current intake sheet that will identify the patient's age and mammography status. The prompt will be designated for improving screening is women who are 40-75 years of age. The intervention focuses on improvement that is provider-based and requires their participation. Providers must be at least 18 years of age and hold an advanced practice degree being a

nurse practitioner or physician's assistant and employed within the proposed clinical setting. The intake sheet will require clinical staff to fill in the patient's age and mammography status for review by a provider. The provider will then utilize their knowledge to provide recommendations and referrals for mammography. The intervention will be studied using a comparison of data from before and after the implementation of provider prompt gained from a retrospective review of charts and referral log and review after the implementation of an intervention. Retrospective data will be obtained for a timeframe of 2 weeks and intervention will be implemented for 2 weeks. Triage sheets will be reviewed to ensure the prompt was utilized and exclusion is not required. Data will include the number of eligible women seen along with a number of recommendations and referrals.

3. Benefits:

No benefits or incentives are promised or provided for participation in this study. The knowledge gathered from your participation in this study will potentially be used in improving provider recommendation and referral for screening mammography by utilizing a provider promptly in hopes of future improvements with participation in mammography by women.

4. Risks:

There are no risks associated with participating in this study.

5. Confidentiality:

The DNP project will not include any identifying information. Research results will be displayed as numbers only and no identifying information will be collected. Records will be kept securely within the clinical site and destroyed after completion of the project in the clinical site's shred box per policy.

6. Alternative Procedures:

There are no alternative procedures.

7. Participant's Assurance:

This project and this consent form have been approved by USM's Institutional Review Board, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about the rights as a research participant should be directed to the Chair of the Institutional Review Board, The University of Southern Mississippi, 118 College Drive #5125, Hattiesburg, MS 39406-0001, 601-266-5997

Any questions about this research project should be directed to the Principal Investigator using the contact information provided above.

Consent to Participate in Research

Participants Name:

I hereby consent to participate in this research project. All research procedures and their purpose were explained to me, and I had the opportunity to ask questions about both the procedures and their purpose. I received information about all expected benefits, risks, inconveniences, or discomforts, and I had the opportunity to ask questions about them. I understand my participation in the project is completely voluntary and that I may withdraw from the project at any time without penalty, prejudice, or loss of benefits. I understand the extent to which my personal information will be kept confidential. As the research proceeds, I understand that any new information that emerges and that might be relevant to my willingness to continue my participation will be provided to me.

Research participant

_____ Date _____

Person Explaining the Study

_____ Date _____

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