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The Effect of Patient Reminders on Osteoporosis Screenings

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THE EFFECT OF PATIENT REMINDERS ON OSTEOPOROSIS SCREENINGS

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DEDICATION

This project is dedicated to my loving, patient, and supportive husband, Dean. Without his constant understanding, this would not have been possible. To my sons Jake and Scott thank you for all your love and support. To my parents, especially my father, who has always been my biggest fan and has supported me from the beginning of my education. To Sheila, thank you for the financial support. It has been a long and demanding process; I thank and love you all!

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ABSTRACT

Osteoporosis is characterized by reduction of bone mass and compromised bone strength, resulting in an increased fracture risk. Since a reduction of bone mass has been shown to be predictive of future fracture risk, prevention strategies target screening those patients at risk for decreased bone mass by using bone mineral density (BMD) dual energy x-ray absorptiometry (DXA) scans. Current national guidelines recommend that all women 65 years and older undergo BMD testing using central DXA every two years. Despite these recommendations, women age 65 years and older still do not participate in this screening. Greater rates of osteoporosis screening could be achieved by identifying an efficient, effective way for healthcare providers and patients to schedule DXA scans. The purpose of this EBP project was to determine if a mailed patient reminder would increases BMD screening rates in women at risk for osteoporosis, as compared to the previous practice of provider recommendation during a scheduled visit. The Stetler Model was used to guide the EBP project, and Kotter and Cohen's eight steps for successful change provided support for the behavioral change. The population of focus consisted of female Medicare recipient's age 65 years and older who were active patients within a Midwestern community care clinic in the fall of 2013. Overall, the mailed reminder for osteoporosis screening demonstrated effectiveness in improving BMD screening rates. At the end of the 12-week project, the percentage of female Medicare recipients who were up to date in their BMD screening increased from 17.07% to 31.40%. Those participating in BMD screening during the 12-intervention intervention period ranged in age from 65 to 98. Of the 47 female patients who were not up to date and had a DXA scan as a result of the intervention, a significantly larger percentage were patients of the physician (87.23%) versus patients of the NP (12.77%) who focused on women's wellness during routine office visits ($\chi^2 = 9.824$, $p = .002$).

Keywords: osteoporosis, BMD, mailed patient reminder, screening

CHAPTER 1

INTRODUCTION

Background

The National Osteoporosis Foundation (NOF) recently released new prevalence data estimating that approximately 9 million adults in the U.S. have osteoporosis (NOF, 2013). The NOF has also noted that nearly 60% of adults age 50 and older are at risk sustaining a fracture and should be concerned about bone health (NOF, 2012). Furthermore, within the literature, the prevalence of osteoporosis at either the femoral neck or lumbar spine has been reported to range from 7% to 35% in women, with the prevalence increasing each decade after age 50 (Looker, Borrud, Dawson-Hughes, Shepard, & Wright, 2012). In women, the prevalence of low bone mass increases until age 70 years, after which prevalence rates remains stable (Looker et al., 2012). "Overall, an estimated 6.8 million adults have osteoporosis" (NOF, 2014, p.10).

Approximately one in two women and up to one in four men age 50 and older will actually fracture a bone due to osteoporosis (NOF, 2012). Because osteoporosis currently affects 9 million Americans and is responsible for more than 1.5 million fractures annually, the financial burden of osteoporosis is considerable, with annual direct medical costs estimated at 17 to 20 billion dollars (Becker, Kilgore, & Morrissey, 2010). Most of these costs are related to the acute and rehabilitative care following osteoporotic fractures, mainly hip fractures (Becker et al., 2010). The societal burden of osteoporosis includes these direct medical costs and the monetary and nonmonetary costs of poor health.

The aging of the U.S. population is expected to increase the prevalence of osteoporosis and the number of osteoporotic fractures. By 2020, half of all Americans over age 50 are expected to have low bone density or osteoporosis. By 2025, experts predict that osteoporosis will be responsible for approximately three million fractures and

$25.3 billion in overall costs each year (NOF, 2012). The increase of the older population will create significant challenges to Medicare, which assumes most of the cost of osteoporosis care. Efforts to address the alarming financial burden must focus on reducing the prevalence of osteoporosis and the incidence of costly fragility fractures (Becker et al., 2010). The increase of the older population will create significant challenges to Medicare, which assumes most of the cost of osteoporosis care. Efforts to address the alarming financial burden must focus on reducing the prevalence of osteoporosis and the incidence of costly fragility fractures (Becker et al., 2010).

“Because of the morbid consequences of osteoporosis, the prevention of this disease and its associated fractures is considered essential to the maintenance of health, quality of life, and independence in the elderly population" (World Health Organization [WHO], 2007, p. 6).

Fractures and their complications are the relevant clinical consequences of osteoporosis. The most common fractures are those of the vertebrae, proximal femur, and distal forearm. Most fractures in the older adult are attributable to low bone mass even when they are the result of a considerable trauma. Fractures may lead to a full recovery, but may alternatively attribute to chronic pain, disability, or even death (Canale, 2009). Twenty percent of older people who fracture a hip die within a year from complications related to the fracture or complications with the surgery required to repair it (NOF, 2012). Many of those who survive will need long-term nursing home care (NOF, 2012). For those who are fortunate enough to continue to live within their own community, osteoporosis may impact their ability to ambulate inside and outside of their home. Quality of life may be profoundly impacted as older adults living with osteoporosis face challenges to mobility that may contribute to feelings of isolation and depression.

The primary goal in treating a patient with osteoporosis is preventing fractures. A detailed history and physical examination together with the BMD screening, when

appropriate, should be utilized to establish the individual patient's fracture risk (Dawson-Hughes, 2008). A comprehensive treatment plan would include education on proper nutrition, exercise, and prevention of falls that may result in fractures. There are also several medications that have been shown to slow or stop bone loss or rebuild new bone, increase bone density, and reduce fracture risk. Patient education needs to be reinforced. When taking medication to prevent or treat osteoporosis, it is still essential that the patient obtain the recommended amounts of calcium and vitamin D. The patient also needs to be exercising and maintaining other aspects of a healthy lifestyle. Staying as active as possible, eating a healthy diet that includes adequate calcium and vitamins, and avoiding smoking and excess alcohol use are also important for patients with osteoporosis (NOF, 2012).

Statement of the Problem

Osteoporosis is the most common bone disease in humans, and it represents a major public health problem as outlined in the Bone Health and Osteoporosis: A Report of the Surgeon General (U.S. Department of Health and Human Services [USDHHS], 2004). Osteoporosis is characterized by low bone mass, deterioration of bone tissue and disruption of bone architecture, compromised bone strength, and a resultant increase in the risk of fracture (Warriner et al., 2012). As a silent disease with no physical symptoms and no cure, osteoporosis is best managed through aggressive prevention strategies targeting high-risk patients. Since low bone mass has been shown to be highly predictive of future fracture risk, one prevention strategy includes using bone mineral density (BMD) scans to screen patients for decreased bone mass and assess their total fracture risk (Warriner et al., 2012).

The link between low BMD and increased fracture risk in women is well established (Johnell et al., 2005). The occurrence of a fragility fracture is indicative of low BMD and a clinical diagnosis of osteoporosis can be made, yet osteoporosis can be

identified in asymptomatic women using dual energy X-ray absorptiometry (DXA). DXA of the lumbar spine and hip is the gold standard for diagnosing osteoporosis, and United States guidelines recommend screening bone density test using central DXA in all women 65 years and older (U.S. Preventive Services Task Force [USPSTF], 2011). Postmenopausal women younger than 65 should only be screened with DXA if they have significant risk factors for osteoporosis and/or bone fracture (American Congress of Obstetricians and Gynecologists [ACOG], 2012). In the absence of new risk factors, DXA screening should not be performed more frequently than every two years (ACOG, 2012).

Despite these recommendations, less than one-third of the eligible U.S. women age 65 years and older undergo testing (Curtis et al., 2008). The reasons a majority of women do not receive DXA testing are likely multifactorial (Agency for Healthcare Research and Quality [AHRQ], 2011). Patients and health care providers may be unaware of screening recommendations and the reasons for these recommendations. Screening tests that are required infrequently may be difficult to remember if there are few reminders. In addition, primary care providers are busy managing numerous other co-morbid and acute care illnesses and may be unable to stay current with all preventative care needs during short office visits (Warriner et al., 2012). Achieving greater rates of osteoporosis screening might be facilitated by identifying a systematic, effective and generalizable way for healthcare providers and patients to schedule DXA scans (USPSTF, 2011).

Clinical Agency Data

The office for this EBP project has served the regional community since 1952, when the primary physician in the practice's father built the clinic. The practice has served the primary blue-collared, middle-class population of Lake County, Indiana (Practice Physician, personal communication, June 10, 2013). At the time of project

implementation, although the office had been designated as family practice, the patient population was more internal medicine, as 90% of the patients were adult; no more than 20% were Medicare recipients with chronic medical conditions (Practice Physician, personal communication, June 10, 2013). Medicare recipients accounted for approximately 20% of all office visits (Practice Physician, personal communication, June 10, 2013). The patient mix within the clinic was not typical of Lake County as it was 96% white, with the remaining 4% of patients being of Hispanic, Asian, Iranian, or African American ethnicity. The ethnic distribution could be attributed to the southern location of this clinic (Practice Physician, personal communication, June 10, 2013).

The office merged with a larger local hospital in April of 2010. At the time of project initiation, there were two advanced practice nurses (APNs) and one physician working in the office. The project implementer, one of the APNs, worked in the office with the collaborative physician for more than 12 years. Numerous supportive staff members were available to assist with daily patient care. Each provider had a medical assistant, and the physician also had a scribe that worked with him daily to maintain electronic charting. The office staff also included a phlebotomist three days a week, an x-ray technologist 20 hours a week, a full-time office supervisor, and two full-time and two-part-time receptionists.

Within the practice, productivity had always been an objective. Positive patient outcomes were expected no matter what the productivity was, but the main focus had been the volume of patients seen per day per provider (Practice Physician, personal communication, June 10, 2013). The added time necessary for patient education had been identified as a barrier to health promotion. BMD screenings were impacted by time constraints within the office. The office had just transitioned to Epic electronic health records (EHR) on May 14, 2013 which drastically decreased productivity. Prior to implementing EHR, the physician would see 140 to 150 patients per week, and the

project implementer would see an average of 90 to 100 patients per week. With the transition to Epic, the project implementer's schedule had been limited to seeing only 70 patients per week, and the physician's schedule was also reduced to 100 patients per week. Furthermore, the office recently had a change in APNs. The new APN was shadowing the physician, resulting in a further decrease in productivity. With the transition to EHR, the practice had an added focus on increasing productivity; thus, the providers had even more limited time to address primary and secondary prevention strategies.

Although the practice continued to focus on increasing productivity during the EHR transition, a review of clinical agency data supported the need for the project. Prior to EBP project implementation, a needs assessment was conducted to determine the viability of a project focused on osteoporosis screening. It was found that the office did not have a thorough osteoporosis screening in place. A review of the electronic database was conducted upon the request of the collaborative physician. The review indicated that the practice had approximately 3322 patients, of which 328 were female Medicare recipients who were 65 years of age and older. Practices varied among the providers on how they screened for osteoporosis and managed osteoporotic or at-risk patients. One provider (the physician) didn't feel that the BMD was an important test; one provider (the new FNP) dealt with the issue if there was enough time, and the third provider (the FNP/project implementer) managed the issue at regular annual exams and routine follow up visits. Although patients in the clinic had been shared by the provider group, patients usually preferred one provider and were allowed to schedule with their provider of choice. The project implementer managed 90% of all the female annual exams in the office (including those for women age 65 years and older), but the other two providers performed these examinations if requested by individual patients.

After meeting with the office providers, it was apparent that the integration of routine osteoporosis screening protocol would not only benefit the providers in this clinic, but it could also be modified for future use in other offices within the hospital network. A consensus was reached that the office would benefit from an osteoporosis screening protocol. With the integration of a screening tool, the office would also be complying with the USPSTF recommendation of "screening for osteoporosis in women age 65 years or older whose fracture risk is equal to or greater than that of a 65 year old white women who had no additional risk factors" (USPSTF, 2011, p. 356). Despite these recommendations, less than one-third of the eligible U.S. women age 65 years and older have undergone testing (Curtis et al., 2008).

A chart audit conducted on June 26, 2013 revealed that 560 (16.85%) of the 3322 patients were Medicare recipients. Of these, 328 were female and only 56 of these female Medicare recipients (17.07%) had documented records of up-to-date BMD. Thus, an efficient evidenced-based practice project was needed to improve osteoporosis screening for Medicare recipients within this practice. The goal based on chart audit data, was a 12 percentage-point increase in mailed patient reminders rate of BMD screenings. This goal was supported by the literature: Warriner et al. (2012) reported a 12 to 19% increase in the DXA screening in women receiving the intervention and Lafata et al. (2007) reported a 24.1% increase in osteoporosis screening in the mailed reminder group.

Purpose of the EBP Project

The purpose of this EBP project was to increase the identification of osteoporosis in female Medicare patients. The objective of this EBP project was to answer the compelling clinical question: Does a reminder for osteoporosis screening mailed to patients increase BMD screening rates in women at risk for osteoporosis? The project was designed to incorporate strategies to (a) change patient behaviors towards

osteoporosis screening (b) implement mail order screening tool and (c) evaluate the EBP project effectiveness. The PICOT format was used to create the EBP project question. This format entailed identifying population of interest (P), intervention or issue of interest (I), comparison or intervention group (C), outcome of interest (O), and time frame (T) (Melnyk & Fineout-Overholt, 2011) The targeted population of interest (P) for this intervention was female Medicare patients age 65 years and older. This population was selected for two reasons: (a) the well-established nationally recommended guidelines targeted this population and (b) Medicare covered the cost of the examination, thus eliminating any financial barrier to screening. The intervention of interest (I) was the integration of a mailed patient reminder The comparison of interest (C) was the addition of the mail reminder, as compared to the previous practice of provider recommendation during a scheduled visit. The outcome of interest (O) was an increase in the percentage of those who had participated in bone mineral density screening within the past two years. The time frame for this project (T) was a three-month period beginning September 1, 2013.

Significance of the Evidence-Based Practice Project

With a sufficient amount of literature and the national objectives, the EBP project was constructed to address the identified need for improved osteoporosis screening and treatment protocol for female Medicare patients. The office's lack of routine osteoporosis screening and treatment procedures provided a suitable forum for project implementation.

Current literature supported the need for improved bone health practices in primary care settings because office settings have been able to offer a unique integrated setting for preventative health and maintenance services. Numerous authors have identified significant patient-focused barriers to BMD screenings in older female adults:

(a) cost barriers (b) infrequency of testing (c) side effects of treatments or (d) importance of the preventative health maintenance (Cadarette, Beaton & Hawker, 2004; Lafata et al., 2007; Solomon et al., 2005; & Warriner et al., 2012) Provider-focused barriers have also been recognized: (a) lack of an effective reminder system, (b) limited time for preventative education, and (c) unaware of preventative screening recommendations (Ayoub, Newman, Blosky, Stewart & Wood, 2009; Feldstein et al., 2003; Lafata et al., 2007; & Warriner et al., 2012) The APN, with knowledge of these barriers and disparities, as well as evidence of an effective strategy for improving BMD screening, would be in a key position to affect practice change that will improve patient outcomes. "Low bone density is a risk factor for fractures, especially in elderly persons. Screening and treating low BMD detected through screening can result in increased BMD and decrease the risk for subsequent fractures and fracture related morbidity and mortality" (USPSTF, 2011, p. 362). It was anticipated that this EBP project would not only have a positive impact at the individual level, but also at the health care team, and an organizational level. The effects at the individual level would include appropriate identification and initiation of treatment of osteoporosis that would result in an overall positive influence on the health of female Medicare patients. The proposed change at the health care team level would allow the providers to not only be involved in EBP project, but also actively change patient behavior. In addition, it was expected that this EBP project protocol would have a positive impact on the clinic at an organizational level by allowing the clinic to meet the proposed USPSTF screening recommendations for osteoporosis.

Implementation of this EBP project was intended to not only have a positive effect on the health of female Medicare patients, but to also add to the body of evidence pertaining to osteoporosis and female Medicare patients. Findings from this EBP project

were intended to provide information to other primary care community care clinics as well as other APNs who are considering pursuing EBP practice change for the screening and treatment of osteoporosis in the female Medicare population. This EBP project was designed to provide additional depth to the current body of knowledge regarding BMD screening in older adults. Results would be useful for other APNs as they instituted simple, patient-focused strategies to improve patient outcomes.

CHAPTER 2

THEORETICAL FRAMEWORK AND REVIEW OF LITERATURE

Theoretical Framework

Implementing change in provider behavior has been a process that can be met with resistance. Kotter and Cohen (2002) suggested that the key to organizational change has been assisting people to alter behaviors; their Eight Stages of Change (ESC) model has provided a multi-step process that promotes successful organizational change. The ESC process has consisted of (a) generating a sense of urgency, (b) building the guiding team, (c) creating the vision, (d) communicating the vision, (e) empowering others to act on the vision, (f) creating short term gains, (g) building on the change, and (h) solidifying the change. Campbell (2008) recognized that organizational change in health care can be successfully managed utilizing Kotter and Cohen's dynamic, non-linear, eight step approach.

John Kotter has been internationally known and widely regarded as the foremost expert on the topics of leadership and transformation. As a professor of leadership at Harvard Business School, he has studied over 100 business companies. In the 1990's he determined that more than 50% of all major changes in organizations failed and then identified strategies to manage change (Kotter, 1996). Kotter has identified the most common mistakes companies made in attempting to create change and has offered an eight-step process to overcome the obstacles and carry out the companies agenda: establishing a greater sense of urgency, creating the guiding partnership, developing a vision and strategy, communicating the change vision, empowering others to act, creating short-term wins, consolidating gains and producing even more change, and institutionalizing new approaches in the future (Kotter, 1996).

Kotter and Cohen revised the model in 2002 to meet the needs of the changing organizational culture. In today's society, organizations have been forced to change faster and more radically than ever. Kotter and Cohen have revealed the results of their research within over 100 organizations in the midst of large-scale change (Kotter & Cohen, 2002). Although most organizations believe change happens by making people "think" differently, Kotter and Cohen believe in making individuals "feel" differently (Kotter & Cohen, 2002).

Application of Theoretical Framework

In the first step of ESC, Kotter and Cohen (2002) have explained that creating a sense of urgency is vital to obtain the desired cooperation within the organization. After investigation of current office practices with regards to routine osteoporosis screening, the project leader and healthcare providers recognized the need to implement a practice change, thus fulfilling step one increasing a sense of urgency. In order to create this sense of urgency, it was essential that the office clinical staff understand the importance of osteoporosis screening, but more importantly to realize how the implementation of a mailed patient reminder would not further impact productivity and negatively impact their day-to-day workflow.

With active support from the primary physician, the remaining office staff was brought in as part of the partnership to develop a successful EBP project. Engaging clinical staff in the development of the EBP project allowed the project leader to gain a better understanding of what would be feasible and realistic with regards to project implementation. In creating the guiding coalition, Kotter and Cohen (2002) revealed that no one individual is ever able to develop and communicate the vision, eliminate potential obstacles, generate short-term wins, lead, manage, and anchor changes.

During Kotter and Cohen's (2002) third step, a vision to guide the change and promote understanding would need to be developed. Integrating a screening osteoporosis patient reminder system for the office would allow meeting the recommended screening guidelines for osteoporosis. The vision of this EBP project was to promote a better understanding of the importance of routine osteoporosis screening of those female Medicare patients that have osteoporosis. In examining the office's current practices and their climate for change, the project leader was able to successfully navigate through the first three steps of Kotter and Cohen's (2002) ESC process: (a) increasing a sense of urgency, (b) building the guiding team, and (c) getting the vision right. Because employees would not make changes unless they believe that useful change is possible (Kotter, 2007), effectively communicating the importance of osteoporosis screening as well as providing examples from the literature, enabled the office staff to envision the potential effects of the proposed EBP project. Within the ESC fourth step, the change vision would be conveyed. The vision of this project was to educate patients on osteoporosis and the need for BMD screenings by encouraging strong bone health through raising awareness, promoting diet, lifestyle changes and exercise defining and implementing prevention and treatment options; these processes would take place through several different forums on numerous occasions. Speaking first with the physician and then with the office staff in weekly meetings allowed for reiteration and enhanced understanding within this EBP project. Step five of the ESC process involved empowering a broad based action plan and overcoming obstacles that may possibly hinder the forward momentum of implementing a reminder for osteoporosis screening (Kotter & Cohen, 2002). The biggest obstacle had been the office implementation of EHR. This caused a decrease in productivity, increased provider stress, and decreased time for education and prevention activities which impacted this EBP project. Time was another obstacle as EHR had become time consuming for the

providers and has decreased their productivity. Recently, the second APN in the office resigned and the office had hired a new APN. The physician had two assistants working with him, but the APNs were working with one assistant, so there was more time needed to acclimate to the system. The project implementer had to train the new APN in the office and have her agree to participate in this EBP project. These potential impediments were avoided by providing timely feedback and demonstrating how the protocol generated a positive impact, which leads into step six. Generating short term wins have demonstrated effectiveness in building momentum and showing people that their hard work and sacrifices are paying off (Kotter, 1996). With bi-weekly data collection, the project leader was able to track the effectiveness of the mailed reminder with the BMD screening. After data collection, the project leader conveyed to the physician and other healthcare providers the monthly progress. The monthly meetings were also designed to be a time to examine what processes would not be successful and what additional steps would need to be implemented in order to improve patient compliance

When moving into the final two steps of the ESC process (building on the change and institutionalizing/cementing the change), it was important to recognize that true success within an organizational change involves the organization's willingness and ability to continue with the implemented change (Kotter & Schlesinger, 2008). To ensure that the implemented change continues, it was essential that the changes implemented were involved with the current organizational culture. If each of the previous seven steps within this process were successfully completed, the continued implementation of routine osteoporosis screening would be fundamental. After the final data collection was completed, the project leader was scheduled to meet with the physician and the second APN to discuss the EBP project's future. It was determined that the intervention would continue, with any needed changes, during and beyond data collection.

Strengths and Limitations of Theoretical Framework

An identified strength of Kotter and Cohen's ESC process has been that it is an easy to follow step-by-step approach to implementing successful organizational change. Within the setting of this project, this model allowed for extraneous factors (e.g., organizational culture, communication, and goals) to be taken into consideration and accounted for in a check list type approach. Mixon, Kemp,Towle and Schrader, (2005) utilized Kotter and Cohen's ESC process to merge three nursing programs into one larger program; Mixon et al. found that the model helped to identify, explain, and address significant steps needed to successfully navigate through change. The authors also found that participating in short-term wins helped to increase faculty cohesiveness and productivity throughout the change process (Mixon et al., 2005).

While this step-by-step approach may be an identified strength, it was also considered to be a limitation. Campbell (2008) identified that the use of this model was interactive (i.e., one step can be used to accomplish another step) and relied on the skills and knowledge of who was employing the change. Kotter (2007) indicated that the change process goes through a series of phases that usually require a considerable length of time. The twelve-week time frame allotted for this EBP project implementation, coupled with the actual time it takes for organizational change to occur and progress through each step within an appropriate amount of time was thought to be a potential challenge for the project. While the time constraints did pose an initial challenge, the fact that the project implementer worked within the system the EBP project could facilitate this change well after the formal end of the DNP project.

Evidence-Based Practice Model of Implementation

In addition to Kotter and Cohen's ESC process, the proposed EBP project was

also guided by the Stetler Model (Stetler, 1994). This model was originally published in 1976 as the Stetler/Marram model for research utilization at the University of Massachusetts. The model was originally created to assist in the application of research findings at the practitioner level, rather than the organizational level of practice (Stetler, 1994). Since its original publication, the model has undergone several revisions which focus on improving the appropriateness, feasibility, and manner in which research findings are utilized at an individual or group level (Stetler, 2001) With these evolving refinements and most recent revision in 2009, the framework was utilized at both the practitioner and organizational level of practice (Stetler, 2010). According to Stetler (2010), the model has been practitioner-oriented, consisting of several criterion-based decision making steps to facilitate proper utilization of research and relevant clinical evidence. While the model has been practitioner-oriented, it is important to note that the model has also been applied to groups of practitioners on a committee or project team, as well as the activities of administrators, managers, educators, and other health care specialists (Stetler, 2010). The Stetler model was chosen for this EBP project because of the model's focus on group work, which was consistent with Kotter and Cohen's ESC's processes; In addition, the Stetler model offered a methodical, comprehensive approach to designing and implementing EBP research.

The Stetler model has been noted to consist of five phases of activity: (a) preparation, (b) validation, (c) comparative evaluation/decision making, (d) translation/application, and (e) evaluation. These stages were subsequently addressed as they pertained to this EBP project implementation.

After meeting with the physician and providers, the project leader identified a need for a practice change involving routine screening of osteoporosis in female Medicare patients. Once this need was identified, current practice was explored. It was

determined that existing practices were inadequate; no routine osteoporosis screenings were being implemented on a consistent basis. After the clinical problem was identified, it was important to (a) identify the EBP project expectations and (b) determine if undertaking a practice change focused on osteoporosis screening was feasible. Moving forward in the preparation stage, the project team (composed of the faculty advisor, project leader, and clinical support staff members) was established.

According to Stetler (2010), once the need has been identified, validation must occur. Therefore, a thorough review of the literature, with a utilization focus in mind, was conducted by the project implementer. Supportive evidence was then selected, critiqued, and summarized. For this EBP project, the literature appraisal focus began with osteoporosis and BMD screening in primary care. Once a broad base of evidence was established, the focus was then tailored to fit the specific needs of females age 65 years and older. After sufficient evidence was identified, project progression turned toward the third phase of the Stetler model.

In the phase of comparative evaluation/decision making, decisions were made with regard to the identified evidence. According to Stetler (2010), it has been important that feasibility, current practice, and substantiating evidence were all taken into consideration. In addition, this phase within Stetler's model supported Kotter and Cohen model's (2002) third step of developing a vision and change strategy. Stetler's third step targeted prompting the project leader to evaluate the feasibility of proposed interventions, including assessing the readiness of the organization, and current practice standards. Since this EBP project was a quality assurance project, patient consent was not needed. But, an agreement for project implementation and provider participation was obtained from the physician and the second APN. This EBP project leader utilized specific interventions (i.e., an educational session for health care providers, mailed

patient reminders, and a printed form letter) to facilitate communication with the patients. Utilizing the findings from phase three, a formal recommendation for change was to be developed.

To implement Stetler's Translation/Application step, the project leader had to decide (a) on the type of change to be implemented and (b) how to effectively put into practice a BMD screening protocol that would produce positive change for both the patient and the providers. An important step involved meeting with the providers to discuss the proposed project and acquiring their feedback. This action also aligned with Kotter and Cohen's steps four and five: communicating the vision and empowering employees. Monitoring progress at an individual level, the project leader decided to measure the success of the change by tracking the effectiveness of the mailed reminder with the BMD screening.

The final phase of the Stetler model has been developed to evaluate the attainment of identified project goals. Monthly data collection allowed the project leader the ability to monitor the short-term effectiveness of the mailed patient reminder. In addition to collecting results/outcomes, an important step involved informally evaluating the healthcare providers' opinions of project effectiveness. Results were then distributed to the providers and recommendations for future practice implementation, including the potential integration of a system-wide osteoporosis screening protocol, were given to the practice manager. An increased awareness of osteoporosis was anticipated to be inevitably raised throughout the facility as a whole, subsequently increasing utilization of their screening services. Completing Stelter's final phase also seamlessly fit with the completion of steps seven and eight in Kotter and Cohen's ESC process: consolidating gains, producing more change, and anchoring new approaches.

Literature Search

A search of the CINAHL database using the key words “osteoporosis and post card reminders” produced only one relevant title for review; six abstracts were obtained using the key terms “patient reminders and osteoporosis”; 18 potential articles were identified using the key term “patient reminders”, one additional article was identified using the search term combination “mailed reminders and osteoporosis” and “mailed reminders” yielded ten abstracts for review. A search of the Medline database using the key words “osteoporosis and post card reminders” produced 3 relevant titles for review; 17 potential articles were obtained using the key terms “mailed reminders”, and 49 abstracts were obtained for the key terms “patient reminders”. When exclusion criteria of years 2003-2012 were added to “post card reminders”, the results were narrowed to three. When exclusion criteria of years 2005-2012 were added to “mailed reminders”, this narrowed the search to 17 pieces of evidence; for “patient reminders” applying these criteria limited the results to 49 articles. When searching the Cochrane database the terms “post card reminders, patient reminders and mailed reminders” resulted in 33 for postcard reminders which were from 2000 were not useable. A search of the Cochrane database using the key term “patient reminders” yielded 3 potential pieces of supportive evidence; using the key term “mailed reminders”, resulted in an additional 59 articles. The JBI ConNect was also searched using the terms “patient reminder”. This search unfortunately did not yield any appropriate resources and thus JBI ConNect was then searched utilizing the term “mailed reminder”, which yielded only telephone related results which were not pertinent to this project. These results were excluded from further review because exclusion criteria were articles that did not include a mailed reminder.

For the articles that were selected after a review of abstracts, a hand search of the reference lists were reviewed for additional potential resources. Additional websites

were also reviewed to obtain clinical guidelines, these included The National Osteoporosis Foundation, U.S. Preventive Services Task Force, and National Institutes of Health. One clinical guideline was found published by the U.S. Preventive Services Task Force that met the criteria for inclusion: National Guidelines on BMD screenings.

After eliminating duplicates, 20 abstracts were reviewed. Nine of these were eliminated from further review because they did not include a mailed remainder intervention arm. The remaining eleven pieces of evidence included a guideline that supporting the use of DXA screening, as well as two systemic reviews and eight research articles that focused on mailed reminders.

Appraisal of Relevant Evidence

The Haynes “5S” Model (Haynes, 2007) was utilized to organize relevant research for this EBP project. The Haynes “5S” model is a pyramid comprised of five levels of clinical evidence. The five levels starting with the lowest level and working to the highest are Expert Opinion, Studies, Syntheses, Synopses, Summaries, and Systems (Haynes, 2007). Eleven pieces of evidence were included for final appraisal: one Level II, two Level IV, and eight Level V (see Appendix A).

The Critical Appraisal Skills Program is a non-profit international organization that was established in 1998 to promote skills in finding, critically analyzing, and utilizing evidence (Critical Appraisal Skills Programme, [CASP] 2013). Readily available tools focus on evaluating systematic reviews and primary research through answering 11 questions in three steps: evaluating if the study is valid, identifying the results, and determining if the results are useful. Although not scored, the “yes” or “no” answers provide the reviewer ample opportunity to determine its appropriateness for use within an EBP project. For example, results are not examined until the reviewer determines the

study is valid, and once the results are determined to be valid and important the reviewer needs to determine the applicability of the evidence for the EBP project.

Level 1: Systems

At the top of the pyramid are “systems”, which included computerized decision support resulting from current best evidence matching the patient specific conditions. For this EBP project, there were no “systems” resources available.

Level 2: Summaries

The Agency for Healthcare Research and Quality’s (AHRQ’s) National Guideline Clearinghouse has recommended screening for osteoporosis in women age 65 years and older (USPSTF, 2011). The authors clearly identified the overall objectives for (a) women aged 65 years and older without previous known fractures or secondary causes of osteoporosis and (b) women aged under 65 years whose 10-year fracture risk is equal to or greater than that of a 65-year-old white woman without additional risk factors. The recommendation was identified as grade B; grade B recommendation is a “high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial” (USPSTF, 2011, p.7). The development group of the guidelines was clearly described, the authors noted that the views and preferences of the target population had been sought, and the target users of the guidelines were defined. The strengths and limitations of the body of evidence and the methods for formulating the recommendations were clearly described. The health benefits, side effects, and risks were considered in the formulation of recommendations, and there was an explicit link between the recommendations and supporting evidence.

The key USPSTF recommendations included in the guideline were (a) to screen women age 65 and older with dual-energy x-ray absorptiometry of the hip and lumbar

spine every two years (Grade B); and (b) that interventions should focus on adequate calcium and vitamin D intake and weight-bearing exercise, as well as approved FDA therapies to reduce fracture risk (Grade B). While this information may not be helpful for the use of patient reminders, it supports the need for the BMD every two years.

Level 3: Synopses

The third level of the Haynes "5S" pyramid is the "synopses" which include meta-analysis that provide a brief description of original studies and reviews and include an analysis of a collection of results from individual studies. Sources for "synopses" include Cochrane Library: Database of Systematic Reviews, JBI ConNect, PubMed, and CINAHL. Each of these databases was searched for this EBP project; no references met the required inclusion and exclusion criteria.

Level 4: Synthesis

The fourth level of evidence, "syntheses", includes cumulative reviews of single studies, often identified as "systematic reviews". A search for systematic reviews was included within the overall search for relative evidence, and while there were no Cochrane Reviews that specifically addressed the PICOT question, two systematic reviews that were applicable to this project were identified for appraisal.

Thomas, Russell and Lorenzetti (2010) conducted a systematic review to assess effects of interventions to increase health promotion activities in those 60 years of age or older. Thomas and colleagues specifically evaluated the effect of interventions on immunization rates, but the review included the use of mailed patient reminders and provider prompts or reminders. The objectives of this review were clearly stated and the authors provided an analytic framework developed to answer the clinical question (a) Does using postcards, letters, brochures, telephone calls, computer reminders,

educational campaigns, vaccination campaigns or incentive for patient increase community demand or patients' perceptions of their susceptibility to influenza?

Thomas et al. (2010) reviewed a total of 44 RCTs, which included older adults residing in community settings within high-income countries. The summary of effects comparing the effectiveness of postcard to no intervention for increasing community demand for influenza vaccine included 11 RCTs with a total of 59,193 participants in the intervention groups and 246,455 in the control groups ($p < 0.00001$). Five of the 11 RCTs showed a positive effect of the postcards 0.33 (95% CI [1.79, 6.22]) $p = < 0.0002$. The investigators then reviewed the evidence comparing the use of a letter, postcard or personalized phone call, or no intervention on participant's health status. Nine of the 13 RCTs showed a positive effect of the intervention 2.72 (95% CI [1.55, 4.76]) $p = 0.0005$.

Using the CASP Systematic Review Checklist, the evidence presented by Thomas et al. (2010) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Bonfill, Pladevall, Marti, and Emparanza (2009) conducted a systematic review, to identify the effectiveness of screening strategies for women ages 59 to 59. Although the screening specifically was designed to reduce breast cancer mortality risk, there is no reason to believe that the information could not be generalized to reducing fragility fracture risk through osteoporosis screening. This systematic review's objectives were to assess the effectiveness of different strategies for increasing the participation rate of women invited to community breast cancer screening activities or mammography programs. MEDLINE, CENTRAL, and EMBASE searches from 1966-2000 were supplemented by reports and letters to the European Screening Breast Cancer Program.

Both published and unpublished trials were eligible for inclusion, provided the women had been invited to a community breast screening activity or program and had been randomized to an intervention group or a control group. Out of 151 articles, 34 were excluded because they lacked a control group; 58 of the 117 articles were considered opportunistic and not community-based; 59 articles, which reported 70 community–based randomized controlled trials or clinical controlled trials, were accepted. In 24 of these, the control group had not been exposed to any active intervention, but eight of the 24 had to be excluded because attendance was unknown. In the end, 14 studies were reviewed.

Bonfill et al. (2009) found that inviting women into community breast cancer screening services with letter of invitation, mailed education material, letter of invitation plus phone calls, and training activities plus direct reminders for the women all seem to increase numbers of women participating. It is also important to note that osteoporosis screening tools can be utilized in the EBP project due to the successful response for breast cancer screening. It is important to consider that while these results may not be favorable to the proposed EBP project, the use of a routine breast screening tool can still be considered effective in facilitating appropriate management of psychological problems (Kaczorowski et al., 2009). Letters of invitation compared with control had 2451 women in the intervention group and 1715 women in the control group. The odds ratio in relation to the outcome, attendance in response to the mammogram invitation during the 12 months after the invitation, was 1.66 (95% CI [1.43, 1.92]). Mailed education material compared with control had 305 women in the intervention group and 240 in the control group. The odds ratio for the outcome, attendance in response to the mammogram invitation during the 12 months after the invitation, was 2.81 (95% CI [1.96, 4.02]). The invitation letters plus phone calls arm had 739 women in the intervention

group and 751 in the control group. The odds ratio for the outcome, attendance in response to the mammogram invitation during the 12 months after the invitation, was statistically significant at 2.53 (95% CI [2.02, 3.18]).

Most recruitment strategies for breast cancer screening programs in this review were found to be more effective than no intervention. Whether sending letters, mailing educational material, or making phone calls to women, these actions were shown to increase the attendance rates of community breast cancer screening services.

Using the CASP Systematic Review Checklist, the evidence from the Bonfill et al. (2009) systematic review was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Level 5: Studies

In the lowest level, studies, of the Haynes "5S" model pyramid. Single studies consist of randomized controlled trials, cohort studies, case control studies, and case series/reports. Eight single studies met both the inclusion and exclusion criteria for this EBP project. These included seven randomized control trials and one cross sectional study. Although this literature provides a lower level of evidence as raked by the Hanes system, the articles reviewed provided significant support for the proposed EBP project. A summary of these studies' characteristics and findings are provided in Appendix A: Evidence Data.

Warriner et al. (2012) conducted group randomized, controlled trial of 4163 women over 65 years of age who had not undergone DXA screening in the past four years. The women were randomized to receive intervention materials (patient osteoporosis brochure and a letter explaining how to self-schedule a DXA scan), *n* = 977

versus usual care (control), n = 4163. The outcome of interest was DXA completion. DXA scan completion was significantly improved through use of a mailed osteoporosis brochure and the availability for patients to self-schedule (17. 3% in the intervention group vs. 5.25 in the usual care group, $p < 0.0001$). The researchers concluded that mailing a simple educational osteoporosis brochure and providing an opportunity to self-schedule a DXA scan improved osteoporosis screening. This approach was an effective strategy within a quality improvement program to increase rates of osteoporosis screening.

Using the CASP Randomized Control Review Checklist, the evidence presented by Warriner et al. (2012) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Lafata et al. (2007) conducted a randomized cluster trial where primary care clinics were randomized to usual care, mailed reminders alone, or mailed reminders with physician prompts. Study participants (n =10,354) were females aged 65 to 69 years. Information was collected on BMD testing, pharmacy dispensing, and other patient characteristics. The outcome of interest was the effectiveness of patient mailed reminders (a) alone and (b) in combination with physician prompts to improve osteoporosis screening and treatment. The researcher's osteoporosis screening rates were 10.8% in the usual care (control arm), 24.1% in mailed reminders, and 28.9% in mailed reminders with physician prompt ($p < 0.001$). Among those tested, the rate of abnormal findings did not differ significantly by study arm ($p = 0.104$): 16.2% in usual care, 17.8% in the mailed reminder arm, and 13.7% in the mailed reminder in combination with physician prompt arm. Results adjusted for differences at baseline

indicated that mailed reminders significantly improved testing rates compared to usual care.

Using the CASP Randomized Control Review Checklist, the evidence presented by Lafata et al. (2007) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Lee, Groessl, Ganiats, and Ho (2011) conducted a blinded, randomized, controlled trial; patients were randomly assigned to usual care fecal occult blood test (FOBT) n = 382 or the intervention group (FOBT plus a mailed reminder) n = 387. Ten days after picking up the FOBT cards, a 1-page reminder with information related to colorectal cancer screening was mailed to the intervention group. The costs and incremental cost effectiveness ratio of the intervention was assessed and calculated respectively. Sensitivity analyses were based on varying costs on labor and supplies. The primary outcome was number of returned FOBT cards after six months. At six months after card distribution, 64.6% of the patients in the intervention group returned FOBT cards compared with 48.4% in the control group ($p < 0.001$). The total cost of the intervention was $962 or $2.49 per patient. Sensitivity analysis based on a 10% cost variation was $13.50 to $16.50 per additional patient screened for colorectal cancer. Lee et al. concluded that a mailed educational reminder increased FOBT card return rates at a cost many health care systems could afford.

Using the CASP Randomized Control Review Checklist, the evidence presented by Lee et al. (2011) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Sequist, Zaslavsky, Marshall, Fletcher, and Ayanian (2009) conducted a randomized controlled trial of patient and physician reminders as a secondary prevention strategy in eleven ambulatory health care centers in eastern Massachusetts. Participants were patients, ages 50 to 80 years who were overdue for colorectal cancer screening, and their 110 primary care physicians. Patients were randomly assigned to receive mailings containing educational pamphlets, fecal occult blood test kit, and instructions for direct scheduling of flexible sigmoidoscopy or colonoscopy. Physicians were randomly assigned to receive electronic reminders during office visits with patients overdue for screenings. The primary outcome was receipt of fecal occult blood testing, flexible sigmoidoscopy, or colonoscopy over 15 months, and the secondary outcome was detection of colorectal adenomas. Among the group of patients who were overdue for screening with usual care, patients who received mailings (n = 10,930) were more likely to complete colorectal cancer screening than those who did not control, (n = 10,930) 44.0% vs. 38.1%, $p < .001$. The patient mailing was more effective among older patients, with the absolute increase in screening rates ranging from 3.7% among patients 50 to 59 years to 10.1% among patients aged 70 to 80 years. The mailing primarily increased the performance of FOBT among the intervention group compared with the control group (25.4% vs. 20.4%, $p < .001$). Detection of colorectal adenomas tended to be greater among patients who received mailings, although the finding were not statistically significant (5.7% vs. 5.2%, $p = .10$).

The researchers concluded that mailed reminders to patients was an effective tool to promote colorectal cancer screening, and electronic reminders to physicians could be used to increase screening among adults who have more frequent primary care visits.

Using the CASP Randomized Control Review Checklist, the evidence presented by Sequist et al. (2009) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Partin, Slater, and Caplan's (2005) randomized controlled trial examined the effect of two interventions on secondary prevention strategies (i.e., repeat mammography utilization) using various adherence definitions. One thousand five hundred fifty-eight women age 40 to 63 years were randomized into three groups: mailed reminder (minimum group) *n* = 502; mailed thank you cards and newsletters and reminders (maximum group) *n* = 560; no mailings (control) *n* = 496. The primary outcome percentages of women who get repeat mammograms were assessed, using administrative data, at 13, 15, 18, and 24 months after the qualifying mammogram. Very few women (less than 16% in any study group) received a repeat mammogram within 12 months of the study qualifying mammogram. The proportions receiving a repeat mammogram (which the researchers did not describe) within 13 months were 0.28, 0.30, and 0.23 for control, minimum, and maximum groups, respectively. The corresponding proportions were 0.28, 0.43, and 0.45 at 15 months 1.25 (95% CI [0.97, 1.61]); 0.43, 0.49, and 0.51 at 18 months 1.29 (95% CI [1.00, 1.66]); and 0.47, 0.52, and 0.54 at 24 months 1.20 (95% CI [0.94, 1.54]). The differences between control and minimum subjects were significant only at 18 months. At 13 months, the repeat mammography rates are generally low for all groups (>35%), and the small difference across study groups were not statistically significant. Repeat mammography rates increased for all study groups between 13 and 15 months, but more dramatically for the intervention groups. The roughly 7% difference between maximum intervention and control subjects at 16 month follow-up point was statistically significant, but the roughly 5% difference

between minimum intervention and control subjects was not. The outcome of the study was that the two low-cost mailed interventions evaluated modestly increased repeat mammography utilization. However, effects were not visible until at least 15 months after the qualifying mammogram.

Using the CASP Randomized Control Review Checklist, the evidence presented by Partin et al. (2005) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Saywell, Champion, Skinner, and Daggy (2004) examined the cost-effectiveness of three combinations of tailored telephone and mailed intervention strategies for increasing adherence to secondary prevention interventions (i.e., mammography) in a randomized controlled trial. The 1044 participants were randomly assigned to one of four groups: the contemplators group (n = 791), precontemplators group (n = 252), history of mammography group (n = 931), and no history of mammography group (n = 109). A logistic regression model, with adherence as the dependent variable and group as the independent variable, was used to test for significant differences, and a ratio of cost/improvement in mammogram adherence evaluated the cost-effectiveness. All three of the interventions (tailored telephone, tailored mail, and tailored telephone and mail) had significantly better adherence rate compared with the control group (usual care). However, when also considering cost, one emerged as the superior strategy. The cost-effectiveness rations for the three interventions show that the tailored mail (letter) was the most cost-effective strategy, achieving 43.3% mammography adherence at a marginal cost 1.718 (95% CI [1.20, 2.46]), $p < 0.003$. The tailored mail plus telephone achieved a greater adherence at 49.4% but at a higher cost 2.014 (95% CI [9.42, 2.87]),

$p < 0.0001$. The researchers concluded that a tailored mail reminder was an effective and economical intervention to increase mammography adherence.

Using the CASP Randomized Control Review Checklist, the evidence presented by Saywell et al. (2004) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Quinley, Mahotiere, Messina, Lee, and Mikail (2003) conducted a randomized control trial evaluating mammography screening, using Medicare claims to identify New York women with claims for mammograms during a baseline and an 18-month follow-up period from 1999 to 2000. Receipt of a second mammogram was examined in relation to whether the facility sends annual reminders, while controlling other patient factors. Of the 97,506 women studied, 76% attended facilities that send annual reminders. Of the women that received the reminder, 74% received a second mammogram within 18 months compared to 67% for the other women. The impact of reminders was significant in all subgroups, but was less for women who were younger, minority, on Medicaid, in New York City, or who received a diagnostic mammogram. In multivariate analysis, the adjusted *OR* for return within 18 months if the facility uses reminders was 1.42 (95% CI [1.37, 1.47]). Among women who had screening and diagnostic mammograms, those received reminders were 1.55 ($p < 0.001$) and 1.23 ($p < 0.001$) times, respectively, more likely to have a repeat mammogram compared to women receiving the same type of mammogram who didn't receive reminders. Adjusted *OR* favoring repeat mammograms among women who received reminders versus those who did not decreased with decreasing age: *OR* = 1.48 ($p < 0.001$) among women greater than 75 years; *OR* = 1.4 ($p < 0.001$) among women ages 65-74; *OR* = 1.27 ($p < 0.001$) among women ages 40 to 64 years. Researchers concluded that annual patient reminders from mammography

facilities were effective in increasing regular repeat mammography in Medicare women, although their impact was smaller in some groups.

Using the CASP Randomized Control Review Checklist, the evidence presented by Quinley et al. (2003) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

Lester et al.'s (2009) cross-sectional study evaluated health care information technology as a means to improve quality and efficiency in the primary care setting. Improving quality of primary care, such as cancer screening rates, was found to require addressing the barriers of a system at provider and patient levels. The authors reported the development, implementation, and preliminary use of a new breast cancer screening outreach program in a large multicenter primary care network. Prior to implementation, there were no systematic efforts to identify or send reminders to patients overdue for mammography screening. Addressing barriers to care at the clinical system, individual providers, and patient levels resulted in over 85% of network physicians and case managers across all practices taking action on 83% of the overdue mammograms population. Over 63% of the mammogram-overdue population was successfully contacted by letter within the first six months.

Using the CASP Cohort Study Review Checklist, the evidence presented by Lester et al. (2009) was found to meet criteria for validity and reliability. The results were also found to be applicable to this EBP project. Thus, the evidence was included in this summary.

The primary outcome of interest in all eight studies reviewed was the effectiveness of patient reminders/mailed reminders in the adult population. Two studies focused on osteoporosis (Lafata et al., 2007; Warriner et al.,2012). Seven studies used a

randomized control methodology (Lafata et al., 2007; Lee et al., 2011; Partin et al., 2005; Quinley et al,. 2003; Mahotiere et al., 2003; Saywell et al., 2004; Sequist et al., 2009; Warriner et al,. 2012). Lester et al.'s (2009) cross-sectional study evaluated health care information technology as a means to improve quality and efficiency in the primary care setting.

Five of the eight studies reviewed were conducted within clinic settings (Lafata et al., 2007; Lee et al., 2011; Lester et al., 2009; Sequist et al., 2009; Warriner et al., 2012). Having an equal proportion of studies that focused on patient reminders within a primary care setting, allowed for generalizability to the female adult population and increased the applicability of the evidence to this EBP project.

The evidence reviewed also provided support for the use of interventions among older adults. Warriner et al. (2012) found that mailing a simple educational osteoporosis brochure and providing an opportunity to self-schedule a DXA scan significantly improved osteoporosis screening in women 65 years of age and older. There was an approximate 12% to 19% increase in the rate of DXA screening in women receiving the intervention when compared to the control group, depending on inclusion of all women. Lafata et al. (2012) found that the use of mailed reminders significantly increased osteoporosis screening rates among insured women. Furthermore, such reminders worked well among women of older age compared to usual care. Whereas the use of patient mailed reminders alone, led to increases in BMD testing rates, the addition of physician prompts further improved testing rates, thereby, illustrating the potential of reminders and prompts combined to improve osteoporosis screening rates.

Best Practice Model Recommendation

After reviewing the literature it was evident that even though there was a lack of literature specifically related to mailed reminders and BMD screening, there was an identifiable need for routine osteoporosis screening for the female Medicare population.

Even with the lack of literature, there was adequate evidence supporting the use of mailed reminders for secondary prevention strategies. While higher levels of evidence were lacking, several single studies revealed the benefit and importance of effectiveness of mailed educational reminders.

The best practice recommendation helped to answer the clinical question: What interventions would be most effective in meeting the projects established objectives? Integrating evidence obtained from the literature in the form of an osteoporosis screening, the patient reminder intervention was anticipated to be able to increase the likelihood of osteoporosis identification. Furthermore, working with the healthcare providers to establish a mutually agreeable plan of action would assist the project leader in being able to answer the proposed clinical question. Data collected from monthly chart audits during and after project implementation would provide the data necessary to determine the effectiveness of the interventions, which in turn would ultimately determine if the best practice recommendation supports the clinical question.

CHAPTER 3

IMPLEMENTATION OF PRACTICE CHANGE

Participants and Setting

The setting for this EBP project was a rural Community Care Clinic located in Northwest Indiana. The office served the local community since 1952, when the physician's father built the clinic.

The office merged with a local hospital in April of 2010. The office was affiliated with a local 427-bed acute care hospital which offered a wide variety of healthcare services to meet the needs of the older adults in Indiana and Illinois (Practice Physician, personal communication, June 10, 2013).

The office has served primary blue-collared, middle-class population of Lake County, Indiana (Practice Physician, personal communication, June 10, 2013). At the time of project implementation, there were three health care providers. The project facilitator was an APN who had collaborated for more than 12 years with the practice physician; an additional APN had joined the practice in July of 2013. The family physician worked 32 hours a week, while the APNs worked 40 hours a week. Although the office was designated as family practice, the patient population was more internal medicine, as 90% of the patients are adult; yet, no more than 20% were Medicare recipients with chronic medical conditions (Practice Physician, personal communication, June 10, 2013). Medicare recipients accounted for approximately 20% of all office visits (Practice Physician, personal communication, June 10, 2013). Of the 3322 patient population 328 were female Medicare recipients. The patient mix within the clinic was not typical ethnic diversity of Lake County as it was 96% Caucasian, with the other 4% of patients being of Hispanic, Asian, Iranian, or African American ethnicity.

Outcomes

Two major outcomes were evaluated with this EBP project. Consistent with the

supporting literature, the primary outcome of interest within this project was a 12 percentage point increase in BMD screening rates. Additionally, it was essential to determine the effectiveness of the mailed reminder in increasing the osteoporosis screening rates, as compared to the previous practice of provider recommendation during a scheduled visit.

Intervention

The intervention consisted of sending patients who were not up-to-date on their BMD a pre-signed introductory letter (see Appendix B) that provided a general explanation about osteoporosis and the rationale for screening. The same mailing included the signed order from their primary healthcare provider (the physician or one of the two APNs). The mailing was stuffed into the enveloped by the office manager and x-ray technician, who ran them through the office postage machine. The mailings where then picked up from the office by the postal carrier and brought to the post local post office.

Planning

Prior to implementation, project support was obtained from the collaborative physician, additional NP, and additional office staff. The role of each participant was detailed. A letter of support was provided by the physician and additional NP (see Appendix C). Additionally, financial support was obtained from the office's practice manager and additional support was secured from the parent hospital's office liaison.

Confirmation of statistics provided from the physician was undertaken via a computer-based (electronic healthcare records [EHR]) chart audit, undertaken by the Epic team as the office recently transitioned to EHR; the EHR audit was used to obtain post-intervention data. The Epic team was employed by the hospital and had signed confidentiality statements within the institution. Their daily work allowed them to access

specific sections of the patient's medical records when requested by an authorized healthcare provider. Authorization for this chart audit was provided by the physician and the additional APN. Information from the EHR audit was used by the project facilitator to compile a table of eligible patients who did not have documentation of a BMD being completed within the past two year. For confidentiality purposes, these patients were not identified by name. Instead, the patients' medical record numbers were used on the BMD EBP Data Collection Tool (see Appendix D). The BMD EBP Data Collection Tool also included demographic information, (i.e., age and race) which was obtained by the project facilitator and the patient's primary care provider, the MD or one of the two APNs. The project facilitator obtained a signed BMD order (see Appendix E) from the primary care provider for each of the patients who were not up-to-date.

Recruiting Sample

It has been well-established that half of all Americans over age 50 are expected to have low bone density or osteoporosis (Looker, 2012). Researchers have demonstrated that in women, the prevalence of low bone mass increases until age 70 years, after which it remains stable (Looker et al., 2012). Furthermore, DXA of the lumbar spine and hip has been identified as the gold standard for diagnosing osteoporosis, and expert groups recommend that BMD screening should begin at age 65 years for all women (ACOG, 2012). Therefore, women over the age of 65 years were selected as the target population for this EBP based on two rationales: (a) well-established nationally recommended guidelines target this population and (b) Medicare covers the cost of the examination, thus eliminating any financial barrier to screening.

The sample for this population was not recruited. Instead, the convenience sample of patients qualifying for intervention was identified based on the chart audit conducted within the community clinic. Once identified, patients were able to voluntarily elect to participate or not participate in osteoporosis screening.

Data

Data to support the efficacy of the EBP intervention would be obtained from an additional chart audit, completed post-intervention that would identify the percentage of eligible participants who were up to date on BMD. Based on chart audit data revealing that 17.07% of the eligible patient population were up-to-date on their BMD, the health care team targeted a 12-percentage-point increase in BMD screening rates. This goal was supported by Warriner et al. (2012) who reported a 12 to19% increase in the DXA screening. As this EBP intervention was designed to serve as a tool to identify women who were at risk for fracture or in need of additional intervention, it was important to also monitor the results of those electing to participate in the BMD screening.

During the work day, the BMD EBP Data Collection Tool was secured in a locked drawer within the project facilitator's office, which was accessible only to the project facilitator. During regular work hours, results from BMD screening, received via fax or mail, were placed by the front office staff in a folder on the project facilitator's desk. The project facilitator was able to review these, make recommendations for follow up care, and provide BMD screening participation information on the data collection tool. Other results were available for review in the patient's electronic chart; these results would enter into the provider's "in basket" within Epic. The in basket data was reviewed daily; the "in baskets of all providers was linked; thus, the project facilitator was able to access this information for all providers and update the data collection tool on a daily basis.

Consistent with Kotter's steps of change, the project facilitator focused on attaining the goals during the data collection process. Beginning on October 1st, the project facilitator initiated monthly individual verbal feedback to the physician and the additional NP. The meetings took place during the first week of the month. The days and times varied depending on health care provider availability, but were usually before work or during lunch. Ten to fifteen minutes were spent with the physician and DNP and a

standardized script was followed to maintain consistency with each provider. Feedback included a review of bi-weekly audit results and addressed any identified scheduling issues.

The post-project chart audit was completed in mid-December as the project ran until December 1, 2013. Findings from the chart audit, along with additional data collection during the project will be discussed in Chapter 4.

Protection of Human Subjects

Prior to the start of the EBP project implementation, the project leader underwent Institutional Review Board (IRB) training through the National Institutes of Health (NIH) web-based training course “Protecting Human Research Participants”. In addition, approval from Valparaiso University’s IRB committee and the community clinic’s parent hospital’s IRB was obtained prior to implementation of proposed EBP project. Eligible participants for this project included female Medicare patients age 65 years and older with intact mental capacities; thus, this was not considered a vulnerable population. Identifying data was obtained via chart audits in a secure environment by authorized personnel. Subject confidentiality was of the utmost importance Individual participant’s identifiers (i.e., name, birth date, or social security numbers) were not utilized in data collection. During the EBP project, all chart audit data were kept in a secured location with only the EBP project leader having access to his information. At the conclusion of the project, all collected data were shredded. Patient names and other identifying information were not associated in any publication or presentation of the information of this project. No monetary reimbursement was awarded to those involved in the audit and feedback, or to those healthcare providers involved. The project facilitator remained conscious of ethical concerns regarding her roles during project implementation.

CHAPTER 4

FINDINGS

The purpose of this EBP project was to incorporate strategies to change patient behaviors towards osteoporosis screening. The objective of this EBP project was to answer the compelling clinical question: Would a mailed patient reminder increase BMD screening rates in women at risk for osteoporosis? Data were analyzed using the PASW (Predictive Analytics Soft Ware) Statistics 18 statistical program. Descriptive analysis of the participants' demographics was conducted. A chi-square analysis was computed to calculate and analyze the primary outcome of interest: increase in percentage of patients who were up to date on their BMD screenings (BMDD data). Data were then analyzed for summary.

Sample Characteristics

Of the total 328 female Medicare patients ages 65 years and older within the practice, a total of 56 (17.07%) were up to date with their BMD at the time of project initiation. Of the remaining 272 patients, 28 were eliminated because they moved, had dementia, had low IQ, or were determined by the office staff to be physically unable to fulfill the objective of obtaining the BMD. The medical records of 244 female Medicare patients, ranging from age 65 to 98 years (*M* = 74.33 years) who were not up to date on their osteoporosis screening were followed during a 12-week project period. Forty Seven of the 244 (19.26%) of female Medicare patients who were not up to date on their osteoporosis screenings participated in BMD screening after receiving their mailed letter.

Those who participated were representative of the patient population, 99.4% were white and the mean age of those electing to participate was 74.33 years of age. The age of those undergoing BMD are shown in Table 4.1.

Changes in Outcomes

The percentage of female Medicare recipients who were up to date on BMD

screening increased from 17.07% (*n* = 56) prior to the intervention to 31.40% (*n* = 103) at the end of the 12-week project (Figure 4.1). Forty-one of these patients (87.23%) previously received care by the physician; six of these patients (12.77%) previously received care by the NP (see Table 4.2).

Statistical Testing and Significance

To determine the effectiveness of the mailed patient reminder, chi-square analyses were conducted using the PASW (Predictive Analytics Soft Ware) Statistics 18. Statistical analysis was performed to answer the PICOT question. Chi-square analysis was conducted to determine the effectiveness of the mailed reminder on the primary outcome of interest: increasing the percentage of female Medicare recipients age 65 and older who were up to date on their BMD. Chi-square, descriptive analyses were also conducted to make comparisons between providers. Mean age of participants, by provider, were compared using independent *t*-test of means. Statistical significance for all analyses was established as $p < 0.05$.

Findings

Overall, the mailed reminder for osteoporosis screening demonstrated effectiveness in improving BMD screening rates. The percentage of female Medicare recipients who were up to date on BMD screening increased from 17.07% prior to the intervention to 31.40% at the end of the 12-week project. Interestingly, of the 47 female patients who were not up to date and had a BMD as a result of the intervention, a significant larger percentage were patients of the physician (87.23%) versus patients of the NP (12.77%) who focused on women's wellness during routine office visits ($\chi^2 = 9.824$, $p = .002$). Those participating in BMD screening during the 12-intervention intervention period ranged in age from 65 to 98. As noted in Table 4.2, a significant number (56.14%) of those participating in repeat BMD screening during the 12-week intervention were at a prime age for intervention, under the age of 75.

Table 4.1

Patient Demographics: Age

Patient Age	Current on BMD	Not Current, But Got BMD	Not Current, Didn't Get BMD
65	9	4	24
66	4	1	20
67	4	1	20
68	3	2	15
69	4	2	8
70	4	4	15
71	3	3	12
72	2	4	17
73	2	3	15
74	2	2	11
75	4	1	8
76	2	1	8
77	2	1	6
78	2	2	8
79	0	2	2
80	3	1	3
81	0	2	8
82	1	1	7
83	0	0	0
84	1	4	3
85	3	2	4
86	0	0	3
87	0	1	1
88	0	0	5
89	1	1	3
90	0	2	1
91	0	0	1
92	0	0	2
93	0	0	3
94	0	0	1
95	0	0	0
96	0	0	0
97	0	0	0
98	0	0	1

Figure 4.1

BMD Data

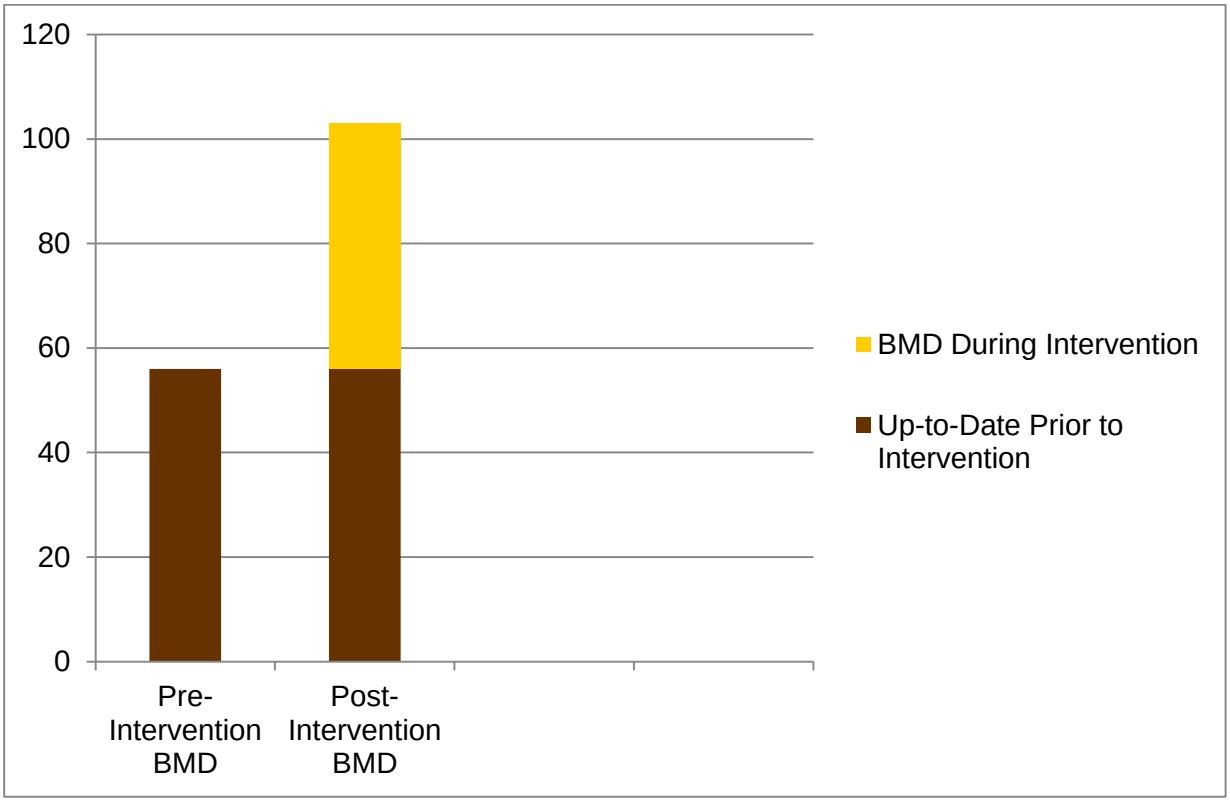

Table 4.2

BMD Screening Outcomes by Provider

	Total *n* (%)
Mailed Reminders (*n* = 244)	
Not Current on BMD, but got BMD	
Physician	41 (87.23%)
NP	6 (12.77 %)

Chapter 5

DISCUSSION

This EBP project was designed to answer the PICO question: Does a reminder for osteoporosis screening mailed to patients increase BMD screening rates in women at risk for osteoporosis. The EBP project was implemented at a rural community care clinic in Northwest Indiana, to determine if the mailed reminder influenced patient behavior on obtaining screening BMD versus usual care of the provider recommendation at routine office visits. This chapter provides an explanation of the project findings, evaluates the theoretical and EBP framework utilized to guide this EBP project, and offers implications for future projects.

Explanation of Findings

Evidence

Research focusing on osteoporosis and strategies to improve screening and decrease fragility fractures has been evidence based. As a result, the staff and providers involved in this EBP project had access to systematic reviews and research studies (Bonfill et al., 2009; Lafata et al., 2007; Lee et al., 2011; Partin et al., 2005; Quinley et al., 2003; Saywell et al., 2004; Sequist et al., 2009; Thomas et al., 2010; Warriner et al., 2012) focusing on the effectiveness of patient mailed reminders for primary and secondary prevention. Warriner et al. (2012) found that mailing a simple educational osteoporosis brochure and providing an opportunity to self-schedule a DXA scan significantly improved osteoporosis screening in women 65 years and older. Warriner et al. (2012) reported there was an increase in rate of DXA screening in women ranging from an approximate 12% to 19%. Lafata et al. (2007) found that the use of mailed reminders significantly increased osteoporosis screening rates among insured women. Furthermore, Lafata et al. (2007) found reminders worked well among women of older age when compared to usual care. Whereas the use of patient mailed reminders alone

led to increases in BMD testing rates in the Lafata et al. study, the addition of physician prompts further improved testing rates, thereby illustrating the potential of reminders and prompts combined to improve osteoporosis screening rates.

Using the Stetler Model, the staff and providers within the rural community clinic reviewed the supportive literature that had been critically evaluated and summarized by the project facilitator. The reviewed literature revealed comparable findings and recommendations, and provided evidence demonstrating the effectiveness of mailed reminders for osteoporosis screening in the adult population. Furthermore, DXA had previously been established as a reliable tool for routine osteoporosis screening for female Medicare patients (Lafata et al., 2007; Warriner et al., 2012) The findings of this project were consistent with previous research and support the effectiveness of using a mailed patient reminder to increase screening for osteoporosis using BMD. The intervention within the rural community clinic population resulted in a 14.34 percentage point increase (17.07 to 31.40%) in patients up to date on BMD screening.

Of the 47 female patients who were not up to date and had a BMD as a result of the intervention, a significant larger percentage were patients of the physician (87.23%) versus patients of the NP (12.77%) who focused on women's wellness during routine office visits ($\chi^2 = 9.824$, $p = .002$). Those participating in BMD screening during the 12-intervention intervention period ranged in age from 65 to 98 years. A significant number (56.14%) of those participating in repeat BMD screening during the 12-week intervention were at a prime age for intervention, under the age of 75 years. And, this project logically led to interventions promoting bone health. Once the patient underwent screening, the office visit was scheduled and the patient was educated on the on the risk for compression fractures, fall risk, and pharmaceutical treatments were initiated for appropriate candidates.

Environmental Influences

Within this EBP project, economic, social, and political factors impacted the organizational culture. From the beginning, the project facilitator was provided support from the organization, but there was an understanding, that the project needed to be completed with minimal cost to the practice. Therefore, budgetary concerns were vital. The cost of mailing the letter with the BMD order to all those who were not up to date at the time of intervention was approximately $115.00 and were offset by the Medicare reimbursement from the DXA scan. The profits were significant; therefore, the project generated significant revenue for the practice. Upon completion, although no analysis of cost-effective analysis was conducted, the project facilitator and providers determined that a mailed reminder was an inexpensive and time-efficient way to increase osteoporosis screening in this practice. Within this practice, the NPs had been known to spend more time in health promotion activities and patient education. The physician focused on productivity (i.e., patient volume) to maintain his income; thus, he had spent less face-to-face time with patients and less time had been allotted for health promotion and patient education. The length of time between office visits may have been a major reason why the mailed reminder was more efficient for patients seen by the physician, as the physician previously did not conduct many women's wellness exams addressing health promotion. Social and economic influences have also impacted the number of patients that were up-to-date on BMD screenings at the start of the project. Prior to the intervention, the physician didn't follow the current USPSTF recommendations. An analysis of the previous year's DXA orders revealed that none of the screening undertaken in the previous year was ordered by the physician; furthermore, he had only ordered 15 DXA scans in the current year**.**

Leadership within this organization was guided by the Stelter Model. At the time of project implementation, the providers and staff had worked together for many years

and the individuals were aware of the strengths of each other. The roles of the office staff were set at the time of the project initiation. Although the approval came from the collaborative physician, initial decision-making was democratic and inclusive. After the project topic was selected, the physician deferred many decisions to the facilitator, blurring the leadership role. As a result, the FNP took on a dual role: as leader and project facilitator.

Overall, the implementation of patient mailed reminders was more effective than previous office practices of verbal reminders during office visits. When comparing results to the previous screening practices at the office, the findings demonstrated a significant change in not only screening, but also in follow up care for those diagnosed with osteoporosis. Thus, the routine use of a mailed reminder improved the quantity of screening and served as an incentive for effective treatment. The mailed reminder was an effective way of getting females age 65 years and older to obtain their DXA screening. After the healthcare providers accepted and embraced the integration of the mailed reminder, several comments were made with regards to the positive impact the EBP project has had on identifying female Medicare patients at risk.

Evaluation of the Applicability of the Theoretical and EBP Framework

Two frameworks guided the development, implementation, and evaluation of this EBP project: the Stetler Model of Evidence-Based Practice (EBP) and the Kotter and Cohen's (2002) Eight Stages of Change (ESC). An evaluation of the applicability of each framework as it pertains to this EBP project will be completed in this section.

Stetler Model of Evidence Based Practice

The Stetler Model of EBP Practice (2001) provided the framework to facilitate proper utilization of research and relevant clinical evidence. The Stetler Model introduced a methodical, comprehensive, five phase approach to designing and implementing EBP research. Progression through the five phases of the Stetler Model of

EBP Practice (2001) was also facilitated with the use of Kotter and Cohen's ESC (2002) process.

In the preparation stage, an initial meeting with the collaborative physician was scheduled to discuss the feasibility of the project and review the current osteoporosis screening protocol practices. After meeting with the physician, a need was identified to develop and integrate an osteoporosis screening protocol into the office practice. The current practices of the office did not include routine osteoporosis screening, nor were there any consistent processes in place. The physician was hesitant to undertake the project as he did not agree with the USPSTF recommendation of DXA scans due to the cost and Medicare reimbursement. The motivation for initiating the project was not necessarily due to a need within the practice, but a need for the DNP student to undertake an EBP project that could have a positive impact on the practice and female population over age 65 years.

After identifying the need for the osteoporosis screening and protocol, it was also important that the project leader consider the feasibility of practice change. To determine feasibility, the validation stage of the Stetler model guided the DNP student to conduct a thorough review of the literature, with a utilization focus in mind. The literature appraisal began with osteoporosis screening in primary care and once a broad base had been established, the focus was then tailored to meet the specific need of female Medicare patients. Through the comparative evaluation phase of the Stetler model, the evidence from the literature was reviewed, and project development began. The DNP student took into consideration the feasibility of the project, but also incorporated current practice standards. The importance of integrating a mailed reminder that was both effective and user friendly was stressed by the providers. Keeping these criteria in mind, the DNP student was able to identify a mailed reminder the met the needs of the organization, demonstrated reliability, and would fulfill the office needs.

Educational sessions for the office healthcare providers and staff were conducted to communicate literature findings and project recommendations. During these sessions it was also important to acquire staffs feedback with regards to project feasibility. These meetings were important to successfully completing the translation/application phase of the Stetler model. It was decided that successful change would be evidenced by the health care provider's compliance with performing the osteoporosis screening tool. The final phase, evaluation, was fulfilled through bi-weekly data collection sessions that afforded the project leader the ability monitor compliance. Early on in data collection, it was noted that compliance by one of the healthcare providers was low. After modifying staff roles and having the office ancillary staff take a more active role, adherence began to improve. It wasn't until after an office staff meeting and marked increase in adherence rates that the project leader was made privy to the information that the ancillary staff had decided to take sole responsibility for maintaining project implementation and ensuring success.

Overall, the Stetler Model served as an effective framework to guide this EBP project. Each phase of the model served as a guide for the DNP student to ensure that all requirements for the EBP project would be met. While the Stetler Model may be practitioner-oriented, it has also been readily applied to groups of practitioners, project teams, administrators, managers, educators, and other health care specialists (Stetler, 2001). The perceived strengths of this model aligned with the consensus regarding the ease of use and applicability of EBP.

Kotter and Cohen's Eight Stages of Change

Kotter and Cohen's ESC (2002) served as the theoretical framework for this EBP project. The ESC process was designed to consist of eight stages. Utilization of the ESC allowed the DNP student to develop an EBP project that would take into account the barriers to organizational change and ensure success. In addition, the use of this model

assisted the DNP student in considering extraneous factors (e.g., organizational culture, communication, and goals of the office staff) during project development.

According to Kotter and Cohen, the first step of the ESC is “generating a sense of urgency” (2008, p.133). This was achieved by the DNP student’s requirement to complete this task in the last semester of the project, more than the facility’s need for a screening tool. Previously, the project facilitator had numerous opportunities to witness the potentially devastating, yet preventable, impact of fragility fractures. Being the primary provider for women’s wellness examinations, the project facilitator had expanded her role to incorporate osteoporosis prevention, screening, and treatment. The project facilitator had identified a need to screen aging women for osteoporosis so that intervention could precede that advent of these fractures. This passion led to the development of this evidence-based practice project. The project facilitator provided a brief in-service to the office physician and staff about the importance of routine osteoporosis screening within with female Medicare population. During this in-service the office staff provided the DNP student with feedback regarding the feasibility and implementation of the project. Recommendations were made regarding realistic goals and expectations as to how females over age 65 would be tracked, ensuring that the screening tool would be completed, and how the incoming results would be handled. The results of DXA undertaken at outside facilities were typically placed on the office desk of the project facilitator for review prior to being placed in the patients’ chart. But, some were scanned into the patient’s charts, and charts were reviewed on a bi-weekly basis by the project facilitator. The guiding team consisted of two full time nurse practitioners, a physician, four medical assistants, four receptionists, an x-ray technician and an office manager. Without active support from all members of the office, the implementation of this EBP project would not have been successful.

After careful examination of the current office practices with regards to routine osteoporosis screening and input from the office staff, the project leader and office physician recognized that it was an appropriate time to implement a practice change. To fulfill step three in the ESC process it was crucial that the project leader developed a feasible and realistic EBP project. As Kotter and Cohen noted (2002), “getting the vision right” was crucial in ensuring success of the EBP project. Integrating a routine osteoporosis screening provided an opportunity for appropriate care for each patient who sought treatment at the office. The underlying vision of the EBP project was to promote a better understanding of the importance of routine osteoporosis screening, along with treatment if deemed needed by the provider. Effective routine communication with office staff was important in making certain that the EBP project was implemented to its fullest.

Monthly communication with the providers occurred during data collection; during these times providers and staff brought forth concerns with implementation and suggestions for improvement. These monthly communications not only allowed for successful transition through steps four and five in the ESC process. During these bi-weekly data collection sessions it was also a time for the project leader to divulge the office progress with regards to osteoporosis screening. Bi-weekly updates not only allowed the project leader to create short-term wins but also demonstrate to the guiding team the dedication to the success of the project. Successful changes implemented were noted with regards to the BMD mailings, with much of these responsibilities shifted to the ancillary staff, healthcare providers were able to focus more on the results and how to educate the patients on what the options for treatment. To ensure that the implemented EBP project changes are continued it is essential that these changes are enmeshed with current organizational culture.

After the final data collection was completed the project leader met with the office physician to discuss the EBP project's future. It was determined that project implementation will continue but with minor changes in the mailed reminder procedure, the inside facility that does the DXA scans has the ability to do patient recalls which will help with patient recall for the patient that went to that facility for the BMD screening in the upcoming years. For the patients that did not obtain a BMD or went to the outside facility they will again get a mailed reminder.

Application of the ESC served as a suitable framework to guide this EBP project. The step-by-step approach of the ESC model was an identified strength because, if each of the steps is successfully completed, continued implementation of a mailed reminder will be essential. The twelve-week time frame allotted for this EBP project implementation, coupled with the actual time it takes for organizational change to occur, and progression through each step within an appropriate amount of time may not be feasible, and was identified as a weakness. It is recommended that perhaps a greater period of time would allow the office staff to progress through each of the stages more naturally, thus allowing the change in patient behavior to be more gradual and readily accepted, especially as patients continue to obtain their BMD after the twelve week period.

Strengths and Limitations of the EBP Project

Strengths

Implementation of the EBP project for osteoporosis screening in the office was effective for identifying those females older than 65 years of age who were at risk for developing fragility fractures. The support from the office staff and their enthusiasm made the project possible. The Kotter and Cohen ESC model (2002) provided support in the development and implementation of a project that promoted the involvement of all members of the office staff and fostered a positive relationship between the office and

the DNP student. The DNP student had a conversation at week 6 with the supervisor of the facility that was performing the DXA scans. Due to the number of BMD tests that were scheduled, the facility needed to temporarily hire additional technicians to accommodate patients. This was a major win for the EBP project. The cost of the DXA and the reimbursement from Medicare outweighed the cost of hiring the technicians. The compliance with implementation also assisted the office with complying with the U.S. Preventive Services Task Force (USPSTF) recommendation of "screening for osteoporosis in women age 65 years or older whose fracture risk is equal to or greater than that of a 65 year old white women who have no additional risk factors" (USPSTF, 2011, p. 356). The goals and objectives established by the USPSTF not only intended to improve the wellbeing of women age 65 and older; they were also developed to have a lasting impact on the entire female population over this age (USPSTF, 2011).

Limitations

The utilization of Kotter and Cohen's ESC model was effective in guiding the project development and implementation; however, the project implementer did not predict the large age variation in women who obtained their BMD as a result of the intervention, but would require age-tailored follow up intervention. After facilitating discussion between the office providers, it was determined that patients age 80 years and older, even if shown to have osteoporosis via their DXA screening, would not be treated for osteoporosis. Their plan of care would only include education on the disease process and fall risk. These patients could be rescreened for osteoporosis again in 2 years if they elected to do so, but the physician felt they were not candidates for pharmacotherapy. This issue was not addressed prior to project implementation. Thus, one could question whether women ages 80 years and older should have been excluded from participating in the project.

Nonetheless, the issue of treating these older adults brought about a reiteration of the importance of utilization of the osteoporosis screening was revisited with the healthcare providers, and it was through constant reminding of the office staff that headway was made with regards to screening adherence. The providers openly admitted when they had fallen short, and “old habits die hard”, nevertheless it was with the guidance of the Kotter and Cohen’s ESC process that the project leader was able to modify provider behavior. Following this interaction, there was a steady improvement noted after these procedural changes were implemented: however, it was still evident that there would be a greater effort needed to ensure that the change in office healthcare provider would continue.

An additional limitation of this EBP project was the predominance of the Caucasian females. The lack of ethnic diversity within the patient population made it difficult to generalize the evidence to culturally diverse populations or ensure that applying this strategy within ethnic minority groups would have positive results.

Implications for Future Practice

Based on the outcomes achieved through this EBP project, it is recommended that implementation of routine osteoporosis screening for those ages 65 to 79 continues at this rural Northwest Indiana community clinic. Current literature has supported the need for improved bone health practices in primary care settings because office settings are able to offer a unique integrated setting for preventative health and maintenance services (Lafata et al., 2007 and, Warriner et al., 2012). The project facilitator also proposes that dissemination of these findings will motivate other offices to evaluate their current practice standards with regards to osteoporosis screening. To do so, the project facilitator would need to educate other providers within the network of physicians employed by the hospital about the benefits of the mailed patient reminders for increasing DXA screening rates so that osteoporotic patients may be identified and

treated. While data collection for this project focused specifically on females 65 years and older, it is important to emphasize the applicability of this osteoporosis screening for all patients over the age of 50 years who meet the criteria for needing a BMD.

It is important to note that the relationship between healthcare providers and the support staff (i.e., the MAs and receptionists that work within the office) was critical to ensuring successful implementation. In the future, the project implementer would need to recognize that each person plays and integral role and that early delineation of the roles would eliminate any ambiguity that could potentially impede project success.

Theory

The Stetler Model of EBP (2001) provided the necessary support for project development but it was ultimately Kotter and Cohen's ESC model (2002) that provided the necessary framework for integrating effective organizational change. All eight stages provided direction for the project and allowed for anticipation of pitfalls that could potentially be encountered during planning and implementation of the project. Not only were females age 65 years and older being routinely screened for osteoporosis, a change also occurred within the healthcare providers attitudes toward osteoporosis screening. Since the initiation of the project, there has been a loss of a full-time NP. Therefore, it will be important for the physician to share some responsibility for providing women's health education until the new full-time NP is hired and trained.

It is important to note that the Kotter and Cohen ESC model (2002) has traditionally been considered a business model, with little literature available to support its use in health care. Based upon the success of this project, it is recommended that the Kotter and Cohen ESC model (2002) would continue to be utilized in future projects and research conducted specifically within the health care realm. Through conversations during bi-weekly data collection sessions, the DNP student was able to gather from providers their feelings towards project implementation. These bi-weekly meetings were

conducted based upon Kotter and Cohen's ESC model (2002) that encouraged empowering action and creating short-term wins. Initially, providers reported how they were falling short of project expectations, but as implementation progressed the providers were quick to identify how they felt about the test results, and how they were finding the screening beneficial in treating all patients that came into the office for follow up. For future DXA screening interventions, it is recommended that females over the age of 85 years are excluded. These individuals could receive educational information on osteoporosis and fall or fracture prevention.

Research

Additional areas for further research were identified during EBP project development, implementation, and evaluation. First, further research needs to be conducted with regards to osteoporosis screening as it specifically relates to (a) females over the age of 65, (b) effectiveness of treatment in females age 80 and older, and (c) strategies that could be implemented to improve follow-up for those patients who are identified as high risk. Second, future research should be conducted to determine the effectiveness of osteoporosis screening with patients over age 50 at risk for fragility fractures. Finally, further research needs to focus on effective screening and treatment strategies that are appropriate for patients in these high risk groups. Providers often fail to recognize that older adult males have only a slightly lower risk for osteoporosis than their female counterparts and still need to undergo BMD screening when they reach the age of 65 or if they have risk factors (Cauley,2011) Focusing on ethnicity will also be important as Caucasian women tend to have the highest risk when it comes to fragility fractures followed by Japanese women, Mexican women then African American women (Cauley,2011)

Education

Continuing education efforts should focus on (a) enlightening office staff about the prevalence of osteoporosis in females age 65 and older, (b) identifying at risk patients, and (c) identifying effective interventions that can be utilized to treat those with osteoporosis. Educational components should also be integrated into nursing programs in order to educate students about the incidence of fragility fracture and the necessity of patient education prior to hospital discharge or within community settings. Patients need to be aware that osteoporosis and fragility fractures are not a part of normal aging; important bone health interventions should be undertaken as they age: getting enough calcium and vitamin D, eating foods that are good for bone heath, avoiding smoking, and limiting alcohol (NOF, 2013).

Conclusion

Overall, the EBP project had a positive impact on current osteoporosis screening, and undeniably answered the proposed PICOT question. Osteoporosis is a serious bone disorder that affects older adults and demands an increased awareness and effective treatment strategy. EBP strategies that are effective in educating, treating, and changing healthcare provider behavior are essential in influencing osteoporosis screening and treatment. Implementing these evidence-based strategies within a community care clinic will not only influence provider and patient behavior but will also have an impact on the osteoporotic-related morbidity and mortality of women over the age of 65.

Although the moderately small number of patients within the practice complicates the ability to track declines in morbidity and mortality, the doctorally-prepared FNP was the perfect candidate to lead this EBP. Additional education provided the APN with the knowledge and means to become a transformational leader: motivating, challenging, and enabling others throughout the change process. Within this project, the change began as a vision for improving health care for older adults, continued as the FNP scrutinized

through a wealth of information, and ultimately manifested in project completion. The Stetler Model was an appropriate guide for project selection, but provided less guidance for supporting the implementation process. Instead, Kotter's steps of change proved to be essential to ensuring the continued participation of the team of healthcare providers. The healthcare providers and the support staff developed a common understanding of goals and direction, focusing on short-term successes provided momentum to overcome complacency and achieve the overall goal. Participation in this EBP has now initiated an organizational change, although with some initial reluctance from the physician, which is anticipated to be applied to other health promotion activities. Although the small number of patients included within this project may limit its applicability to organizational change within larger facilities, there are now 47 older adults who are at decreased risk for morbidity and mortality related to the consequences of undiagnosed osteoporosis.

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BIOGRAPHICAL MATERIAL

BILLIE-ANN BLACK

Ms. Black graduated from Valparaiso University with a Bachelor of Science in Nursing Degree in 1994. Within her early nursing career, she gained experience in medical-surgical nursing, home care, and long term care before returning to Valparaiso University for her Master of Science in Nursing Degree in Adult Health. She completed Valparaiso University's Post Master's Family Nurse Practitioner (FNP) Program in 2001 and obtained FNP certification through the ANCC. Following certification, Ms. Black took a position with a family practice physician in northwest Indiana, a practice which continues to provide care to a number of older adults. Within this practice, Billie-Ann has had numerous opportunities to witness the potentially devastating, yet preventable, impact of fragility fractures. Being the primary provider for women's wellness examinations, she has expanded her role to incorporate osteoporosis prevention, screening, and treatment. She has identified a need to screen aging women for osteoporosis so that intervention could precede that advent of these fractures. This passion led to the development of her evidence-based practice project within the Doctorate of Nursing Practice program at Valparaiso University. In addition to leadership activities within the doctoral program, Ms. Black promotes the advancement of nursing through her membership in Sigma Theta Tau Zeta Epsilon Chapter, the American Academy of Nurse Practitioners, and the Coalition of Advanced Practice Nurses of Indiana.

ACRONYM LIST

ACOG: The American Congress of Obstetricians and Gynecologists

AHRQ: The Agency for Healthcare Research and

APNs: advanced practice nurses

AS: AGREE II Score

BMD: Bone Mineral Density

CASP: Critical Appraisal Skills Programme

CDC: Centers for Disease Control and Prevention

CINAHL: Cumulative Index to Nursing and Allied Health Literature

DNP: doctor of nursing practice

DXA: Dual Energy X-Ray Absorptiometry

EBP: evidence-based practice

EHR: electronic health records

ESC: Eight Stages of Change

FNP: family nurse practitioner

FOBT: fecal occult blood test

IRB: Institutional Review Board

MeSH: medical subject heading terms

NOF: National Osteoporosis Foundation

NP: nurse practitioner

PICOT: patient population, intervention of interest, comparison intervention or status, outcome, and time (study design)

RCTs: randomized controlled trials

USDHHS: U.S. Department of Health and Human Services

USPSTF: U.S. Preventive Services Task Force

WHO: World Health Organization

Appendix A

Evidence Data Table

Author(s) Publication Level of Evidence	Population, Setting	Design, Intervention(s), Comparisons	Outcomes and Effect Measures
Bonfill et al. (2009) *Cochrane Database of Systematic Review* Strategies for increasing the participation of women in community breast cancer screening *Level 4 Synthesis*	• Women age 50-69 without history of breast cancer • European Breast Cancer program	•Systematic Review of articles from 1966-2000 •14 community-based RCTs included in final review •Letter of invitation (*n* = 116 intervention) (*n* = 104 control) •Mailed education material (*n* = 305 intervention) (*n* = 240 control)	• Letter of invitation 1.66 (95% CI [1.43, 1.92]) • Mailed education material 2.81 (95% CI [1.96, 4.02]) •Active recruitment strategies for breast cancer screening programs were more effective than no interventions.
Lafata et al. (2007) *Society of General Internal Medicine* Improving osteoporosis screening: Results from a randomized cluster trial *Level 5 Studies*	• Females 65-89 years (*N* = 10,354) • Primary care clinics in South East Michigan	•Randomized Cluster Trial •usual care, mailed reminders alone, or mailed reminders with physician prompts.	• Osteoporosis screening rates were 10.8% in the usual care, 24.1 % in mailed reminder, and 28.9% in the mailed reminder with physician prompt. • Mailed reminders significantly improved testing rates compared to usual care, and additional of prompts further improved testing.
Lee et al. (2011) *BioMed Central Gastroenterology* Cost-effectiveness of a mailed educational reminder to increase colorectal cancer screening *Level 5 Studies*	•U.S. Veterans •769 patients	• Blinded, randomized, controlled trial • Control: FOBT alone (*n* = 382) vs. Intervention: FOBT plus mailed reminder (*n* = 387)	• At 6 months after card distribution, 64.6% in the intervention group returned FOBT cards vs. 48.4% return in control group ($p < 0.001$)

Author(s) Publication Level of Evidence	Population, Setting	Design, Intervention(s), Comparisons	Outcomes and Effect Measures
Lester et al. (2009) *Journal of the American Medical Informatics Association* Mammography fast track: An intervention to facilitate reminders for breast cancer screening across a heterogeneous multi-clinic primary care network *Level 5 Studies*	• 2,167 patients • Overdue Mammogram screening • Large Multicenter primary care network (64 PCP) •Massachusetts General Primary Care Network	• Cross-sectional study • Mailed letters • Implementation of Mammography Fast Track(population-based, multi-modal system for screening reminders for over-due mammograms in primary care)	•63% of the mammogram-overdue population was successfully contacted by letter within the first six months
Partin et al.(2005) *Preventive Medicine* Randomized controlled trial of a repeat mammography intervention: Effect of adherence definitions on results *Level 5 Studies*	•1,558 Women • Ages 40-63 • Federally funded screening programs	• Randomized controlled trial • Mailed reminder • Mailed thank you card/newsletter • Reminder no mailings.	• Mailed thank you/ newsletter increased repeat mammography utilization by up to 8 % relative to controls • Mailed reminders only increase repeat mammography by 6% although these weren't seen until 15-18 months later.
Quinley et al. (2003) *Preventive Medicine* Mammography-facility-based patient reminders and repeat mammograms for Medicare in New York State *Level 5 Studies*	• 97,506 women • New York • Mammography facilities	• Randomized Control trial • Mailed letter from physician • Mailed letter from facility	• 74% received a second mammogram within 18 months compared to 67% for other women • In multivariate analysis, the adjusted odds ratio for return within 18 months if the facility uses reminders was 1.42 (95%CI [1.37, 1.47])

Author(s) Publication Level of Evidence	Population, Setting	Design, Intervention(s), Comparisons	Outcomes and Effect Measures
Saywell et al.(2004) *Journal of Women's Health* A cost-effectiveness comparison of three tailored interventions to increased mammography screening *Level 5 Studies*	• 1044 participants • > 51 years old • No mammogram in past 15 months • No history of breast cancer	• Randomized controlled trial • Tailored telephone counseling • Tailored mailed intervention • Combination of the Tailored mailed and telephone intervention	• control group had a 33% mammography adherence rate 8 weeks after intervention • Tailored telephone group had a 41.9% mammography adherence rate • Tailored mail and telephone group had a 49.4% adherence rate.
Sequist et al. (2009) *Archives of Internal Medicine* Patient and physician reminders to promote colorectal cancer screening *Level 5 Studies*	• 11 ambulatory health care centers • Ages 50-80 years • 21860 patients age 50 to 80 years overdue for colorectal cancer screening and 220 primary care physicians over 15 month	• Randomized Controlled Trail • Received mailings of educational pamphlets, FOBT and instructions on scheduling flexible sigmoidoscopy or colonoscopy	• Screening rates were higher for patients who received mailings compared with those who did not 44.0% vs 38.1%; $p < .001$. • The effect increased with age 3.7% for ages 50-59 years; 7.3% for ages 60-69 years; and 10.1% for ages 70 to 80 years $p = .01$. • Screening rates were similar among patients of physicians receiving electronic reminders and control group 41.9% vs. 40.2% $p = .47$ • Electronic reminders tended to increase screening rates among patients with three or more primary care visits 59.5% vs 52.7%; $p = .07$

Author(s) Publication Level of Evidence	Population, Setting	Design, Intervention(s), Comparisons	Outcomes and Effect Measures
Thomas et al. (2010) *Cochrane Database of Systematic Reviews* Intervention to increase influenza vaccination rates of those 60 years and older in the community *Level 4* *Synthesis*	• U. S. participants age 65 or older Medicare participant	•Systematic Review of articles from 1950-2010 • 11 of 44 RCTs were at low or moderate risk of biases. • 3 of 13 personalized postcard/phone call interventions (all three effective), two of the four home visit interventions, three of the four reminders to physicians interventions, three of the four facilitator interventions	•Effectiveness of postcard to no intervention for increasing community demand for influenza vaccine included 11 RCTs ($p < 0.00001$). Five of the 11 RCTs showed a positive effect of the postcards 0.33 (95% CI [1.79, 6.22]) $p = < 0.0002$. • comparing the use of a letter, postcard or personalized phone call, or no intervention on participant's health status. Nine of the 13 RCTs showed a positive effect of the intervention 2.72 (95% CI [1.55, 4.76]) $p = 0.0005$.
Warriner et al. (2012) *American Society for Bone and Mineral Research* A randomized trial of a mailed intervention and self-scheduling to improve osteoporosis screening in postmenopausal Women *Level 5* *Studies*	• Women > 65 • UAB PCP visit in past 12 months • *N* = 2997 patients of the 34 PCPs met inclusion criteria • *N* = 977 unique patients randomized to intervention group • *N* = 2020 unique patient randomized to control (usual care)	• Group randomized control • No DXA scan in past 4 years	• A total 17.3% of women in the intervention group completed DXA, compared to 5.2% in the control group (12.1% difference, $p > 0.0001$) • When including only those medically appropriate, they found a difference of 19% between the two groups ($p < 0.0001$)

Appendix B

Introductory Letter

COMMUNITY CARE NETWORK
Community Healthcare System®
COMMUNITY CARE CENTER
13963 Morse Street
Cedar Lake, Indiana 46303

Phone: 219-374-5555
Fax: 219-374-6669
www.comhs.org

Osteoporosis is a disease of the bones, it happens when you lose too much bone, make too little bone or both. As a result, bones become weak and can break from a minor fall or, in serious cases, even from simple actions, like sneezing or bumping into furniture.

If you look at healthy bone under a microscope, you will see that parts of it look like a honeycomb. If you have osteoporosis, the holes and spaces in the honeycomb are much bigger than they are in healthy bone. This means your bones have lost density or mass and that the structure of your bone tissue has become abnormal. As your bones become less dense, they also become weaker and more likely to break.

A review of your chart shows that you haven't had a Bone Mineral Density in the past two years. Medicare pays for a screening Bone Mineral Density every two years. If you have had one done somewhere else by any another healthcare provider please call our office so we can get a copy for our records.

If you haven't had one done in the past two years take the enclosed signed order to the St. John Out-Patient Center, after calling 219-226-2291 to schedule your Bone Mineral Density test.

If you have any questions, please feel free to call the office.

Jon Misch, DO

Billie Black, FNP

Marlee Steele, DNP

Appendix C

Project Support Letter

COMMUNITY CARE NETWORK
Community Healthcare System®
COMMUNITY CARE CENTER
13963 Morse Street
Cedar Lake, Indiana 46303

Phone: 219-374-5555
Fax: 219-374-6669
www.comhs.org

May 23, 2013

To Whom It May Concern:

Billie-Ann Black, MSN, RN, FNP-BC, is enrolled in a doctoral program and will be completing an evidence-based practice project for patients within our office setting. I have provided input with identifying the need and the topic of the proposed project. I will be available should any concerns arise during the project implementation.

Billie has had a preliminary discussion with Jana Lacera, Director of the IRB, regarding the IRB process within the Community Healthcare System. The Community Healthcare System Central IRB will review her Application for Non-physician Investigators (NFI) Research/Projects to determine if either an expedited or exempt status will apply. The project encompasses chart audits to identify patients that need bone mineral density screenings and mailing follow-up letters to them with orders and instructions for the screening. An audit will again be performed at the end of the project time table to compare compliance before and after implementing the letters. Billie has my permission and support to collect data, implement change, and evaluate the implementation within our practice.

Sincerely,

Jon Misch, DO

Appendix D

BMD EBP Data Collection Tool

MRN	AGE	RACE	INITIALS of PROVIDER ORDERING BMD	DATE BMD COMPLETED

Appendix E

BMD Order

Community Care Center /Jon D. Misch, DO - Diagnostic Testing and Specialist Form

ATTENTION PATIENT: ***THIS IS YOUR ORDER - You must present it on the day of testing.***

1. Your insurance plan may require pre-certification for certain tests or for you to have testing done at a facility other than Munster Community Hospital. Please check with your insurance carrier **PRIOR** to having tests done for specific instructions.
2. It is the responsibility of the patient to verify benefits and eligibility **PRIOR TO** any diagnostic service.
3. **YOUR TEST RESULTS** - You will receive test results from your physician via phone call or mail within 10 business days.

☐ ROUTINE XRAY PATIENT TO RETURN TO DR'S OFFICE
☐ ROUTINE XRAY RELEASE PATIENT TO HOME

FAX RESULTS TO 219-374-6669

PLEASE READ REVERSE SIDE FOR INSTRUCTIONS

PATIENT NAME (Please Print)	PATIENT D.O.B.	STAT Need report today.
DIAGNOSIS CODE/SYMPTOM OR REASON FOR TEST:	PATIENT PHONE:	TEST DATE AND TIME

ALL TESTS MARKED WITH A STAR (*) REQUIRE AN APPOINTMENT.

CARDIOLOGY
(219) 836-4599

☐ Arterial Study*
☐ Carotid Ultrasound*
☐ ECHO 2D with Doppler*
☐ EKG*

☐ Holter Monitor 24 hours*
☐ Signal Average EKG (SAECG)*
☐ Plain treadmill stress test* No Meds
☐ Nuclear Exercise Stress test* Cardiolite
☐ Nuclear Pharmacological Stress test*
___ Dobutamine ___ Persantine
☐ Venous Study*
☐ Other study _____

Cardiologist to read:

NEURODIAGNOSTICS
(219) 836-4599

☐ EEG - Specify*
☐ EMG - Specify Extremity*
Complete EMG Test Order Form

DIETICIAN ORDER
(219) 924-5348 EXT. 226

Diet: _____
Evaluate and Treat

NUCLEAR MEDICINE
(219) 836-4599

☐ Bone Scan*
☐ Gallium Scan*
☐ HIDA Scan*
☐ Resting MUGA*

☐ Thyroid 123 Scan/Uptake*
☐ Other study _____

ULTRASOUND
(219) 836-4599

☐ Thyroid*
☐ Gall Bladder*
☐ Liver
☐ Pancreas*
☐ Spleen*
☐ Aorta*
☐ Pelvic/Transvag PRN*
☐ Obstetrical*
☐ Kidney*
☐ Scrotum*
☐ Other study _____

PULMONARY
(219) 836-4533

☐ PreMethacholine *Must have complete PFT
☐ Oximetry, Resting*
☐ Oximetry, Exercise*
☐ Complete PFT evaluate for Broncholidator*
☐ PFT Screen evaluate for Broncholidator*
☐ Pulmonary Stress*

OCCUP. THERAPY*

SPEECH THERAPY*

AUDIOLOGY*
(219) 836-4527

☐ Audiogram*

BONE DENSITY
~~(219) 836-4599~~
☒ Bone Mineral Density*

MAMMOGRAPHY
(219) 836-4599

☐ Screening*
☐ Diagnostic

CT SCAN / MRI
(219) 836-4599

Circle Contrast Type:
NONE IV ORAL
☐ Head CT*
☐ Chest CT* ☐ PE Protocol
☐ Abdomen CT*
☐ Kidneystone Protocol
☐ Pelvis CT*
☐ Spine, cervical CT*
☐ Spine, lumbar CT*
☐ Other study _____

MRI
(219) 836-4599

Circle Contrast Type:
NONE IV
☐ Brain MRI*
☐ Spine, cervical MRI*
☐ Spine, lumbar MRI*
☐ Upper Extremity MRI*
☐ Lower Extremity MRI*

RADIOLOGY
(219) 836-4599

☐ Abdomen
☐ Abdominal Series
☐ Ankle Rt __ Lt __
☐ Chest
☐ Colon*
☐ Elbow Rt __ Lt __
☐ Finger Rt __ Lt __
☐ Foot Rt __ Lt __
☐ Hand Rt __ Lt __
☐ Hip Rt __ Lt __
☐ IVP with Tomo*
☐ Hip Rt __ Lt __
☐ Abdomen
☐ Knee Rt __ Lt __
☐ Shoulder Rt __ Lt __
☐ Sinuses
☐ Spine Cervical
☐ Spine, Thorasic
☐ Spine, Lumbar
☐ Upper GI*
☐ Wrist Rt __ Lt __
☐ Other _____

DIABETES SELF MANAGEMENT TRAINING
Complete DIABETES SELF MANAGEMENT form.

SLEEP STUDY TESTING
Complete SLEEP STUDY ORDER form.

PAIN CLINIC ORDER
Complete PAIN CLINIC Consultation Request form.

SPECIAL INSTRUCTION:

SPECIALIST RECOMMENDED: This form is not an insurance referral - if your insurance company requires a referral, call your physician's office to request an insurance referral after you have scheduled your appointment. See below for instructions.

DR.: _____ **PHONE:** _____

ADDRESS: _____ **APPT. DATE/TIME:** _____

Referral Instructions for patient:

1. Call your insurance company to see if the specialist is in your plan and/or if you need referral paperwork to be completed.
2. Call the specialist and make your own appointment.
3. Call your Primary Care doctor **immediately** and notify their office if you need referral paperwork to be completed for your insurance co.

ALL REFERRALS REQUIRE 24-48 HOURS NOTICE.

To the specialist: Please send a consultation letter to our office for the patient's record.

PHYSICIAN SIGNATURE: [signature] DNP, RN, FNP-BC DATE: _____