

Improving Depression Screening in the Adult Rural Primary Care Setting

by

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### Abstract

An estimated 16 million adults are diagnosed each year with depression with primary care providers most commonly making the diagnosis. Depression screening guidelines from the United States Preventive Services Task Force and the American Academy of Family Physicians are recommended for all adults in primary care. Both the literature and an informal needs assessment confirmed a low rate of depression screening in rural primary care. A quality improvement project was conducted in three federally-qualified health centers in rural North Carolina by implementing a depression screening process. Pre-implementation data for depression screening revealed a screening rate of 0-1.4% in the organization's clinics over the previous three years. Following implementation of the quality improvement project, depression screening rates improved to an overall rate of 14%, with one clinic reaching a 60% screening rate. Collaboration with behavioral health professionals to implement a low-cost depression screening and treatment protocol improved screening rates to meet Healthy People 2020 and Triple Aim goals in primary care.

*Keywords:* Depression, Rural, Primary Care, Screening

## Table of Contents

Acknowledgments .....	2
Abstract .....	3
<b>Chapter One: Introduction</b> .....	7
Background and Significance .....	7
Problem Statement .....	9
Justification of the Study .....	10
Theoretical Framework .....	10
Definitions .....	12
<b>Chapter Two: Research Based Evidence</b> .....	15
Search Strategy .....	15
Synthesis of the Literature .....	15
Gaps and Limitations .....	18
Theoretical Model .....	18
<b>Chapter Three: Methodology</b> .....	22
Needs Assessment .....	22
Project Design .....	23
Setting .....	25
Population .....	25
Methods .....	26
Protection of Human Subjects .....	27
Instruments .....	27
Data Collection .....	28

Data Analysis .....	28
Financial Resources .....	29
<b>Chapter Four: Results .....</b>	<b>30</b>
Intended Outcomes .....	30
Findings .....	30
Summary .....	33
<b>Chapter Five: Final Conclusions .....</b>	<b>34</b>
Significance of Findings .....	34
Project Strengths and Limitations .....	35
Project Benefits .....	37
Recommendations for Practice .....	38
Final Summary .....	39
<b>References .....</b>	<b>40</b>
<b>Appendices .....</b>	<b>45</b>
Appendix A: Literature Review Matrix .....	45
Appendix B: PHQ-2 English .....	67
Appendix C: PHQ-9 English .....	68
Appendix D: PHQ-9P Spanish .....	69
Appendix E: PHQ-9 Questionnaire for Depression Scoring and Interpretation .....	70
Appendix F: Columbia-Suicide Severity Rating Scale .....	71
Appendix G: Depression Screening Protocol .....	72
Appendix H: Original PHQ-9 Flow Map for Depression Screening .....	73
Appendix I: Final Protocol Flow Map for Depression Screening .....	74

Appendix J: Letter of Support .....	75
Appendix K: East Carolina University ORIC Exemption Letter .....	76
Appendix L: DNP Essentials: Implications for Nursing Practice .....	77
Appendix M: Table 1.....	81

## **Chapter One: Introduction**

### **Background and Significance**

Depression is a major health concern in the United States, with an estimated 16 million adults diagnosed annually with depression (National Institutes of Health, 2015). It also has the highest burden of disability of mental health disorders at 8.3% of all years lived with disability (National Institute of Health, 2015). Depression is a leading cause of disability in the United States, affecting approximately 8% of the population over age 12, and approximately 10% of the female population (Pratt & Brody, 2014). Richardson and Puskar (2012) stated the World Health Organization predicts depression to be the second leading cause of disability in the United States by 2020, after cardiovascular disease. According to the Centers for Disease Control (Pratt & Brody, 2014), depression can cause a snowball effect for patients and families, leading to other health-related issues, comorbidities, and mortality, as well as placing a heavier financial burden on the healthcare system. It is well known that depression places emotional, physical, and financial burdens on patients and society, causing undesirable effects on daily function often for extended periods.

Depression care is associated with up to \$43 billion of medical care costs per year (Maurer, 2012). Spending growth in the United States healthcare system has decreased from 2000 to 2010 for the top five health concerns: cardiac, routine care, musculoskeletal problems, respiratory problems, and endocrine problems. In contrast, spending growth has increased for the mental illnesses of depression, dementia, and substance abuse (Dunn, Rittmueller, & Whitmire, 2016). Greenberg, Fournier, Sistsky, Pike and Kessler (2015) estimated the economic burden of depression through direct costs, suicide-related costs, and workplace costs. Direct costs included medical and pharmaceutical services, rising for individuals from \$77,517,000 in 2005 to

\$98,854,000 in 2010, a 27.5% increase. Suicide-related costs had a 2.7% increase from 2005 to 2010. Workplace costs rose from \$85,268,000 in 2005 to \$102,003,000 in 2010. This data included both the costs associated with absenteeism and presenteeism.

Depression in the United States costs the society around \$210 billion per annum (Greenberg et al., 2015). Greenberg et al. (2015) found that \$4.70 is spent on direct and indirect costs of related illnesses for every \$1 spent on treating depression, with another \$1.90 spent on costs associated with suicide directly linked to depression. If suicide rates decrease and if healthcare providers successfully increase the percentage of depressed people who receive high quality care, there should be a favorable shift in direct and indirect costs of depression (Greenberg, 2015).

Primary care providers, including nurse practitioners in rural areas, are critical for diagnosing and treating patients with depression (Tudiver, Edwards, & Pfortmiller, 2010). One-third to one-half of adults with depression, and up to two-thirds of older adults, are treated and managed by primary care practitioners (O'Connor, Whitlock, Beil & Gaynes, 2009a). Poor awareness that physical symptoms may have a psychiatric component by patients and providers may lead to unnecessary testing for physical illnesses and missed diagnosis of depression (Richardson & Puskar, 2012). Primary care providers may be hesitant to diagnose depression due to lack of knowledge in the diagnosis and treatment of major depressive disorders, coupled with a lack of supportive services in the behavioral health field or an awareness of services available (Tudiver et al., 2010). Groh (2013) discussed how little significant research on depression in rural women has been done. Rural women are most likely to use a primary care provider for mental health needs, and their needs include healthcare services and the vulnerability and likelihood of living in poverty, being unemployed, poorly educated, and geographically isolated

(Groh, 2013). When undiagnosed or untreated, the rate of suicide increases significantly. Untreated depression can also lead to cardiovascular, endocrine and immunity illnesses (Richardson & Puskar, 2012). There are many reasons depression goes untreated: poor access to mental healthcare, the stigma of having a mental health diagnosis, little education regarding symptoms, no health insurance to fully cover mental health services. Even with treatment, depression is a life-changing illness and requires a collaborative approach to effectively diagnose, treat, and manage.

### **Problem Statement**

This DNP project was to improve depression screening for adults in the rural primary care setting. Currently, guidelines from both the American Academy of Family Physicians (AAFP, 2016) and the United States Preventive Services Task Force (USPSTF, 2016) recommend depression screening in primary care. Objective MHMD-11.1 of the Healthy People 2020 initiative is to increase depression screenings for adults in primary care (Office of Disease Prevention and Health Promotion, [ODPHP], 2017). The Triple Aim initiative integrates behavioral health and physical health to improve depression screening in community primary care clinics (Health Research & Educational Trusts, 2016). The Institute for Clinical Systems Improvement also developed a guideline *Adult Depression in Primary Care* (Trangle et al., 2016). Research shows one-third to one-half of adults and approximately two-thirds of older adults treated for depression received their care in primary care (O'Connor et al., 2009a). According to the literature, routine depression screening is relatively low in primary care, with approximately 4.2% of adult patients screened from 2012-2013 (Akincigil & Matthews, 2017). The low rate of depression screening is consistent with observations as a nurse practitioner in a rural primary care clinic.

### **Justification of the Study**

This project was to improve depression screening in rural primary care through education and integration of screening tools and treatment algorithms to providers in three federally qualified community health centers (FQHCs) in southeastern N.C. There is sufficient evidence that multilevel treatment plans including the use of medications and behavioral therapy decrease morbidity and improve clinical outcomes (Maurer, 2012). Both the AAFP and the USPSTF emphasized if systems are not in place to correctly diagnose, treat, and manage depressive patients, then screening is not beneficial (AAFP, 2016; Thombs, Ziegelstein, Roseman, Kloda, & Ioannidis, 2014).

### **Theoretical Framework**

The Model for Change to Evidence-Based Practice by Rosswurm and Larrabee (1999) was the theoretical model for this DNP project. The model guides nurses and other healthcare professionals through the process of evidence-based change. “Evidence-based practice is more likely to occur in practice settings that value the use of knowledge and provide resources to access that knowledge” (Rosswurm & Larrabee, 1999, p. 317). The model guides practitioners in the development and implementation of clinical guidelines based on the research utilization process (Rosswurm & Larrabee, 1999). The Model for Change to Evidence-Based Practice is a change process model that is applicable across nursing practice settings, including primary care (Rosswurm & Larrabee, 1999).

Gawlinski and Rutledge (2008) described the model as integrating evidence-based practice into care delivery. Gawlinski and Rutledge (2008) described how a practice change, once established, can be maintained through diffusion strategies. The Model for Change to Evidence-Based Practice has six basic steps: Step 1 assesses the need for change in practice.

This includes collecting and analyzing data, collaborating with the major stakeholders, and identifying the problem addressed. Step 2 links the problem with interventions and outcomes using standard systems and language, identifying potential interventions, and selecting the indicators for outcomes. Step 3 synthesizes the best evidence. This involves a literature review related to the key variables, analyzing, and synthesizing the best evidence and assessing the feasibility, benefits and risks associated with a change. Step 4 designs the practice change that includes identifying resources, planning the implementation process, and defining outcomes. Step 5 is implementation and evaluation of the change in practice. This step may involve a pilot study to evaluate process and outcomes, and a decision to adopt the practice change, revise it, or reject it. Step 6 is integration and maintenance of the change in practice. This step focuses on communicating recommendations to major stakeholders, performing in-service education on the change of practice to staff, and integrating the change into standards of practice. The last step continuously monitors the change and outcomes as well (Rosswurm & Larrabee, 1999).

Figure 1 shows the general process of The Model for Change to Evidence-Based Practice and how it could be applied to make a change in clinical practice (Rosswurm & Larrabee, 1999).

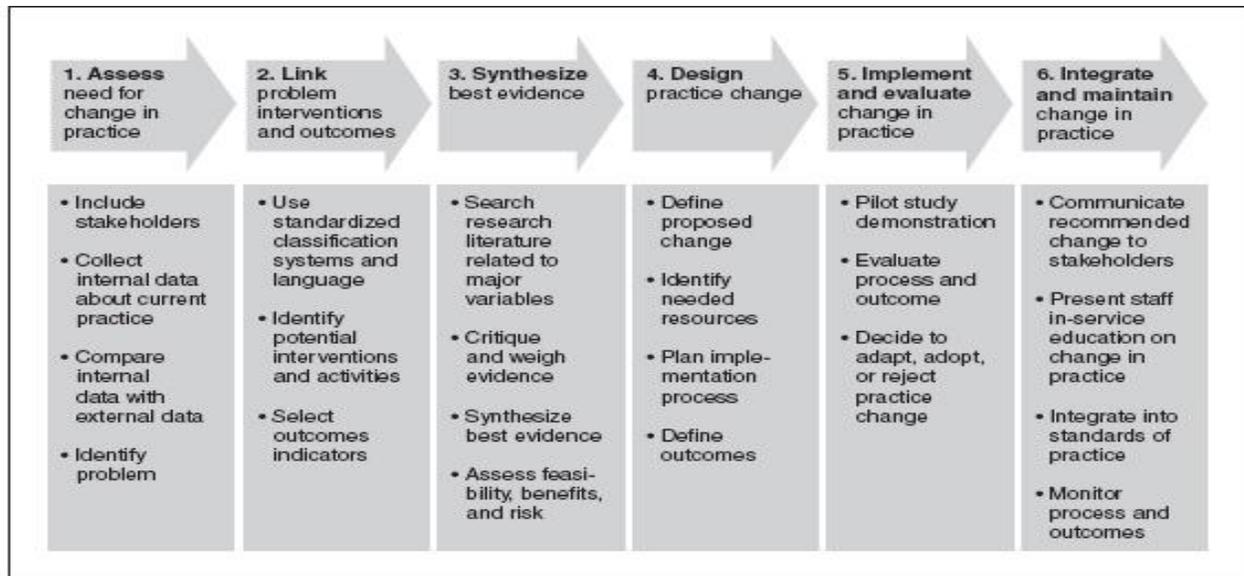


Figure 1. The Model for Change to Evidence-Based Practice (Rosswurm & Larrabee, 1999)

The Model for Change to Evidence-Based Practice was an appropriate and useful framework for a project to implement recommended depression screening guidelines in a rural primary care setting. The model outlined each step of the process, considered components relevant to the project, and lead to an evidence-based implementation process. This framework allowed the project leader to consider stakeholders, variables, feasibility, current evidence, patient outcomes, and training needed to implement current practice guidelines to improve overall mental and physical health. The Model for Change to Evidence-Based Practice was well suited and easy to apply for this DNP project to improve depression screening and treatment in rural primary care.

### Definitions

Conceptually, depression is difficult to define. While it may not have a single working definition, depression encompasses a range of symptoms (Pilgrim & Bentali, 1999). “In the clinical context, the term depression refers not simply to a state of depressed mood, but to a syndrome comprising mood disorder, psychomotor changes and a variety of somatic and

vegetative disturbances” (Pilgrim & Bentali, 1999, p. 263). In clinical practice, the term “depression” is defined as major depressive disorder (MDD), dysthymia, or minor depression (O’Connor, Whitlock, Gaynes & Biel, 2009b). Culture also has a role in the definition of depression and Pilgrim and Bentali (1999) discussed how cultural factors play into the definition of depression around the world. Bryant, Greer-Williams, Willis, and Hartwig (2013) discussed the stigma associated with a diagnosis of depression in an African American rural population, particularly in a faith community. This stigma was identified as a barrier to the diagnosis of depression.

There are numerous behavioral theories to explain depression. Freud initially proposed depression as a biological disease of the brain, later to change his theory to describe depression as a result of the super-ego (McLeod, 2015). Beck’s 1983 model of depression focused on loss of self-esteem, object loss, external narcissistic deprivation and oral personality (McLeod, 2015). In 1967, Beck modified his theory to identify depression as a result of a cognitive triad of negative thinking, negative self-schemas, and erroneous information processing (McLeod, 2015). Seligman also developed a cognitive theory of depression in 1974 called *learned helplessness theory*. This proposed that despite trying to escape negativity, a depressed person is unable to succeed. A person learns helplessness because of an inability to change the environment (McLeod, 2015). Maslow identified self-actualization as a basic human need and its absence as a cause of depression.

Depression is both a medical diagnosis and a state of altered mood. It may present as unhappy or sad mood, loss of pleasure in normally pleasurable activities, and may be accompanied by weight loss or gain, change in sleep habits, irritability or aggression, fatigue or lack of energy, sense of worthlessness, and/or an inability to function in daily life activities.

Depression must be viewed relevant to a person's environment, spirituality, culture, personal beliefs and experiences. Defining depression in simple terms is not possible because it encompasses many factors. While a medical diagnosis of depression has specific symptoms that must be present for assignment of a diagnosis, depression encompasses much more than a medical diagnosis can describe. Multiple components in a person's life contribute to depression, making the illness multifaceted. Each person's presentation of depression is unique, dependent on environment, culture, faith, and experiences.

It is important to equip primary care providers with a consistent way to screen, diagnose and treat depression in a rural setting. "Workplace data suggest that advanced practice registered nurses (APRNs) are choosing to work in rural areas at increasing rates" (Groh, 2013, p. 88). This DNP project was designed to improve the health of patients by using the recommended practice guidelines for patients with positive depression screenings and symptoms. Providing rural health care providers and staff with tools to achieve this goal was a major part of this proposed quality improvement project.

## Chapter Two: Research Based Evidence

### Search Strategy

Through a literature review performed by PubMed, over 23,000 peer reviewed scholarly articles from the last 5 years were obtained through the search term “*depression screening*”. In a narrower search, “*rural health*” was added to the terms, yielding 350 articles. Adding “*primary care*” to the search returned over 80 articles. Only a few results were relevant to this project, so the dates were extended to 10 years, and then changed to no date range. Many of the studies were performed in other countries; many included comorbidities with depression screening and were excluded. There were approximately 15 relevant articles related to depression screening, 18 articles related to depression treatment, and three articles relevant to depression screening guidelines in rural primary care. Another search for a theoretical framework to use in the project revealed six relevant articles. Other searches related to the project yielded four articles related to the economic burden and costs associated with depression, and several articles on depression screening tools were discovered.

### Synthesis of the Literature

In a systematic review of depression screening in adults and older adults in primary care, O’Connor et al. (2009b) examined over 400 studies to update the evidence for the benefits and harms of screening for depression in primary care. This review critically examined evidence from systematic reviews, meta analyses, and large observational studies performed in the United States and other countries (O’Connor et al., 2009b). A framework and a series of five questions were applied to the evidence to support or refute the USPSTF guideline to routinely screen all adult patients in primary care. The first question addressed if screening for depression in primary care reduced morbidity or mortality. This was examined in eight studies in primary care across

diverse populations. The results were mixed and the effect was not large enough, showing improved health outcomes only in previously diagnosed depressed patients (O'Connor et al., 2009b). The second question explored the effect of providers' feedback of depression screening results. Results were examined with or without subsequent care management follow-up, as well as remission in positively screened patients who received treatment in primary care. This revealed weak evidence to support depression screening if care support is unavailable. It also unfolded that primary care clinics that had support care in place showed a reduction in depression and depressive symptoms. "Feedback of screening results combined with the participation of other staff in the treatment of the patient's depression did improve depressive symptomatology, particularly for adult patients with newly detected depression" (O'Connor et al., 2009b, p. 32). The findings also revealed thorough provider and support staff training along with patient education materials, and mental health staff, led to better outcomes for patients treated for depression. The third question addressed harms related to screening adults for depression and no harmful effects related to depression screening were found. The fourth and fifth questions examined pharmaceutical and behavioral therapy and their effectiveness to improve health outcomes and reduce adverse effects. O'Connor et al. (2009b) found 96% of successful depression screening and management programs involved care management, compared to 39% of unsuccessful programs. Overall, the authors presented evidence to support the use of depression screening in adults in primary care when supportive care is in place. O'Connor et al. (2009b) found the best implementation processes involved provider training, along with treatment protocols, patient education materials, and office staff training (O'Connor et al., 2009b). Providing comprehensive treatment requires the availability of follow-up care and mental health services to monitor treatment responses and modify treatment plans as appropriate.

Several articles addressed depression screenings and assessment in a rural setting. In a survey by Brossart, Wendel, Elliott, Cook, Castillo, and Burdine (2013), the researchers used the Patient Health Questionnaire (PHQ-9) versus the Center for Epidemiological Studies-Depression Scale to compare severity of depressive symptoms. Brossart et al. (2013) findings were regardless of the instrument used, women and African-American patients were more likely to suffer from depression in a rural area. Aleem, Torrey, Duncan, Hort, and Mecchella (2015), used multiple process improvement tools to integrate depression screening into electronic records in a rural primary care setting. These authors reported impressive improvement in depression screening rates from 17% to 75.9% over a one year period. This study used multiple flowsheets to diagram a depression screening process. In a similar descriptive study by Cashman, Hale, Candib, Nimiroski, and Brookings (2004), an academic institution developed and implemented a depression screening and treatment program in a community health center through a service learning project. This study provided algorithms for screening and treatment and used a similar approach by Aleem et al. This project faced many of the same barriers to depression screening and treatment anticipated in this DNP project. Several authors revealed common barriers to depression screening and treatment, in different cultures and demographics. Brenes, Danhauer, Lyles, Hogan, and Miller (2015) studied barriers to treatment in the rural older adult population. Common barriers to depression screening for rural adults were costs of services, inadequate insurance, loss of wages, lack of transportation, and treatment knowledge and locations for treatment. The authors also found stigma and personal beliefs were barriers to effective depression care.

A systematic review by Akena, Joska, Obuku, Amos, Musisi, and Stein (2012) examined 19 studies comparing the accuracies of brief and long depression screening tools. The authors

found no significant difference in using a brief tool like the PHQ-9 over a long tool, such as the CES-D, and a brief tool had some advantages because of a short administration time. Only one systematic review by Thombs et al. (2014) found no evidence for a recommendation of routine depression screening. This review looked at randomized control trials previously conducted and evaluated if depression screening was beneficial to patients in primary care (Thombs et al., 2014). Based on their findings, the researchers advised that depression screening is not beneficial and should not be routine; therefore, the USPSTF should reconsider its published recommendations.

### **Gaps and Limitations**

There was a gap noted in the literature regarding the rate of depression screening in primary care. Akincigil and Matthews (2017) analyzed data from the 2012 and 2013 National Ambulatory Medical Care Survey of over 33,000 physician-provider encounters to find 4.2% of patients were screened for depression and the percentage was even lower for African-American patients. The Centers for Medicare and Medicaid Services (CMS, 2016) published the benchmarks for 2014 in preventative care and screening for clinical depression and follow-up plan (PQRS Measure 134) at 30.54% with a standard deviation of 36.61%. Healthy People 2020 reported the rate of primary care office visits that included screening for depression at 1.6% in 2008 increasing to 2.4% in 2010 and 2.2% in 2012 (ODPHP, 2017).

### **Theoretical Model**

To implement and evaluate a depression screening and treatment protocol in rural health clinics in southeastern North Carolina, Rosswurm's and Larrabee's Model for Change of Evidence-Based Practice served as the framework for this project. Figure 2 shows the application

of the six steps of the model to improve depression screening in rural primary care and how each step was applied in the project in southeastern North Carolina

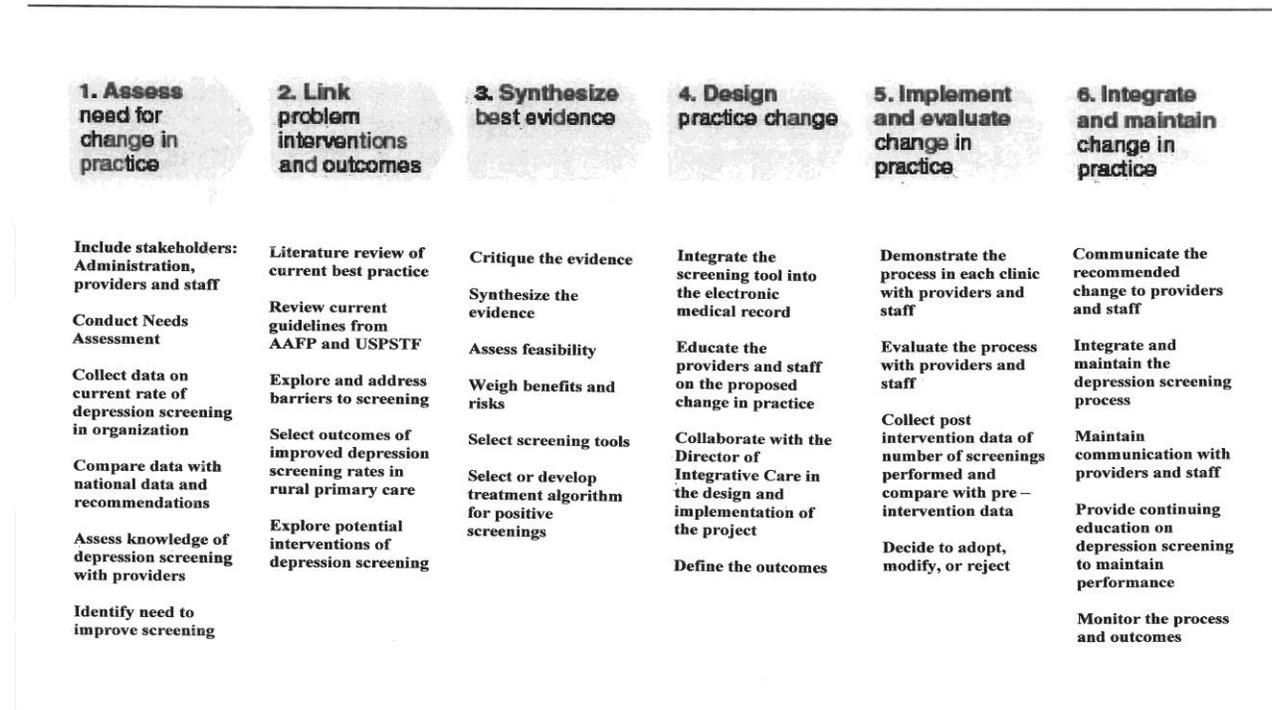


Figure 2. Application of the Model for Change to Evidence-Based Practice (Adapted from Rosswurm & Larrabee, 1999)

The first step of the Model for Change of Evidence-Based Practice required including the Medical Director, the Director of Integrative Care at the facility, the providers (physicians, nurse practitioners, and physician assistants), nurses, and the staff of the FQHCs involved in the project. This step required collecting data of how many patients were currently screened, assessing knowledge of depression screening and treatment guidelines by primary care providers, and current treatments in place for patients diagnosed with depression. These data supported the need for the project. In the second step, an ongoing literature review of the best available

evidence was performed. This included searching for successful depression screening programs in rural health centers, depression screening tools, and evidence supporting national guidelines.

This review also addressed additional areas of barriers to screening and treatment in the rural population. The outcomes were selected at this time along with potential interventions.

Following the third and fourth steps of the model, evidence was synthesized and a practice change designed. In planning the practice change, it was imperative to include education for staff, including the tools and treatment plans put in place. In Step 4 of the model, the plan included integrating the screening tools into the electronic medical record, and this step proved to be unsuccessful with the current software in use. The plan was modified to provide a hard copy of the screening process to staff and providers and demonstrate how to document the results of the screening as well as provide billing and coding instructions.

Implementing a practice guideline was crucial to improve screening and treatment of depression. In this project, there were practice guidelines already recommended by several professional organizations; however, they were not in use at this time. Both the USPSTF and the AAFP recommend the PHQ-2 or the PHQ-9 for the initial screening of patients in primary care. The practice site was using the PHQ-9 that has nine questions. Both the PHQ-2 and the PHQ-9 are available in the public domain and have been tested and deemed reliable. According to Maurer(2012), “the PHQ-2 has been found to be up to 97 percent sensitive and 67 percent specific in adults, with a 38 percent positive predictive value and 93 percent negative predictive value”(p. 141). The PHQ-9 demonstrated around 61% sensitivity and 94% specificity (Maurer, 2012). The PHQ-2 is efficient with only two questions and the PHQ-9 is also easy to use and takes 2-5 minutes to complete. According to Maurer (2012), the American Geriatrics Society recommends the use of the PHQ-2 as the initial screening followed by the Geriatric Depression

Scale (GDS) or PHQ-9 if the PHQ-2 is positive. In a systematic review comparing the accuracy of brief depression screening tools like the PHQ-2 or PHQ-9 to long depression screening tools, Akena et al. (2012) found no difference in the accuracy of the tools and the shorter tools had a slight benefit because they were brief.

Step 5 of the model required implementation of the practice guideline in the clinic. Data were collected again to compare and analyze if the project improved practice guideline implementation. It was in the final stages of the process that a sustainability plan was put in place. To sustain this project, there must be ease of use for each stage of the process in the clinics. Because the setting was FQHCs, there were limited funds available for this project. Working with the behavioral health professionals to design and implement the screening and follow-up care was one avenue that made this a collaborative effort of two disciplines. Providing ongoing educational sessions of the workflow process for the providers and clinic staff helped avoid problems in the system.

### **Chapter Three: Methodology**

This quality improvement project took place from June 2017-July 2018 in three FQHCs in southeastern N.C. Each clinic was in a rural area in one of the most poverty stricken and unhealthiest counties in the state. These areas had a large population of African American and Native American residents. The three clinics were part of a larger organization of approximately 30 community clinics across North Carolina.

#### **Needs Assessment**

As in many rural primary care clinics, the rate of depression screening for adults was very low at these three clinics. In a conversation with the Director of Integrative Care at this organization of FQHCs, she stated less than 2% of adult patients in the organization's 30 clinics were screened for depression. Her position had recently been created to combat this deficit. Research and national data related to depression screening in primary care was used in collaboration with the Director of Integrative Care to develop an approach to improve depression screening in the three NC clinics. The Director of Integrative Care and her team focused on another NC county's clinics integrating a behavioral health counselor into those areas. The goal for the organization overall was to implement a depression screening process in the organization's thirty clinics, as well as employ a behavioral health counselor for each region.

The organization's Medical Director, the newly hired Director of Integrative Care, and project leader met regarding the project proposal. It was discussed how the project was in line with the Healthy People 2020 Initiative MHMD-11 to increase depression screenings by primary care providers (ODPHP, 2017). The low depression screening rates for this organization were similar to data collected by the National Center for Health Statistics revealing only 4.2% of

primary care patients were screened for depression in 2012 and 2013 (Akincigil & Matthews, 2017).

### **Project Design**

The project began with a review of retrospective data from the organization's Health Resources and Services Administration (HRSA) reports of depression screenings performed in 2015 and 2016 in its 30 rural clinics. According to the HRSA Health Center Profile reports filed from the organization in 2016, the organization served 41,470 patients in approximately 30 clinics across North Carolina. The report showed screening for clinical depression and follow-up plan at 1.4% in 2015 and 0.5% in 2016. These percentages represented 580 patients in 2015 and 207 patients in 2016, falling well below the national benchmark of CMS that was 30.54% for 2014 (CMS, 2016).

Current guidelines on depression screening from the USPSTF and AAFP were incorporated into the project design, and interventions were devised to educate staff, providers, and administrators on the depression screening process. Prior to implementation, a design approved by the organization began a screening process using the PHQ-9, rather than the recommended PHQ-2 (Appendices C & B). This had been implemented in several other clinics in the organization a few months prior to this project implementation. Feedback on the process from the Director of Integrative Care suggested that the process should begin with PHQ-2 administration followed by PHQ-9 if a PHQ-2 score was positive. A change process was initiated and the workflow algorithm was swiftly modified to implement in the three clinics for this project.

A depression screening tool, PHQ-2, was given to a patient by the front desk personnel and a patient was instructed to complete it when checked in. A patient then gave the completed

screening tool to a medical assistant, nursing assistant, or nurse when called to an exam room. A medical assistant, nursing assistant or nurse then scored a PHQ-2. If a PHQ-2 was positive, meaning either of the two answers were above 0, a PHQ-9 was administered to the patient by the intake nurse/staff. Documentation and scoring of the depression screen were recorded in the electronic health record and a provider was notified of the score. If a PHQ-9 revealed a positive screening for depression, a provider further assessed a patient and began treatment if warranted. If a patient answered above 0 to Question 9 on the PHQ-9 regarding “having thoughts of being better off dead or hurting yourself in some way,” then the Columbia Suicide Rating Form (Appendix F) was administered by the provider and the patient was assessed for safety. A workflow process algorithm, based on current screening and treatment guidelines, was developed and given to each provider and staff member in each of the three clinics to reference the process of the depression screening and treatment (Appendices G, H, & I). A licensed clinical social worker was available through the Integrative Care program in the organization’s other clinical sites to assist providers as needed by telephone. Ongoing monitoring of the program was conducted, and modifications were made as needed. The project was to improve overall depression screening rates, emphasize ease of use of the screening tools, and provide staff and healthcare providers with resources to properly assess and treat patients with depression. It was predicted improved provider knowledge and comfort in performing screening and treatment would help reinforce use of the practice guideline at the FQHCs. Following implementation, data were analyzed on the number of screenings performed in these three clinics, and disseminated throughout the organization’s other clinic sites.

**Setting**

The project was conducted at three rural FQHCs in southeastern N.C. The clinics are a part of a non-profit organization of approximately 30 FQHCs in N.C. There was no routine depression screening process in place in the three clinics at the time of the project. Physicians, nurse practitioners, registered nurses (RN), licensed practical nurses (LPN), certified medical assistants (CMA), front desk receptionists, and clinical site leaders staff the three clinics. Clinic A was the smallest clinic with one physician, a licensed practical nurse, and a front desk receptionist who also served as the clinic site leader. Clinic B was a newly built clinic, with a front desk receptionist, a medical assistant, a registered nurse, and a newly graduated family nurse practitioner. Clinic C was the most established clinic, with several front desk personnel, four nurses/medical assistant personnel, a site leader, family nurse practitioner, and a physician well established in the area. The Information Technology Department was located remotely at the corporate office and provided guidance for documentation of the depression screening, as well as the collection of data from each of the three clinics during the implementation process. The clinics used AllScripts Professional Version 15 electronic record software.

**Population**

While the depression screening process involved adult patients in rural primary care clinics, the quality improvement process was to equip healthcare providers and staff with the appropriate tools to improve depression screening rates. These tools included how to appropriately screen for depression, accurately use the screening tools, document and bill for screening, and provide appropriate treatment and referrals to behavioral health specialists. Physicians, nurse practitioners, registered nurses, licensed practical nurses, certified medical

assistants, clinical site leaders, and front desk receptionists were all involved in the depression screening process change.

## **Methods**

A workflow process protocol was developed in collaboration with the organization's Director of Integrative Care. The protocol developed, hereby referred to as the GMC Depression Screening Protocol, started with the intake by front desk personnel in which all patients age 12 and older were given a paper copy of the PHQ-2 form to complete and present to the intake staff once called to the patient care area (Appendix B). The CMA, LPN, and/or RN then entered the PHQ-2 score into a patient's electronic chart following protocol instructions. The CPT code for depression screening used was 96127, brief emotional/behavioral assessment (CMS, 2018). If both questions were answered "0", the screening process was complete and no further action was needed. If a PHQ-2 had at least one item greater than "0" then a clinical staff person administered the PHQ-9 (Appendix C & D) to the patient and documented the score in the electronic record. A scoring chart was available to a provider to determine the level of depression from mild to severe. If the patient circled any number other than "0" for Question 9 on the PHQ-9 (Appendices C & D), "thoughts that you would be better off dead or of hurting yourself in some way", a healthcare provider then administered the Columbia-Suicide Severity Rating Scale (Appendix F). The protocol then directed a provider who to contact to access a crisis provider in the event of suicide risk, or a behavioral health counselor referral for any level of depression without suicide risk. Once forms were completed and reviewed by a provider, screening tools were scanned into a patient's electronic record, filed until project leader's weekly or biweekly visits to manually count forms, and once counted were shredded. The healthcare provider interpreted the screening scores using the *PHQ-9 Questionnaire for Depression Scoring*

*and Interpretation Guide* (Appendix E) and directed a treatment plan accordingly with medications and/or behavioral health counseling. An encounter was then coded with the ICD-10 code of Z13.89, encounter for screening for other disorder (“The Web’s Free 2018 ICD-10 Cm/PCS Medical Coding Reference,” 2018).

### **Protection of Human Subjects**

The quality improvement project proposal was submitted to the organization in June 2017 for review. The medical director and the organization approved the project and deemed it an improvement project not requiring institutional IRB approval (Appendix J). The proposal was then submitted to the Office of Research Integrity & Compliance (ORIC) at East Carolina University and deemed “not human research”, waiving IRB review (Appendix K). An Excel© spreadsheet was used to store the initial aggregate data from the HRSA reports prior to implementation and the aggregate data collected from the diagnostic codes used for screening during and following implementation. The project involved working solely with healthcare personnel, healthcare providers, staff, and the Information Technology Department. There was no patient contact or personal identifying information involved at any time.

### **Instruments**

The PHQ-2 and the PHQ-9, recommended by the USPSTF and the AAFP guidelines for depression screening in primary care, were used in this project. The PHQ-2 contains two questions scored on a scale of 0 to 3, from “*not at all*” to “*nearly every day over the last two weeks*.” The PHQ-9 contains nine questions using the same scoring scale (Appendices C, D & E). The forms were available in both English and Spanish. These tools were available for use in the public domain and had been tested and deemed reliable (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 showed around 61% sensitivity and 94% specificity (Maurer, 2012). Both the

PHQ-2 and the PHQ-9 were self-reported by a patient, very easy to use, and took 1-5 minutes to complete. The Columbia-Suicide Severity Rating Scale (C-SSRS) is a validated tool for use in primary care to assess suicide risks following the administration of the PHQ-9 (The Columbia Lighthouse Project, 2016). If a patient answered any number other than zero on Question 9 on the PHQ-9, the C-SSRS was administered to assess suicide risks and to direct care by a provider (Appendix F). The GMC Depression Screening Protocol provided the algorithm and workflow for staff and providers to implement the depression screening process (Appendix I).

### **Data Collection**

The implementation process began at the end of January 2018 and continued through March, 2018. Monthly data were collected from the three clinics and logged into a password protected Excel© spreadsheet. Data were collected from the Information Technology department and included the number of adult patients over age 18 seen in each clinic and the number of adult patients over age 18 with the diagnostic codes of Z13.89, encounter for screening, unspecified, and the CPT code of 96127, brief emotional/behavioral assessment. The monthly data were then combined for January-March 2018 and analyzed.

### **Data Analysis**

A descriptive analysis was performed comparing aggregated pre-implementation data to aggregated post-implementation data. The data from the Excel© spreadsheet and the organization's 2015 and 2016 yearly HRSA reports were used for the analysis. For each clinic, frequencies, percentages and means were calculated based on number of depression screenings, percentage of patients screened per month, average number of patients screened, and average number of screenings compared to total patient encounters. The statistics were used to determine

improvement of the depression screening process and to ensure sustainability once the project was completed.

### **Financial Resources**

Healthcare staff and providers in the project received no financial or other compensation for participation. There were few costs associated with this project. Implementation took place through the use of the workflow process and the electronic health record. The project leader's costs included travel to clinics during implementation, and printing costs for posters and brochures. While the depression screening process requires only a few minutes of staff time when checking in patients, reimbursement for the screening ranges from \$6.48 to \$9.21 per screening. This may be billed once yearly and more frequently to monitor treatment effectiveness if patients are diagnosed and receive treatment for depression. Both the CPT code 96127 and the ICD-10 diagnosis code Z13.89 must be entered to file for reimbursement for the depression screening. A positive diagnosis of moderate to severe depression may accumulate more income related to specific diagnoses codes and time spent with a patient.

## **Chapter Four: Results**

Evidence based practice supports depression screenings for adults in primary care. A workflow process to implement depression screening in rural primary care clinics revealed an improvement in depression screening rates. Benefits and limitations were explored during and following implementation of the project.

### **Intended Outcomes**

The desired outcome of this project was an increase in the number of adult patients screened for depression in the rural primary care clinics. This outcome was met through improvement in staff and provider utilization of the depression screening process, ultimately leading to better patient outcomes through appropriate diagnosis and treatment of depressive disorders in the rural primary care setting. Developing and implementing a workflow protocol, providing weekly consultations and troubleshooting, working through change, and serving as a liaison between clinics and the Director of Integrative Care, led to success in increasing the numbers of adult patients being screened for depression in the rural primary care setting.

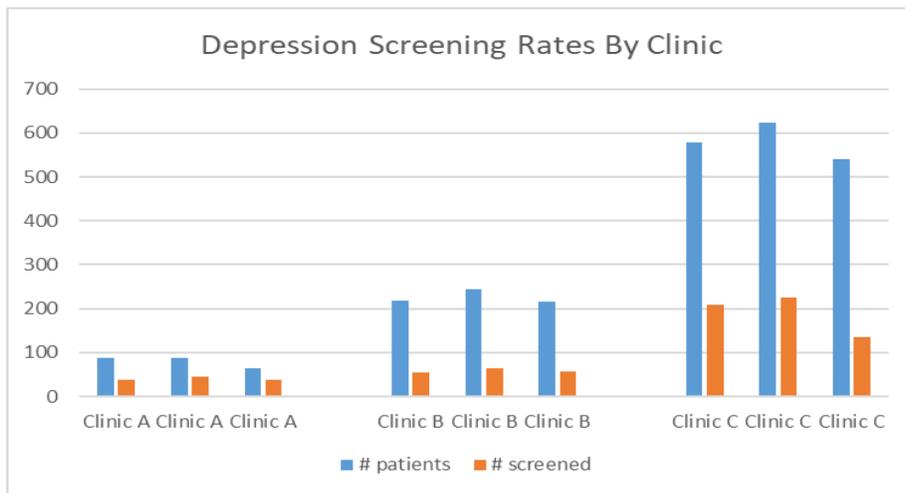
### **Findings**

Prior to the implementation of this project, aggregate data obtained from the organization's yearly reports to HRSA from 2015 and 2016 revealed that depression screening rates across the organization's thirty clinics were 0% in 2014, 1.4% in 2015 and 0.5% in 2016. Data was collected at each of the three clinics in which the depression screening project was implemented during this project for January, February and March, 2018. Table 1 (Appendix M) reveals the results from the three clinics from January through March 2018.

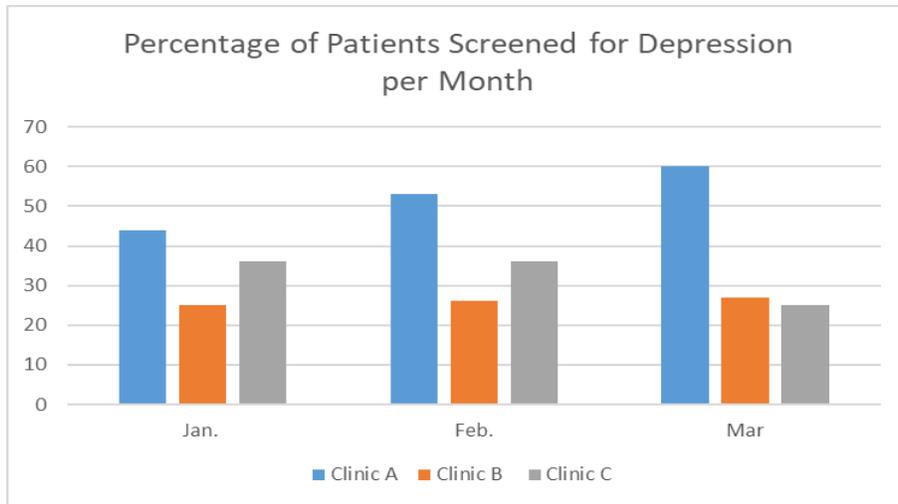
Clinic A increased its screening rates from 44% in January to 53% in February, and 60% in March. While the percentage rates were relatively high in this clinic, it is important to keep in

mind that Clinic A saw the least amount of patients. Clinic B improved to 25% in Jan, 26% in February and 27% in March. Clinic C’s screening rates were at 36% in January and February, dropping to 25% in March. Clinic C saw the largest volume of patients, and also had two providers compared to Clinics A and B with only one provider. During the last month of the project, the staff reported a large number of patients returning for follow-up of influenza, in which the staff chose not to administer the depression screening a second time.

Graph 1 displays the frequency of adult patient encounters in each clinic compared to the number of adult patients screened for depression during the months of project. Graph 2 reveals the percentages of patients screened for depression in each of the three clinics by month.

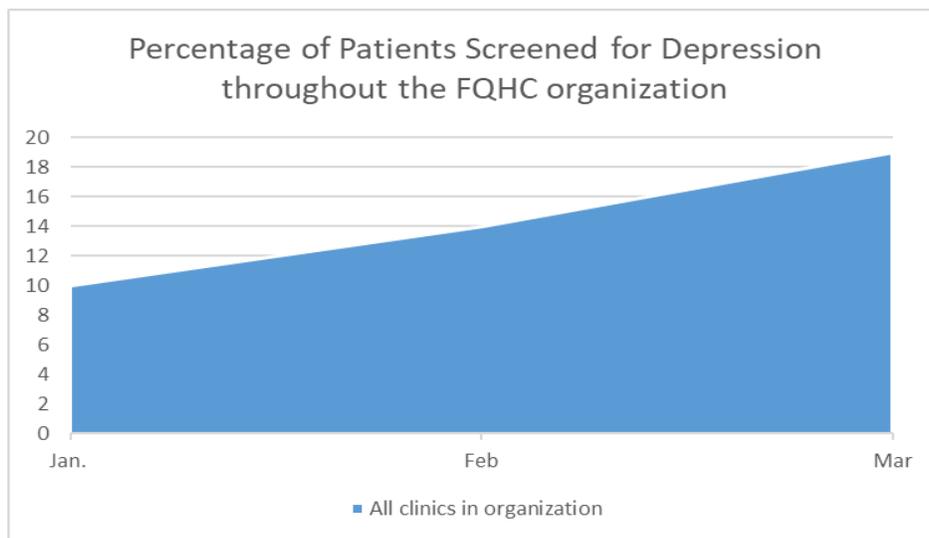


Graph 1. Frequency of patient encounters versus patients screened in each clinic



Graph 2. Percentage of patients screened for depression in each clinic per month

The mean number of patients screened in Clinic A was 41, Clinic B had a mean of 59 patients, and Clinic C had a mean of 189 patients in the three month period of implementation. Depression screening results increased in the project’s three clinics and overall in the organization’s thirty clinics. In January, the rate of screening in all thirty clinics within the organization showed a rate of 9.97% of adult patients screened. The trend in Graph 3 continued to improve with February revealing an overall rate of screening at 14.36% and March at 19.22%. This was an impressive improvement over the pre-project rates ranging from 0%-1.4%.



Graph 3. Percentage of patients screened for depression January – March 2018 throughout the organization’s thirty clinics

**Summary**

The four healthcare providers in the project's three clinics revealed they completed depression screenings on some patients in the past, but were not consistent in screening or in the process to document the screening in the electronic record. While 2014 records indicated 0%, this is likely not an accurate view of depression screening, but rather a lack of knowledge on the documentation process. Following the project implementation process, depression screening rates for the organization showed an increase from 0% in 2014 to over 14% in January through March, 2018. Further improvement in depression screening rates was noted in the three clinics involved in the project, with depression screening rates ranging from 25-60%.

## **Chapter Five: Final Conclusions**

In reviewing the results of this project, it was important to examine the significance of the findings and how they affected the organization and rural primary care. During the process, there were both strengths and limitations noted that affected parts of the project. There were numerous benefits to the depression screening project which led to several recommendations for the organization as a whole.

### **Significance of Findings**

An increase in the overall organization's depression screening rates reveals a positive finding related to project implementation and evaluation. While depression screening tests are not diagnostic, they do reveal if patients need further evaluation and treatment for depressive disorders. Patients with depression or depressive symptoms are usually first seen by their primary care provider and are often misdiagnosed or overlooked for depression (Richardson & Puskar, 2012). Providing a workflow process to primary care staff members and providers, with a detailed algorithm to follow, can increase the rate of depression screening in primary care. This can lead to effective treatment and wellness for many patients as well as provider confidence in diagnosis and treatment of depression. Diagnosing and treating depression can lead to better patient outcomes. Saving one patient and family from the horrors of suicide make improving depression screening and treatment worthwhile.

Both the Healthy People 2020 and the Triple Aim initiatives strive to increase depression screening rates in primary care. The Healthy People 2020 objective is to increase the proportion of primary care clinics performing depression screenings (ODPHP, 2017). "Historically, behavioral health care and physical health care have operated as separate and minimally coordinated systems of services in the United States" (Health Research & Educational Trust,

2016, p. 5). The Triple Aim initiative is to integrate behavioral and physical health care services, build networks with community stakeholders, including community primary care clinics, to coordinate integrative care and implement alternate pay systems to sustain these services (Health Research & Educational Trust, 2016). The improvement in depression screening rates in the rural health clinics involved in this project directly lines up with both of these national healthcare initiatives. Collaboration with behavioral health professionals during this project directly supports the Triple Aim initiative.

### **Project Strengths and Limitations**

There were several strengths related to this project and its implementation. Clinics that were involved were eager and cooperative to start the change process and to improve depression screening rates. Two of the three clinics were not overly busy, allowing adequate time to work with each staff member and provider on a one-on-one basis. There were evidence based depression screening guidelines already in place by regulatory bodies, and making the process easier to design. The project leader worked with the organization in the past as a provider, which allowed for ease in navigating the system and use of electronic record documentation.

Collaboration with the Director of Integrative Care at the organization provided another professional perspective to the project. Collaboration between an adult nurse practitioner as the project leader and a PhD prepared behavioral health counselor provided the highest level of expertise in both primary care and behavioral health. Experiences from both professionals aided in developing a thorough and feasible process for depression screening in the primary care organization.

Early in the project implementation, there were several limitations identified. The current electronic health record used was antiquated and unable to easily filter data needed for the

project. Data were therefore collected manually each week in the three clinics. Staff filed the screening tools after being scanned, removed any identifying information, and the project leader counted the screening tools manually during weekly and biweekly visits and recorded on a data collection tool. In addition, the site leader at each clinic provided the number of patients 18 and older treated in the clinic during that week. Since the project involved adults, data were collected for ages 18 years and above, although the clinics used the screening process for patients 12 years and above. This limitation led to increased time spent with the Information Technology Department on extracting data electronically. More time was required for the staff to file the screening tools and for the site leader to calculate the number of patients seen in each clinic. This did not alter the workflow in Clinic A or C; however, Clinic B often had missing screening tools and verbal accounts from the clinic staff supported the workflow protocol was not always followed.

Another limitation identified was the inadequacy of the electronic health record software. This system did not have a health maintenance recall for depression screening. Although the depression screening was available as a CPT code as well as a diagnosis code, the electronic system had no way of identifying that a yearly screening had been completed. This accounted for duplicate screenings to be completed on a patient within a short period of time. Since the project took place during the influenza epidemic of 2017-2018, many patients were returning to the clinic within 2-3 weeks of the previous visit. There was no means to determine the number of patient encounters that was duplicated in the screening process during the manual collection of data. Following several meetings with the IT Department, a solution to collect the data using the patient in only one encounter for the period of implementation was discovered. This created a discrepancy in the data that was collected manually and electronically. In this case, the electronic

data was used to compare the descriptive statistics on depression screening in the three clinics. In addition, it was noted that a large number of acutely ill patients had completed the screening, and illness may have affected the scoring, leading to a false positive for depression. This was discussed with the healthcare providers in order to help distinguish whether a patient should be screened at a sick visit or if they should wait for an annual physical visit. Discussions with the providers revealed that many patients in the rural clinics may not come back for well visits and that for most patients, it would be beneficial to screen during an acute visit.

An additional limitation was related to coding for the depression screening. Neither the CPT code 96127 nor the ICD-10 diagnosis code are specific to depression screening (CMS, 2018). Each may be used for other screening processes which may skew the data if used for another type of screening. The limitation was managed by requiring the staff and providers to enter both the CPT and ICD-10 codes in order to signify depression screening, since the software system did not offer this capability.

### **Project Benefits**

Primary care providers play a critical role in depression screening for adult patients. Using a flow map process to implement depression screenings in primary care can help identify patients with depression at an early onset and provide patients with optimal care. Depression care includes collaboration with a behavioral health counselor in addition to medication therapy. Providing clinics with the resources available within a rural community for patients who are diagnosed with depression allows for continuity of care for a vulnerable population. Depression screening is the first process to prompt a depression diagnosis and/or referral to a behavioral health counselor (Richardson & Puskar, 2012). Providers and clinic staff become more

comfortable and knowledgeable in screening, diagnosing and treating depression, therefore easing the process and improving screening rates.

Primary care clinics and the overall FQHC organization may also benefit financially from implementation of depression screenings. According to the Director of Integrative Care, federal and state funding is based on criteria, one criteria being the percentage of patients screened for depression. If insured patients are screened, each encounter could result in revenue of \$6-10, leading to an increased revenue of \$60,000 -\$100,000 per year for the organization. Also, increasing the percentage of patients screened and documented should enhance the organization's funding options through HRSA and other funding sources.

Indirectly, patients who are screened for depression and receive treatment may avoid further complications with mental illness and physical illnesses involving cardiovascular, endocrine and immune systems. The incidence of unnecessary testing for physical illness may decrease as well. If patients are treated effectively, the rate of suicide will decrease, further lowering financial burdens within the healthcare system and emotional trauma for patients and families.

### **Recommendations for Practice**

The organization plans to implement a depression screening protocol across all of its clinics. Recommendations were made to the organization that policies be in place and behavioral health services available within each of the communities prior to implementing the policy. It is recommended that a liaison be available for each clinic to troubleshoot issues that may arise. A liaison could periodically check on each clinic to ensure compliance and encourage providers and staff members to continue the protocol. Posters or handouts for patient education in the exam rooms could also help with patient cooperation in the screening process. If the organization is

shopping for a new electronic record system, recommendations would include finding one that incorporates preventive screenings including depression screenings, with an avenue to view that screening data at each visit. An alert system indicating when the next screening is due within the current electronic record system should be explored further with the software company. The Information Technology Department at the organization was not aware of the capability of activating an alert system within the current software program.

The organization is currently advertising for a behavioral health counselor for the county in which the project was implemented. It is recommended that each area or region has its own behavioral health counselor so that all patients that need cognitive therapy can be served. This interprofessional collaboration would likely improve overall patient outcomes.

### **Final Summary**

There is quite often a societal stigma associated with depression. Rural patients most often use primary care as the main source of healthcare, including mental health services. Research has shown that implementing evidence based guidelines for depression screening in primary care is beneficial for the patient. These guidelines specify that treatment options must be accessible and available in order for implementation. Improving depression screening rates in rural primary care may lead to improved patient outcomes, decreasing the incidence of physical illnesses, decreasing the rate of suicides, and increasing the potential revenue for rural health clinics.

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Appendix A  
Literature Review Matrix

**East Carolina University  
College of Nursing DNP Program Evidence Matrix**

**Student: Kelly Laham  
Course: NURS 8269 DNP 1**

**Databases Used for Literature Search: ECU Laupus Library, UNCW Randall Library, PubMed and CINAHL**

**Terms searched: depression screening in primary care; depression in rural health; depression screening rates; depression screening guidelines, depression costs, depression economic burden, evidence based models,**

**MESH Terms Searched: depression, depression screening, and depression treatment**

**Filters Applied to Searches: Scholarly peer reviewed journals, full text, within 5 years, within 10 years, no dates, nursing, medicine, psychology, psychiatry**

**Number of Articles Retrieved (unique, cumulative) Total: 23,004, unique 350; final 59**

**Number of Article Abstracts Read: 200+**

**Number of Full Articles Read: 112**

**What were the rationales for excluding articles? Not related directly to depression screening in primary care  
OR studies focused more on comorbidities than depression screening OR studies performed in rural areas of other countries not relevant to rural United States.**

<b>Article (APA Citation)</b>	<b>Level of Evidence (I to VII)</b>	<b>Data/ Evidence Findings</b>	<b>Conclusion</b>	<b>Use of Evidence in EBP Project Plan</b>
Akena, D., Joska, J., Obuku, E., Amos, T., Musisi, S., & Stein, D. (2012). Comparing the accuracy of brief versus long depression screening instruments which have been validated in low and middle income countries: a systematic review. <i>BMC Psychiatry, 12</i> , 187-193. doi:10.1186/1471-244X-12-187	Level 5	Systematic review of nineteen studies to validate use of brief and long depression screening tools	Brief depression screening tools are as accurate as the long tools	Validates use of PHQ-9 (brief tool) in project
Akincigil, A., & Matthews, E. B. (2017). National rates and patterns of depression screening in primary care: Results from 2012 and 2013. <i>Psychiatric Services, 68</i> (7), 660-666. doi:10.1176/appi.ps.201600096	Level 6	Secondary analysis of 2012-2013 data on depression screening in over 33,000 encounters	Revealed rate of depression screening 4.2% with African Americans half as likely to be screened. Overall screening rate low.	Validates need for DNP project
Aleem, S., Torrey, W. C., Duncan, M. S., Hort, S. J., & Mecchella, J.N. (2015). Depression Screening optimization in an academic rural setting. <i>International Journal of Health</i>	Level 6	Process improvement project to improve depression screening rates in primary care through staff training and EHR redesign	Depression screening for primary care visits improved from 17% to 75.9% following the project implementation	Model of implementation for improving depression screening rated in primary care

<p><i>Care Quality Assurance, 28(7), 709-725.</i> doi:10.1108/IJHCQ A-01-2015-0012</p>				
<p>American Academy of Family Physicians (2016). <i>Summary of Recommendations for Clinical Preventive Services</i>. Retrieved from <a href="http://www.aafp.org/patient-care/clinical-recommendations/all/depression.html">http://www.aafp.org/patient-care/clinical-recommendations/all/depression.html</a></p>	Level 7	Provides recommendations for depression screening in primary care	Recommended guideline for practice from AAFP	Provides the practice guideline to guide DNP project
<p>Atkins, J., Naismith, S., Luscombe, G., &amp; Hickle, I. (2015). Elderly care recipients' perceptions of treatment helpfulness for depression and the relationship with help-seeking. <i>Clinical Interventions in Aging, 10</i>, 287-295. doi:10.2147/CIA.S76086</p>	Level 6	Study that examines perceptions of treatments for depression in the elderly population	118 elderly were surveyed, 32.4% screened positive for depression and 24.2% of those reported getting treatment for depression. Most preferred tx from their PCP rather than a mental health specialist. Most found CBT helpful. More research is needed in this area.	Australian study that may not be relevant in the US, although common themes seen throughout other studies. Provides perspective from geriatric population in regards to depression tx.
<p>Bocker, E., Glasser, M., Nielson, K., &amp; Weidenbacher-Hoper, V. (2012). Rural older adults' mental health; status and challenges</p>	Level 6	Study that examined mental health needs and use of mental health services by	Revealed that there are multiple barriers in diagnosis and treatment of	Perspective from rural elderly patients with depression and considerations when developing treatment

in care delivery. <i>Rural and Remote Health</i> , 12. Retrieved from <a href="http://www.rrh.org.au/publishedarticles/article_print_2199.pdf">http://www.rrh.org.au/publishedarticles/article_print_2199.pdf</a>		independent rural older adults in regards to depression care	depression in this population. Stresses importance of PCPs and local communities to provide resources for this population.	plans in the DNP project
Brenes, G. A., Danhauer, S. C., Lyles, M. F., Hogan, P. E., & Miller, M. E. (2015). Barriers to mental health treatment in rural older adults. <i>The American Journal of Geriatric Psychiatry</i> , 23(11), 1172-1178. doi:10.1016/j.jagp.2015.06.002	Level 6	478 rural NC older adults surveyed to identify mental health treatment barriers	Barriers of denial for need of help, financial, mistrust, stigma, and privacy revealed.	Factors to consider with treatment of older adults in the rural area.
Brossart, D. F., Wendel, M. L., Elliott, T. R., Cook, H. E., Castillo, L. G., & Burdine, J. N. (2013). Assessing depression in rural communities: Rural depression. <i>Journal of Clinical Psychology</i> , 69(3), 252-263. doi:10.1002/jclp.21949	Level 4	Surveys of PHQ-9 and CESD-5 responses analyzed	Women and African Americans are at greater risk of depression in an underserved area, but no effects found for rural residency	Can be used to help educate staff and providers
Bryant, K., Greer-Williams, N., Willis, N., & Hartwig, M. (2013). Barriers to diagnosis and	Level 6	Qualitative study in the rural south with 24 African American	Four internal and four external barriers were identified	Will help determine treatment interventions for rural African American patients in this DNP

<p>treatment of depression: Voices from the a rural African-American faith community. <i>Journal of the National Black Nurses Association</i>, 24(1), 31-38. Retrieved from <a href="https://www.ncbi.nlm.nih.gov/pubmed/24218871">https://www.ncbi.nlm.nih.gov/pubmed/24218871</a></p>		<p>participants from the faith community exploring barriers to diagnosis and treatment of depression</p>		<p>project by considering perceived barriers to depression treatment</p>
<p>Bryant, K., Haynes, T., Kim Yeary, K. H., Greer-Williams, N., &amp; Hartwig, M. (2014). A rural african american faith community's solutions to depression disparities. <i>Public Health Nursing</i>, 31(3), 262-271. doi:10.1111/phn.12079</p>	<p>Level 6</p>	<p>Qualitative study in the rural south with 24 African American participants from the faith community exploring how they would address depression within the faith congregation and the community</p>	<p>Identified three key players: church, clergy, and layperson. Recommendations for each role were presented to address depression disparities in rural AA communities</p>	<p>Applies to a large population in the community in which DNP will be implemented. May be useful in developing treatment plans within the community</p>
<p>Bryant, K., Haynes, T., Greer-Williams, N., &amp; Hartwig, M. (2014). "Too blessed to be stressed": A rural faith community's views of African American males and depression. <i>Journal of Religion and Health</i>, 53(3), 796-808. doi:10.1007/s10943-012-9672-z</p>	<p>Level 6</p>	<p>Qualitative study in the rural south with 24 African American participants from the faith community exploring the faith community's perceptions of depression.</p>	<p>Results revealed how participants defined depression, what caused depression, the denial of depression, and male roles</p>	<p>Provides perspective on African American rural faith communities regarding depression.</p>
<p>Cadigan, R.J., and Skinner, D. (2015). Symptoms of</p>	<p>Level 4</p>	<p>Cohort study of 32 low income mothers of</p>	<p>Provided insight into how rural</p>	<p>Treatment recommendations may be incorporated into</p>

depression and their management among low-income, African American and white mothers in the rural south. <i>Ethnicity and Health</i> , 20(3), 293-308. doi: 10.1080/13557858.2014.921889		African American and Caucasian race from eastern NC measuring depressive symptoms	women experience and explain depressive symptoms, and how they seek help for depression. Provided implications for education, intervention, and treatment in a culturally sensitive way	DNP project for rural patients in southeastern NC
Canada, A. (2016). Probing the relationship between evidence-based practice implementation models and critical thinking in applied nursing practice. <i>The Journal of Continuing Education in Nursing</i> , 47(4), 161-168.	Level 7	Compares different evidence based practice models	Stresses the importance of using EBP models in practice	Supports use of Rosswurm and Larrabee Model in DNP project
Cashman, S., Hale, J., Candib, L., Nimiroski, T. A., & Brookings, D. (2004). Applying service-learning through a community-academic partnership: Depression screening at a federally funded community health center. <i>Education for Health: Change in Learning &amp; Practice</i> , 17(3), 313-322. doi:10.1080/13576280400002486	Level 6	Academic nursing/medical institution partnered with a federally funded community health center to implement a depression screening and treatment program through a service learning model	Service learning projects are a good way to supplement resources in a federally funded community health center and are beneficial to both the student and the facility	Some process improvement techniques are available in this article that may be useful in this DNP project

<p>Centers for Medicare and Medicaid Services. Retrieved from <a href="https://www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=251">https://www.cms.gov/medicare-coverage-database/details/nca-decision-memo.aspx?NCAId=251</a></p>				
<p>Centers for Medicare and Medicaid Services. Retrieved from <a href="https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeDbackProgram/Downloads/PY2015-Prior-Year-Benchmarks.pdf">https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeDbackProgram/Downloads/PY2015-Prior-Year-Benchmarks.pdf</a></p>				
<p>Culpepper, L. (2012). Does screening for depression in primary care improve outcomes? <i>Current Psychiatry Reports, 14</i>, 345-352. Doi:10.1007/s11920-012-0275x</p>	<p>Level 7</p>	<p>Looked at outcomes since routine depression screening guideline was implemented in 2002</p>	<p>Revealed that prior to 2010, routine depression screening was still questionable, but since 2010, data shows improved outcomes with screening due to multiple integrative care programs in primary care.</p>	<p>Supports practice guideline of depression screening in Primary care in DNP Project</p>
<p>Cummings, S., Bridgman, T., &amp; Brown, K. (2016).</p>	<p>Level 7</p>	<p>Discusses Lewin’s Model</p>	<p>Presents Lewin’s Change</p>	<p>Support application of Lewin’s Change</p>

Unfreezing change as three steps: Rethinking Kurt Lewin's legacy for change management. <i>Human Relations</i> , 69(1), 33-60. doi:10.1177/0018726715577707			Theory from the original 1947 version and how that applies to process change today	Theory to DNP Project
Davis, D. & Taylor-Vaisey, A. ((1997). Translating guidelines into practice: A systematic review of theoretic concepts, practical experience and research evidence in the adoption of clinical guidelines. <i>Canadian Medical Association</i> , 157 (4).	Level 1	Systematic review of RCTs to recommend effective strategies to implement practice guidelines	Revealed significant deficiencies in clinical practice guideline implementation	Supports the need for DNP project to implement depression screening guidelines in primary care
Deshpande, S. S., Gadkari, M., & Raje, S. S. (2011). Screening for depression and its risk factors in geriatric population: A rural community based study. <i>Asian Journal of Psychiatry</i> , 4(4), 284-287. doi:10.1016/j.ajp.2011.08.001	Level 6	Large rural based community study screening geriatric patients for depression in India	41% screened positive for depression with 19% severe.	Foreign study may not be relevant for this DNP project. Does provide insight into geriatric population and prevalence of depression and emphasizes screening in primary care.
Dunn, A., Rittmueller, L. & Whitmire, B. (2016). Healthcare spending slowdown from 2000 to 2010 was driven by lower growth in cost per case. <i>Health Affairs</i> , 35(1),132-140. doi:10.1377/hlthaff.2015.1109	Level 7	Present national healthcare spending data by medical condition (depression) and looks at the healthcare spending slowdown	Discussed the health spending slowdown that occurred from 2000-10. Revealed it was a result of reduction of growth in cost per case and	Provides financial input for the financial part of the DNP project

			that spending trends varied greatly across conditions and differentially affected the slowdown.	
Duong, K. and Seung-Hyun Lee, J. (2015). Perception of exercise lifestyle as a valid tool for prevention and treatment of depression in rural communities. <i>Journal of Lifestyle Medicine</i> , 5(8), 39-48. doi:10.15280/jlm.2015.5.2.39	Level 6	Depression and exercise survey completed by rural residents of Tx	Participants between 40-59 yrs old, female, and Hispanic are most likely to use exercise as a treatment for depression	Provides perspective on exercise as one part of depression treatment. Plan to incorporate exercise in the self help section of the treatment plan for this DNP project.
Fortney, J. C., Pyne, J. M., Mouden, S. B., Mittal, D., Hudson, T. J., Schroeder, G. W., . . . Rost, K. M. (2013). Practice-based versus telemedicine-based collaborative care for depression in rural federally qualified health centers: A pragmatic randomized comparative effectiveness trial. <i>American Journal of Psychiatry</i> , 170(4), 414-425. doi:10.1176/appi.ajp.2012.12050696	Level 2	Randomized trial comparing onsite collaborative care and telemedicine collaborative care with outcomes of depression treatment response, remission, and changes in depression severity	Contracting with an off site telemedicine based collaborative care system yielded better outcomes than an on site team	Important to consider in developing treatment plans in the DNP project.
Gardenier, D., Maxwell, L., & Cargill, L. (2016). Should primary care nurse practitioners routinely screen for				

depression? <i>The Journal for Nurse Practitioners</i> , 12(10), 658-659. doi:10.1016/j.nurpra.2016.08.004				
Gawlinski, A. & Rutledge, D. (2008). Selecting a model for evidence-based practice changes. <i>Advanced Critical Care Nursing</i> , 19(3), 291-300.	Level 7	Provides a systematic process to select an EBP model	Provides assistance in selecting the appropriate EBP model	Supports use of Rosswurm and Larrabee Model of Evidence-Based Change for DNP project.
Gigliotti, E. & Manister, N. (2012). A beginner's guide to writing the nursing conceptual model-based theoretical rationale. <i>Nursing Science Quarterly</i> , 25(4), 301-306. Doi:10.1177/0894318412457060	Level 7	Provides an overview of conceptual nursing models	Provides a structured guide to select a theoretical framework	Provides a guideline for selecting theoretical framework and model for DNP project
Goodyear-Smith, F. A., van Driel, M. L., Arroll, B., & Del Mar, C. (2012). Analysis of decisions made in meta-analyses of depression screening and the risk of confirmation bias: A case study. <i>BMC Medical Research Methodology</i> , 12(1), 76-76. doi:10.1186/1471-2288-12-76	Level 1	Two Compared Meta-analysis of RCTs to determine practice guideline of depression screening	Results showed recommendations in opposite directions. Researchers found that systematic reviews may be less objective than assumed.	
Greenberg, P. (2015). The growing economic burden of depression in the U.S. <i>Scientific American</i> . Retrieved from	Level 7	Discusses the economic burden of depression in the U.S. based on his research	Provides current costs associated with depression	Provides financial data for DNP project

<p><a href="https://blogs.scientificamerican.com/mind-guest-blog/the-growing-economic-burden-of-depression-in-the-u-s/">https://blogs.scientificamerican.com/mind-guest-blog/the-growing-economic-burden-of-depression-in-the-u-s/</a></p>			<p>care in the U.S.</p>	
<p>Greenberg, P., Fournier, A., Sisitsky, T., Pike, C., &amp; Kessler, R. (2015). The economic burden of adults with major depressive disorder in the united states (2005 and 2010). <i>Journal of Clinical Psychiatry</i>, 76(2), 155-U115. doi:10.4088/JCP.14m09298</p>	<p>Level 6</p>	<p>National data was analyzed to determine the economic burden of MDDD between 2005-2010</p>	<p>The incremental economic burden of Major Depressive Disorder increased by 21.5% between 2005 and 2010. Only 38% of costs were due to MDD alone, as opposed to having a comorbid condition</p>	<p>Provides financial data for DNP project</p>
<p>Groh, C. (2013). Depression in rural women: Implications for nurse practitioners in primary care settings. <i>Journal of the American Association of Nurse Practitioners</i> , 25, 84-90. doi:10.1111/j.1745-7599.2012.00762.x</p>	<p>Level 6</p>	<p>Convenience sample of 140 rural women were included in a descriptive, nonexperimental survey in which participants completed the CES-D depression screening tool and demographic information was also obtained. Sample was from a FQHC in the midwest</p>	<p>36.4% of rural women self reported depression and there was 76.8% congruence between self reporting and the CES-D screening tool, indicating most rural women were able to self identify if they were depressed or not.</p>	<p>Study performed by a NP, in a rural area. Perspective is important for this DNP project.</p>

Hill, S. K., Cantrell, P., Edwards, J., & Dalton, W. (2016). Factors influencing mental health screening and treatment among women in a rural south central appalachian primary care clinic. <i>The Journal of Rural Health</i> , 32(1), 82-91. doi:10.1111/jrh.12134				
Horn, N.R. (2013). Issues in treating depression in primary care. The last decade has provided a better evidence base for treating depression. <i>CME: Your SA Journal of CPD</i> , 31(2). 46.	Level 7	Discusses evidence based treatments for depression	Presents evidence based treatment recommendations for mild, moderate and severe depression	Will be utilized in preparing treatment algorithms for providers in rural primary care
Huntley, A., Araya, R., & Salisbury, C. (2012). Group psychological therapies for depression in the community: systematic review and meta-analysis. <i>The British Journal of Psychiatry</i> , 200, 184-190. doi:10.1192/bjp.bp.111.092049	Level 1	Systematic review and meta-analysis of group based cognitive behavior therapies for depression in primary care and the community	Found that individual therapy is best for immediate treatment but after three months there was no significant difference. Noted that the quality of evidence was poor.	Group therapy may be considered in the treatment plans of this DNP project.
Huot, K., Lutfiyya, M., Akers, M., Amaro, M., Swanoski, M., & Schweiss, S. (2013). A population-based cross-sectional study of health service deficits among U.S.	Level 6	Cross sectional study that examined prevalence of disparities in rural versus non-rural	Found that participants of low SES, Hispanic ethnicity, or rural locale were more likely to have	Relevant to DNP project population

adults with depressive symptoms. <i>BMC Health Services Research</i> , 13:160. Retrieved from <a href="http://www.biomedcentral.com/14726963/13/160">http://www.biomedcentral.com/14726963/13/160</a>		adults with depression	health disparities	
Jiao, B., Rosen, Z., Bellanger, M., Belkin, G., & Muennig, P. (2017). The cost-effectiveness of PHQ screening and collaborative care for depression in new york city. <i>PLoS One</i> , 12(8), e0184210. doi:10.1371/journal.pone.0184210				
Keeley, R. D., West, D. R., Tutt, B., & Nutting, P. A. (2014). A qualitative comparison of primary care clinicians' and their patients' perspectives on achieving depression care: Implications for improving outcomes. <i>BMC Family Practice</i> , 15(1), 13-13. doi:10.1186/1471-2296-15-13	Level 6	Interview of 6 PCP and 30 patients with depression to determine provider and patient perceptions of depression treatment.	Improving outcomes in Primary care may require understanding of patient's experiences and perceptions and more research is needed to further explore.	Identified some barriers that I may face with providers in primary care. Provided some qualitative data to consider in implementation of DNP project.
Keshavarz, H., Fitzpatrick-Lewis, Streiner, D., Rice, M., Usman, A., Shannon, H., & Parminder, R. (2013). Screening for depression: a systematic review and meta-analysis. <i>Canadian Medical</i>	Level 5	Systematic review of studies from 1994-2012 to evaluate the effectiveness of community based screening for depression	Found limited research providing conclusions of the effectiveness of depression screening in average risk or high risk	Important in DNP project to put treatment plans in place per the USPSTF recommendations.

<p><i>Association Journal Open</i>, 1(4). doi: 10.9778/cmajo.20130030</p>			<p>populations in Canada. Also found no benefit in screening if treatment plans not in place.</p>	
<p>Keyes, K., Barnes, D. &amp; Bates, L.(2015). Depression and mood disorder among African American and white women. <i>Journal of the American Medical Association Psychiatry</i>,72(12), 1256-1257.</p>	<p>Level 7</p>	<p>Discusses depression among AA and white women and the Weaver study</p>	<p>States that stressors affect AA mental health less than in white patients</p>	<p>Relevant to population that DNP project indirectly affects</p>
<p>Kitchen Andren, K. A., McKibbin, C. L., Wykes, T. L., Lee, A. A., Carrico, C. P., &amp; Bourassa, K. A. (2013). Depression treatment among rural older adults: Preferences and factors influencing future service use. <i>Clinical Gerontologist</i>, 36(3), 241-259. doi:10.1080/07317115.2013.767872</p>	<p>Level 6</p>	<p>Investigated depression treatment preferences and use of services for older adults in rural Wyoming</p>	<p>Revealed factors influencing the likelihood of seeking depression treatment and preferences on treatment and provider (PCP versus Mental health professional)</p>	<p>Relevant for developing treatment plans in DNP project</p>
<p>Lessard, L., Fournier, L., Gauthier, J., &amp; Morin, D. (2015). Quality assessment of primary care for common mental disorders in isolated communities: Taking advantage of health records. <i>Rural and Remote Health</i>, 15(3), 3224.</p>	<p>Level 6</p>	<p>Part of a research study to identify quality indicators within health records for patients with depression and anxiety disorders in</p>	<p>Eighteen quality indicators were identified and provided potential to identify gaps in the treatment process and</p>	<p>Perspective important in developing treatment algorithms in DNP project.</p>

		isolated rural areas of Canada	improve quality of care	
Maurer, D. (2012). Screening for depression. <i>American Family Physician</i> , 85(2), 139-144. Retrieved from <a href="http://www.aafp.org/afp/2012/0115/p139.pdf">www.aafp.org/afp/2012/0115/p139.pdf</a> /2.	Level 7	Discusses use of depression screening tools PHQ-2 and PHQ-9, sensitivity and specificity	Provides guidelines for depression screening and treatment	Expert opinion for use in implementation of DNP project
Meyrueix, L., Durham, G., Miller, J., Smalley, K., & Warren, J. (2015). Association between depression and aggression in rural women. <i>Journal of Health Disparities Research and Practice</i> , 8(4). 136-144.	Level 6	Convenience sample study from FQHC in rural GA exploring the link between depression and aggression among women in rural areas.	May be a currently unrecognized link between depression and aggression and this should be considered when screening women for depression and when developing treatment plans.	Another angle to possibly consider when developing treatment algorithms for DNP project.
Manchester, J., Gray-Miceli, D., Metcalf, J., Paolini, C., Napier, A., Coogle, C., & Owens, M. (2014). Facilitating Lewin's change model with collaborative evaluation in promoting evidence based practices of health professionals. <i>Evaluation and Program Planning</i> , 47, 82-90. doi:10.1016/j.evalprogplan.2014.08.007	Level 7	Expert opinion on how to apply Lewin's Change Model in healthcare	Presents the model for operationalizing Lewin's three steps for systematic inquiry in healthcare contexts	Supports of Lewin's Theory in the DNP project

<p>McLeod, S. (2015). Psychological theories of depression. Retrieved from <a href="http://www.simplypsychology.org/depression.html">http://www.simplypsychology.org/depression.html</a></p>	Level 7	Compares different psychological theories of depression	Expert opinion of psychological theories of depression	Helps define depression for DNP project
<p>McNeill, D., Hayes, S., Randall, C., Polk, D., Neiswanger, K., Shaffer, J., . . . Marazita, M. (2016). Depression and a rural environment are associated with poor oral health among pregnant women in northern Appalachia. <i>Behavior Modification, 40</i>(1-2), 325-240. doi:10.1177/0145445515615353</p>	Level 6	Study to determine influence of depression and rural living status on oral health outcomes in pregnant women	Depression in rural patients impacts oral health and study recommends depression screening for rural pregnant patients.	Provides good background information on depression and rural health for DNP project
<p>National Institute of Mental Health (2015). <i>Major depression among adults</i>. Retrieved March 20, 2015, from <a href="https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-among-adults.shtml">https://www.nimh.nih.gov/health/statistics/prevalence/major-depression-among-adults.shtml</a></p>	Level 7	Provides national data on depression incidence and prevalence in the U.S.	National statistics on depression	Data relevant for DNP project background and to support need for project
<p>O'Connor, E., Whitlock, E. Beil, T., &amp; Gaynes, B. (2009). Screening for depression in adult patients in primary care: A systematic evidence review. <i>Annals of Internal Medicine, 151</i>(11), 793-803.</p>				

<p>Office of Disease Prevention and Health Promotion (2017). Mental health and mental disorders. In <i>Healthy People 2020</i>. Retrieved from <a href="https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives">https://www.healthypeople.gov/2020/topics-objectives/topic/mental-health-and-mental-disorders/objectives</a></p>	Level 7	Provides recommendation for depression screenings	Outlines the initiative to improve mental health of all Americans	This project is in line with the Healthy People 2020 Initiative MHMD-11 to increase depression screenings by primary care providers
<p>Paykel, E. (2008). Basic concepts of depression. <i>Dialogues in Clinical Neuroscience, 10</i>, 279-289. Retrieved from <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181879/pdf/DialoguesClinNeurosci-10-279.pdf">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181879/pdf/DialoguesClinNeurosci-10-279.pdf</a></p>	Level 7	Reviews concepts of depression	Differentiates different forms of depression	Relevant in the conceptual analysis of the DNP project
<p>Pilgrim, D. and Bentall, R. (1999). The medicalisation of misery: A critical realist analysis of the concept of depression. <i>Journal of Mental Health, 8</i>(3). 262-274. Retrieved from <a href="http://www.brown.uk.com/depression/bentall.pdf">http://www.brown.uk.com/depression/bentall.pdf</a></p>	Level 7	Explores concepts of depression	Further defines concepts of depression	Relevant in the conceptual analysis of the DNP project
<p>Pipe, T., Wellik, K., Buchda, V., Hansen, C. &amp; Martyn, D. (2005). Implementing evidence-based nursing practice. <i>Urology Nursing, 25</i>(5), 365-370.</p>	Level 7	Describes the methodology for establishing and supporting EBP in nursing	Provides a systematic appraisal of the literature for clinicians and a conceptual framework to translate evidence into practice	Supports the use of the Rosswurm and Larrabee Model of Evidence-Based Change in the DNP project

<p>Pratt, L., and Brody, D. (2014). <i>Depression in the U.S. Household Population</i>. Retrieved from Centers for Disease Control and Prevention: <a href="http://www.cdc.gov/nchs/data/databriefs/db172.htm">www.cdc.gov/nchs/data/databriefs/db172.htm</a></p>	Level 7	Presents national data on depression from 2009-2012	From 2009–2012, 7.6% of Americans aged 12 and over had depression. It was more prevalent among females than males and among adults aged 40–59 than those of other age groups.	Supports need to DNP project
<p>Probst, J. C., Laditka, S. B., Moore, C. G., Harun, N., Powell, M. P., &amp; Baxley, E. G. (2006). Rural-urban differences in depression prevalence: Implications for family medicine. <i>Family Medicine</i>, 38(9), 653.</p>	Level 6	Examined the prevalence of depression in rural versus urban areas	The prevalence of depression is slightly but significantly higher in residents of rural areas compared to urban areas, possibly due to differing population characteristics	
<p>Reynolds, C. and Kamphaus, R. (2013). Major depressive disorder from Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. American Psychiatric Association. Retrieved from <a href="http://images.pearsonclinical.com/images/assets/basc-">http://images.pearsonclinical.com/images/assets/basc-</a></p>	Level 7	APA Manual defining major depressive disorder	Provides signs and symptoms, DSM criteria for diagnosis of MDD	Provides the medical concept of depression per the APA

<a href="#">3/basc3resources/DS M5 DiagnosticCriteria MajorDepressiveDisorder.pdf</a>				
Richardson, L. & Puskar, K. (2012). Screening assessment for anxiety and depression in Primary care. <i>The Journal for Nurse Practitioners</i> , 8(6), 475-481.				
Rosswurm, M. & Larrabee, J. (1999). A model for change to evidence-based practice. <i>Journal of Nursing Scholarship</i> , 31(4), 317-348. DOI: 10.1111/j.1547-5069.1999.tb00510.x	Level 7	Describes the model that guides nurses and healthcare professionals through a systematic change in practice	The Model for Evidence Based Change is a useful framework for practitioners to implement evidence based change in practice	Supports use of Model for DNP project
Sathyanath M, S., Kundapur, R., Bhat U, S., & Kiran, N. U. (2014). Proportion of depression among the elderly population in a rural health care setting. <i>Journal of Clinical and Diagnostic Research</i> , 8(1), 137–139. <a href="http://doi.org/10.7860/JCDR/2014/5619.3905">http://doi.org/10.7860/JCDR/2014/5619.3905</a>	Level 6	Outpatient data from a rural mental health facility was analyzed to compare middle aged adults and older adults with depression	Found that older adults had higher rates of depression than the middle aged adults.	Data is relevant to DNP project to show support for the project in this population
Scogin, F. R., Moss, K., Harris, G. M., & Presnell, A. H. (2014). Treatment of depressive symptoms in diverse, rural, and vulnerable older adults. <i>International</i>	Level 2	Randomized Control Trial of CBT in rural Alabama	CBT resulted in lower depression severity scores	Relevant in the planning of treatment interventions for the DNP project

<i>Journal of Geriatric Psychiatry, 29(3), 310-316.</i> doi:10.1002/gps.4009				
Suryavanshi, M. S., & Yang, Y. (2016). Clinical and economic burden of mental disorders among children with chronic physical conditions, united states, 2008-2013. <i>Preventing Chronic Disease, 13</i> , E71.	Level 6	Retrospective cross sectional analysis of the relationship of mental disorders and chronic physical conditions in children with an estimation of direct medical costs	Having a mental disorder was a significant predictor of healthcare costs and having a chronic physical condition may be a predictor for mental health diagnosis	Minimal information relevant for DNP study. Does show healthcare costs associated with children with mental illness
Thombs, B., Ziegelstein, R., Roseman, M., Kloda, L., & Ioannidis, J. (2014). There are no randomized controlled trials that support the United States Preventive Services Task Force guideline on screening for depression in primary care: a systematic review. <i>BMC Medicine, 12(13)</i> . doi:10.1186/1741-7015-12-13	Level 1	Systematic review of nine RCTs on depression screening in primary care and outcomes between screened and non-screened patients to determine if screening should be recommended	The evidence does not support routine screening and the USPSTF should re-evaluate this recommendation	Negates the need for my project; however, identifies areas that need further focus in treatment of depression in primary care
Trangle, M., Gursky, J., Haight, R., Hardwig, J., Hinnenkamp, T., Kessler, D., Mack, N., & Myszkowski, M.(2016). Adult depression in primary care. Institute for Clinical Systems				

<p>Improvement. Retrieved from <a href="https://roar.nevadaprc.org/system/documents/4068/original/NPRC.3054.Depr-Interactive0512b.pdf?1471560355">https://roar.nevadaprc.org/system/documents/4068/original/NPRC.3054.Depr-Interactive0512b.pdf?1471560355</a></p>				
<p>Tudiver, F., Edwards, J., &amp; Pfortmiller, D. (2010). Depression screening patterns for women in rural health clinics. <i>The Journal of Rural Health, 26</i>, 44-50. doi:10.1111/j.1748-0361.2009.00264.x</p>	Level 6	Cross sectional descriptive study was conducted in 19 random rural health centers in the U.S. to determine the rate of depression screening in women in primary care.	Revealed 2.4% screening rate in women in this setting, with informal screening at 33.2%, and a higher rate of screening was noted in younger patients with anxiety.	Comparison data for depression screening rates in rural primary care
<p>United States Preventive Services Task Force (2016). Depression in Adults: Screening. Retrieved from <a href="https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/depression-in-adults-screening1?ds=1&amp;s=depression">https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/depression-in-adults-screening1?ds=1&amp;s=depression</a></p>	Level 7	Provides recommendation for depression screening	The USPSTF recommends screening for depression in the general adult population, including pregnant and postpartum women. Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and	Basis of DNP project. Current practice guideline to be implemented in the DNP project

			appropriate follow-up.	
Vallury, K. D., Jones, M., & Oosterbroek, C. (2015). Computerized cognitive behavior therapy for anxiety and depression in rural areas: A systematic review. <i>Journal of Medical Internet Research</i> , 17(6), e139. doi:10.2196/jmir.4145	Level 5	Systematic review of global studies regarding the effectiveness and acceptability of computerized cognitive behavior therapy for rural and remote patients	Found that computerized CBT was as effective as CBT in person in rural and urban patients	May consider online CBT as part of the treatment algorithm for the DNP project.
Weaver, A., Himle, J., Taylor, R., Matusko, N. & Abelson, J. (2015). Urban versus rural residence and the prevalence of depression and mood disorder among African American women and non-Hispanic white women. <i>Journal of the American Medical Association Psychiatry</i> , 72(6), 576-583. doi:10.1001/jamapsychiatry.2015.10	Level 6	Studied the prevalence of depression in African American women and non Hispanic white women in urban and rural areas of United States	Found that rural residents had lower prevalence of depression among AA women but non Hispanic white women were more at risk. More recent studies need to be conducted.	Data was from 2001-2003- may not be relevant now.

## Appendix B

## PHQ-2 English

**Table 3. Patient Health Questionnaire-2: Screening Instrument for Depression**

<i>Over the past two weeks, how often have you been bothered by any of the following problems?</i>	<i>Not at all</i>	<i>Several days</i>	<i>More than one-half the days</i>	<i>Nearly every day</i>
Little interest or pleasure in doing things	0	1	2	3
Feeling down, depressed, or hopeless	0	1	2	3

NOTE: *If the patient has a positive response to either question, consider administering the Patient Health Questionnaire-9 or asking the patient more questions about possible depression. For older adults, consider the Patient Health Questionnaire-9 or the 15-item Geriatric Depression Scale. A negative response to both questions is considered a negative result for depression.*

*Adapted from patient health questionnaire (PHQ) screeners. <http://www.phqscreeners.com>. Accessed September 6, 2011.*

Appendix C

PHQ-9 English

**PATIENT HEALTH QUESTIONNAIRE-9  
(PHQ-9)**

Over the **last 2 weeks**, how often have you been bothered by any of the following problems?  
(Use "✓" to indicate your answer)

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING   0   +        +        +         
=Total Score:       

If you checked off **any** problems, how **difficult** have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix D  
PHQ-9P Spanish

PHQ9P

CUESTIONARIO SOBRE LA SALUD DEL PACIENTE -9 <span style="float: right;">72883</span> (US Spanish version of the PHQ)												
Durante las <b>últimas 2 semanas</b> , ¿qué tan seguido ha tenido molestias por cualquiera de las siguientes dificultades?	No del todo	Varios días	Más de la mitad de los días	Casi todos los días								
1. Poco interés o placer en hacer cosas	0	1	2	3								
2. Sintiendo decaído(a), deprimido(a), o sin esperanzas	0	1	2	3								
3. Dificultad en caer o permanecer dormido(a), o dormir demasiado	0	1	2	3								
4. Sintiendo cansado o teniendo poca energía	0	1	2	3								
5. Pobre de apetito o comer en exceso	0	1	2	3								
6. Sintiendo mal con usted mismo(a) – o que usted es un fracaso o que ha quedado mal con usted mismo(a) o con su familia	0	1	2	3								
7. Dificultad en concentrarse en cosas, tales como leer el periódico o ver televisión	0	1	2	3								
8. ¿Moviéndose o hablando tan lento, que otras personas podrían notarlo? O lo contrario – muy inquieto(a) o agitado(a) que usted ha estado moviéndose mucho más de lo normal	0	1	2	3								
9. Pensamientos de que usted estaría mejor muerto(a) o de alguna manera lastimándose a usted mismo(a)	0	1	2	3								
<b>SCORING FOR USE BY STUDY PERSONNEL ONLY</b> ____ + ____ + ____ + ____ =Total Score: ____												
Si usted marcó <b>cualquiera</b> de los problemas, ¿qué tan <b>difícil</b> han afectado estos problemas en hacer su trabajo, encargarse de tareas del hogar, o llevarse bien con otras personas?  <table style="width: 100%; text-align: center;"> <tr> <td>Para nada difícil</td> <td>Un poco difícil</td> <td>Muy difícil</td> <td>Extremadamente difícil</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>					Para nada difícil	Un poco difícil	Muy difícil	Extremadamente difícil	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Para nada difícil	Un poco difícil	Muy difícil	Extremadamente difícil									
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									
Copyright © 2005 Pfizer Inc. Todos los derechos reservados. Reproducido con permiso. EPI0905.PHQ9P												
<b>Confirmando que la información en este formulario es correcta.</b>		Iniciales del paciente: _____	Fecha: _____									

\_\_\_\_\_ MRN

\_\_\_\_\_ PROVEEDOR

Appendix E

PHQ-9 Questionnaire for Depression Scoring and Interpretation Guide

PHQ-9\* Questionnaire for Depression Scoring and Interpretation Guide

For physician use only

**Scoring:**

Count the number (#) of boxes checked in a column. Multiply that number by the value indicated below, then add the subtotal to produce a total score. The possible range is 0-27. Use the table below to interpret the PHQ-9 score.

Not at all (#) \_\_\_\_\_ x 0 = \_\_\_\_\_  
 Several days (#) \_\_\_\_\_ x 1 = \_\_\_\_\_  
 More than half the days (#) \_\_\_\_\_ x 2 = \_\_\_\_\_  
 Nearly every day (#) \_\_\_\_\_ x 3 = \_\_\_\_\_

**Total score:** \_\_\_\_\_

Interpreting PHQ-9 Scores			
Diagnosis	Total Score	For Score	Action
Minimal depression	0-4	≤ 4	The score suggests the patient may not need depression treatment
Mild depression	5-9	5 - 14	Physician uses clinical judgment about treatment, based on patient's duration of symptoms and functional impairment
Moderate depression	10-14		
Moderately severe depression	15-19	> 14	Warrants treatment for depression, using antidepressant, psychotherapy and/or a combination of treatment.
Severe depression	20-27		

\* The PHQ-9 is described in more detail at the Pfizer website: <http://www.phqscreeners.com/>

Appendix F

Columbia-Suicide Severity Rating Scale

**COLUMBIA-SUICIDE SEVERITY RATING SCALE**  
*Primary Care Screen with Triage Points*

SUICIDE IDEATION DEFINITIONS AND PROMPTS:	Past month	
	YES	NO
<b>Ask questions that are in bold and underlined.</b>		
<b>Ask Questions 1 and 2</b>		
<b>1) Wish to be Dead:</b> Person endorses thoughts about a wish to be dead or not alive anymore, or wish to fall asleep and not wake up? <b><u>Have you wished you were dead or wished you could go to sleep and not wake up?</u></b>		
<b>2) Suicidal Thoughts:</b> General non-specific thoughts of wanting to end one's life/commit suicide, "I've thought about killing myself" without general thoughts of ways to kill oneself/associated methods, intent, or plan." <b><u>Have you had any actual thoughts of killing yourself?</u></b>		
<b>If YES to 2, ask questions 3, 4, 5, and 6. If NO to 2, go directly to question 6.</b>		
<b>3) Suicidal Thoughts with Method (without Specific Plan or Intent to Act):</b> Person endorses thoughts of suicide and has thought of a least one method during the assessment period. This is different than a specific plan with time, place or method details worked out. "I thought about taking an overdose but I never made a specific plan as to when where or how I would actually do it...and I would never go through with it." <b><u>Have you been thinking about how you might do this?</u></b>		
<b>4) Suicidal Intent (without Specific Plan):</b> Active suicidal thoughts of killing oneself and patient reports having some intent to act on such thoughts, as oppose to "I have the thoughts but I definitely will not do anything about them." <b><u>Have you had these thoughts and had some intention of acting on them?</u></b>		
<b>5) Suicide Intent with Specific Plan:</b> Thoughts of killing oneself with details of plan fully or partially worked out and person has some intent to carry it out. <b><u>Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?</u></b>		
<b>6) Suicide Behavior Question</b> <b><u>Have you ever done anything, started to do anything, or prepared to do anything to end your life?</u></b> Examples: Collected pills, obtained a gun, gave away valuables, wrote a will or suicide note, took out pills but didn't swallow any, held a gun but changed your mind or it was grabbed from your hand, went to the roof but didn't jump; or actually took pills, tried to shoot yourself, cut yourself, tried to hang yourself, etc. <b>If YES, ask: <u>Was this within the past 3 months?</u></b>	<b>Lifetime</b>	

**Response Protocol to C-SSRS Screening** (Linked to last item marked "YES")

- Item 1 Behavioral Health Referral
- Item 2 Behavioral Health Referral
- Item 3 Behavioral Health Consult (Psychiatric Nurse/Social Worker) and consider Patient Safety Precautions
- Item 4 Behavioral Health Consultation and Patient Safety Precautions
- Item 5 Behavioral Health Consultation and Patient Safety Precautions
- Item 6 Behavioral Health Consult (Psychiatric Nurse/Social Worker) and consider Patient Safety Precautions
- Item 6 3 months ago or less: Behavioral Health Consultation and Patient Safety Precautions

## Appendix G

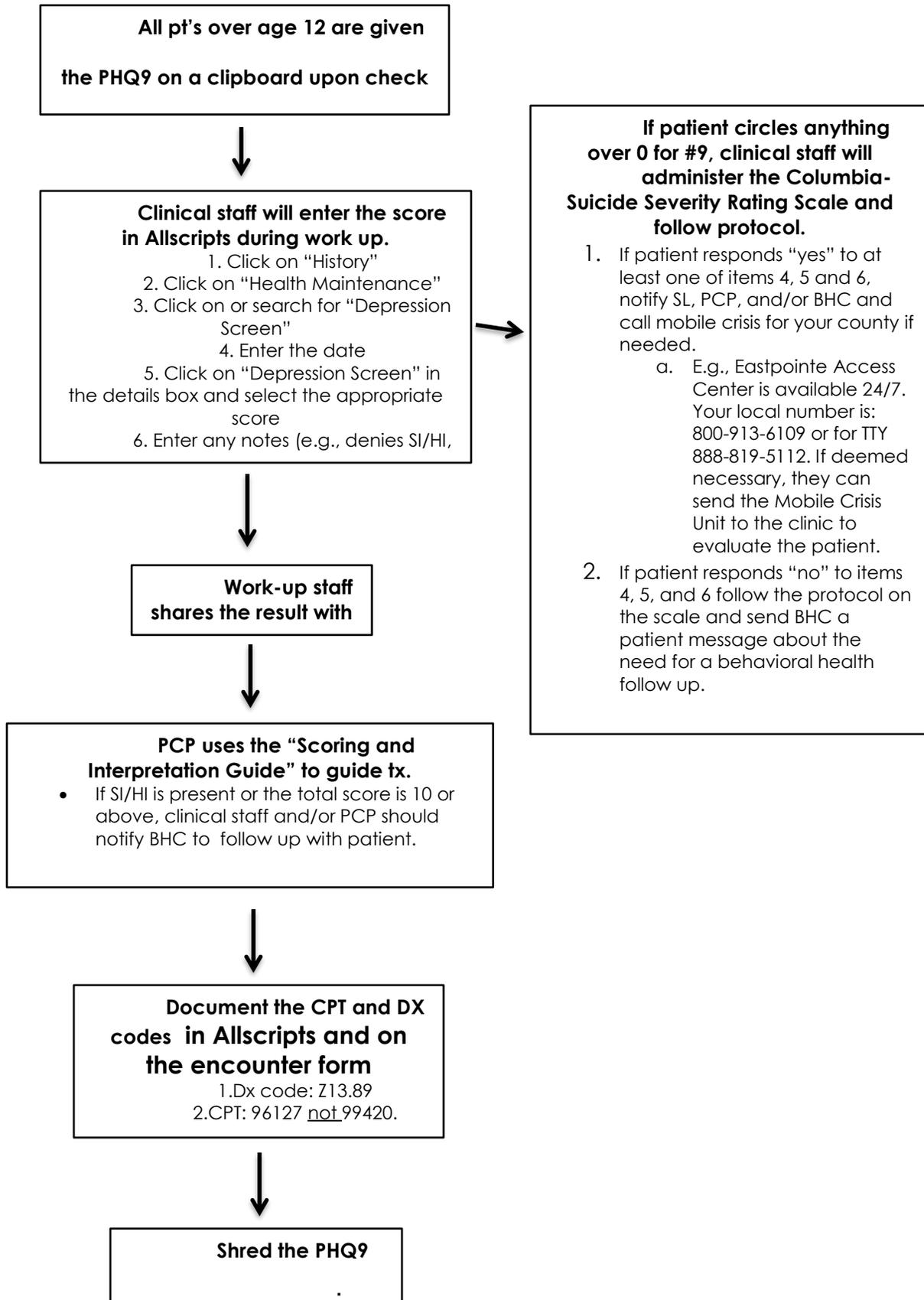
## Depression Screening Protocol

**Depression Screening Protocol****October 16, 2017**

1. PHQ9 will be given to all patients 12+ every visit at the clinics
2. Front desk staff will give the patient the form on a clipboard and will ask the patient to complete it and hold onto it until the work-up nurse pulls him/her back.
3. Work-up staff will enter the PHQ9 score in the patient's chart.
  1. Click on "History"
  2. Click on "Health Maintenance"
  3. Click on or search for "Depression Screen"
  4. Enter the date
  5. Click on "Depression Screen" in the details box and select the appropriate score
  6. Enter any notes (e.g., denies SI/HI, goes to therapy 1/week, etc.)
  7. Click "OK"
4. If patient circles anything over 0 for #9
  1. Work up staff will administer the Columbia-Suicide Severity Rating Scale
    - i. If patient responds "yes" to at least one of items 4, 5 and 6, notify SL, PCP, and/or BHC and call mobile crisis
      1. *Eastpointe Access Center* is available 24 hours a day, 7 days a week. Customer Service Specialists will assist you to find a crisis provider that is well-matched with your needs. Your local number is: 800-913-6109 or for TTY 888-819-5112. If deemed necessary, they can send the Mobile Crisis Unit to the clinic to evaluate the patient.
    - ii. If patient responds "no" to items 4, 5, and 6 follow the protocol on the scale and send BHC a patient message about the need for a behavioral health follow up.
5. Work-up staff shares the result with PCP.
6. PCP uses the "Scoring and Interpretation Guide" to guide tx.
  1. If score is 10 or above, nurse or PCP should notify BHC to follow up with patient
7. Paper PHQ9 should be shredded.
8. Document on the encounter form for billing.
  1. Dx code: Z13.89
  2. CPT: 96127 **not** 99420

Appendix H

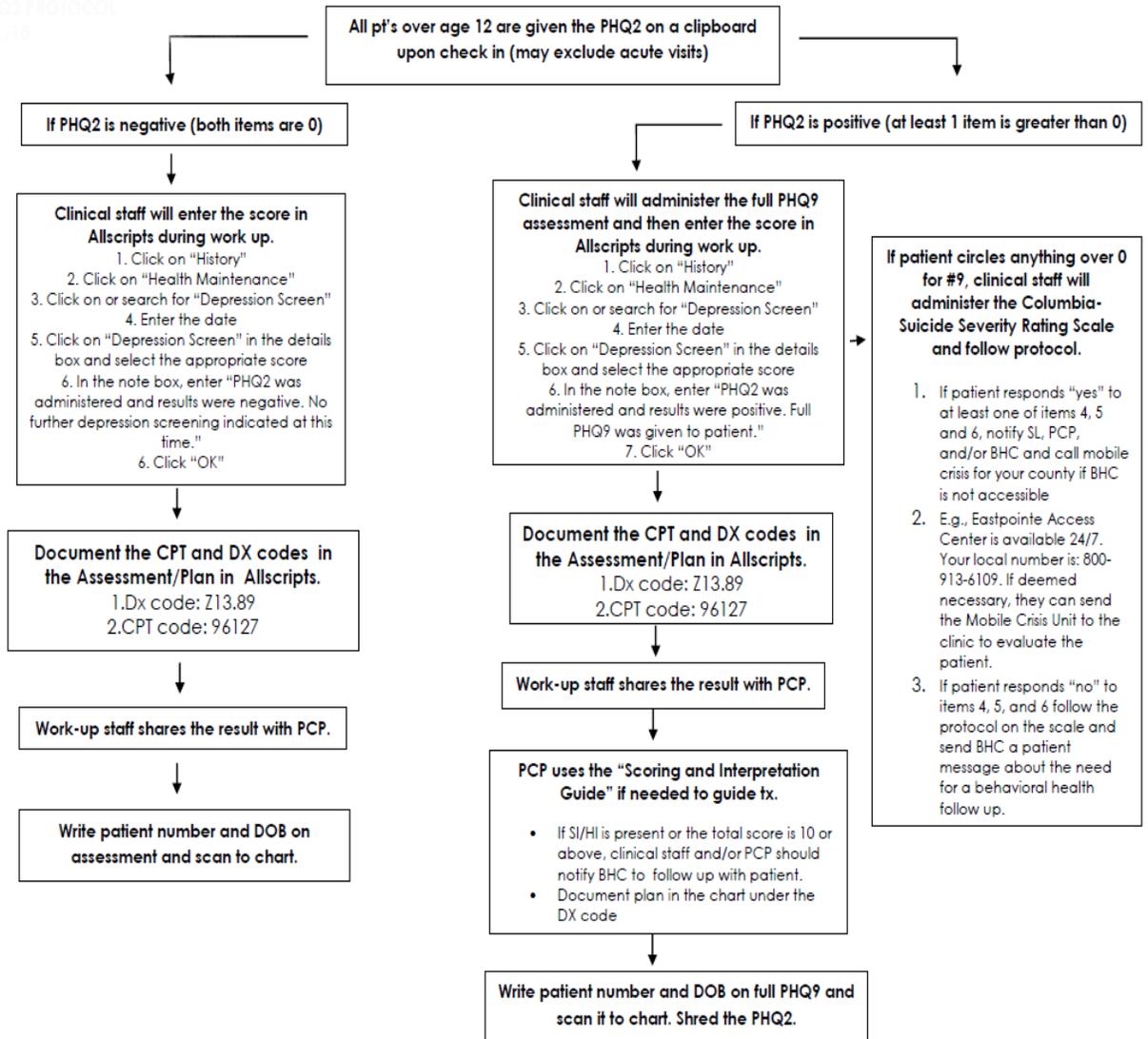
Original PHQ-9 Flow Map for Depression Screening



Appendix I

Final Protocol Flow Map for Depression Screening

GOSHEN MEDICAL CENTER, INC  
PHQ2 PROTOCOL  
2/1/18



Appendix J

Letter of Support

Appendix K

East Carolina University ORIC Exemption Letter

Appendix L.

**DNP Essentials: Implications for Nursing Practice**

DNP Essentials	Demonstration of Knowledge
<p><b>Essential I: Scientific underpinnings for practice</b></p> <p><b>Competency</b> – Analyzes and uses information to develop practice</p> <p><b>Competency</b> -Integrates knowledge from humanities and science into context of nursing</p> <p><b>Competency</b> -Translates research to improve practice</p> <p><b>Competency</b> -Integrates research, theory, and practice to develop new approaches toward improved practice and outcomes</p>	<ul style="list-style-type: none"> <li>• Performed evidence based literature searches and research utilization in the project and DNP paper</li> <li>• Developed DNP proposal based on review of research evidence and current guidelines from USPSTF and AAFP</li> <li>• Development and revisions to DNP paper based on evidence from literature review</li> <li>• Developed and revised depression screening project protocol</li> <li>• Used a theoretical framework from Rosswurm and Larrabee for project</li> <li>• Improved depression screening rates through implementation of project</li> <li>• Developed a protocol for depression screening and treatment in collaboration with behavioral health professionals based on behavioral health and nursing/medical research</li> </ul>
<p><b>Essential II: Organization and systems leadership for quality improvement and systems thinking</b></p> <p><b>Competency</b> -Advocates for improved quality, access, and cost of health care; monitors costs and budgets</p> <p><b>Competency</b> -Develops and implements innovations incorporating principles of change</p> <p><b>Competency</b> - Effectively communicates practice knowledge in writing and orally to improve quality</p>	<ul style="list-style-type: none"> <li>• Identified a practice guideline deficit of low depression screening rates</li> <li>• Designed and implemented DNP quality improvement project in three clinics part of a larger organization</li> <li>• Analyzed cost effectiveness of project</li> <li>• Increased potential revenue for organization by providing correct coding and billing procedures for screening</li> <li>• Served as leader of project team in implementation at three rural FQHCs</li> <li>• Collaborated with Director of Integrative Care to develop and revise project and project tools</li> <li>• Improved depression screening rates to meet Healthy People 2020 and Triple Aim goals</li> </ul>

	<ul style="list-style-type: none"> <li>• Recommended policy for depression screening protocol throughout organization</li> <li>• Dissemination of DNP project and findings in oral presentation at ECU on Nov. 8, 2018</li> <li>• Written DNP project submitted to scholarship repository at ECU and plans to disseminate project and implications to providers within the organization as well as at a primary care provider conference within the next year</li> </ul>
<p><b>Essential III: Clinical scholarship and analytical methods for Evidence Based Practice</b></p> <p><b>Competency</b> - Critically analyzes literature to determine best practices  <b>Competency</b> - Implements evaluation processes to measure process and patient outcomes  <b>Competency</b> - Designs and implements quality improvement strategies to promote safety, efficiency, and equitable quality care for patients  <b>Competency</b> - Applies knowledge to develop practice guidelines  <b>Competency</b> - Uses informatics to identify, analyze, and predict best practice and patient outcomes  <b>Competency</b> - Collaborate in research and disseminate findings</p>	<ul style="list-style-type: none"> <li>• Literature matrix of research findings on depression screening</li> <li>• Disseminated findings of EBP research to Medical Director, Director of Integrative Care and providers</li> <li>• Disseminated findings of EBP research to staff and providers in the clinics to improve health outcomes</li> <li>• Designed, directed, and evaluated quality improvement project to promote safe, timely, effective, efficient, equitable, and patient centered care</li> <li>• Accurate data collection and analysis to generate evidence for nursing practice</li> <li>• Synthesized evidence to develop depression screening protocol and validated tools to use</li> <li>• Plans to disseminate project to other primary care providers</li> </ul>
<p><b>Essential IV: Information systems/technology and patient care technology for the improvement and transformation of healthcare</b></p> <p><b>Competency</b> - Design/select and utilize software to analyze practice and consumer information systems that can improve the delivery &amp; quality of care  <b>Competency</b> - Analyze and operationalize patient care technologies  <b>Competency</b> - Evaluate technology regarding ethics, efficiency and accuracy  <b>Competency</b> - Evaluates systems of care using health information technologies</p>	<ul style="list-style-type: none"> <li>• Collected data through Information Technology Department</li> <li>• Provided coding and billing information in depression screening protocol for electronic health record</li> <li>• Recommend an alert system within the electronic record to monitor depression screening frequencies</li> <li>• Recommend an upgraded or new electronic record software to organization to facilitate depression</li> </ul>

	<p>screening process and data collection in order for compliance and increased funding opportunities</p>
<p><b>Essential V: Healthcare policy for advocacy in healthcare</b></p> <p><b>Competency</b> – Provides leadership in developing and implementing health policy  <b>Competency</b> –Influences policymakers, formally and informally, in local and global settings  <b>Competency</b> – Educates stakeholders regarding policy  <b>Competency</b>- Participates in policy agendas that assist with finance, regulation and health care delivery  <b>Competency</b> – Advocates for equitable and ethical health care</p>	<ul style="list-style-type: none"> <li>• Advocated for social justice and equity for rural health patients through the development of DNP project</li> <li>• Project in alignment with Healthy People 2020 objective MHMD-11 to increase depression screening by primary care providers</li> <li>• Project helped to meet Triple Aim initiative to increase depression screening in primary care</li> <li>• Project helped to meet criteria set by HRSA for funding (depression screening rates are one of criteria)</li> </ul>
<p><b>Essential VI: Interprofessional collaboration for improving patient and population health outcomes</b></p> <p><b>Competency</b>- Uses effective collaboration and communication to develop and implement practice, policy, standards of care, and scholarship  <b>Competency</b> – Provide leadership to interprofessional care teams  <b>Competency</b> – Consult intraprofessionally and interprofessionally to develop systems of care in complex settings</p>	<ul style="list-style-type: none"> <li>• Collaboration with Director of Integrative Care in developing and implementation of depression screening protocol for vulnerable populations in rural health</li> <li>• Collaboration with behavioral health counselor in neighboring county for treatment options for depressed patients</li> <li>• Collaboration with Information Technology in data collection</li> <li>• Collaboration with staff and providers in three clinics during implementation of project</li> <li>• Maintained effective communication with all parties during project implementation</li> <li>• Employed leadership skills to implement project in three clinics</li> <li>• Recommend to organization administration to implement the depression screening protocol throughout all primary care clinics to improve overall rural population health</li> </ul>

<p><b>Essential VII: Clinical prevention and population health for improving the nation’s health</b></p> <p><b>Competency-</b> Integrates epidemiology, biostatistics, and data to facilitate individual and population health care delivery</p> <p><b>Competency</b> – Synthesizes information &amp; cultural competency to develop &amp; use health promotion/disease prevention strategies to address gaps in care</p> <p><b>Competency</b> – Evaluates and implements change strategies of models of health care delivery to improve quality and address diversity</p>	<ul style="list-style-type: none"> <li>• Project supported the Healthy People 2020 objective MHMD-11 to increase depression screening by primary care providers</li> <li>• Project supported the Triple Aim initiative to improve depression screening in primary care with quality care at a reasonable costs</li> <li>• Improved rural health by identifying depressed patients and a guide for treatment</li> <li>• Identified a gap in depression screening in rural primary care and developed project to address this gap</li> </ul>
<p><b>Essential VIII: Advanced nursing practice</b></p> <p><b>Competency</b> – Design, implement &amp; evaluate nursing interventions to promote quality</p> <p><b>Competency</b> – Develop &amp; maintain patient relationships</p> <p><b>Competency</b> –Demonstrate advanced clinical judgment and systematic thoughts to improve patient outcomes</p> <p><b>Competency</b> – Mentor and support fellow nurses</p> <p><b>Competency-</b> Provide support for individuals and systems experiencing change and transitions</p> <p><b>Competency</b> –Use systems analysis to evaluate practice efficiency, care delivery, fiscal responsibility, ethical responsibility, and quality outcomes measures</p>	<ul style="list-style-type: none"> <li>• Developed and sustained therapeutic relationships with healthcare professionals in the rural health clinics/organization to optimize care and patient outcomes</li> <li>• Served as a guide, liaison and mentor to achieve excellence in nursing practice</li> <li>• Educated and guided staff and providers to transition to routine depression screening</li> <li>• Used analytical skills to evaluate links among practice, organizational, population, fiscal and policy issues with development and implementation of DNP project</li> </ul>

## Appendix M

Table 1

Table 1. *Number of patients seen versus number of patients screened for depression from January-March 2018*

Data Source	# of adult encounters	# of Dx code Z13.89 and CPT code 96127	Percentage of patients screened for depression
January Clinic A	87	38	44%
January Clinic B	217	55	25%
January Clinic C	579	208	36%
February Clinic A	87	46	53%
February Clinic B	243	64	26%
February Clinic C	623	224	36%
March Clinic A	65	39	60%
March Clinic B	216	58	27%
March Clinic C	541	135	25%