

4-2020

## The Effect of the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model on Adult Depression in an Outpatient Setting

Genevieve E. Sweeney  
*Grand Valley State University*

Follow this and additional works at: [https://scholarworks.gvsu.edu/kcon\\_doctoralprojects](https://scholarworks.gvsu.edu/kcon_doctoralprojects)



Part of the [Primary Care Commons](#), and the [Psychiatric and Mental Health Nursing Commons](#)

---

### ScholarWorks Citation

Sweeney, Genevieve E., "The Effect of the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model on Adult Depression in an Outpatient Setting" (2020). *Doctoral Projects*. 119.  
[https://scholarworks.gvsu.edu/kcon\\_doctoralprojects/119](https://scholarworks.gvsu.edu/kcon_doctoralprojects/119)

This Project is brought to you for free and open access by the Kirkhof College of Nursing at ScholarWorks@GVSU. It has been accepted for inclusion in Doctoral Projects by an authorized administrator of ScholarWorks@GVSU. For more information, please contact [scholarworks@gvsu.edu](mailto:scholarworks@gvsu.edu).

The Effect of the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model on Adult  
Depression in an Outpatient Setting

Genevieve E. Sweeney

Kirkhof College of Nursing

Grand Valley State University

Advisor: Dr. Della Hughes-Carter, DNP, RN, BC-GNP

Advisory Team: Dr. Joy Washburn, EdD, RN, WHNP-BC

Sarah Faubert, LLMSW

April 6, 2020

### Abstract

Depression is one of the most common chronic conditions in the world. Despite this, depression continues to be under-screened, inaccurately assessed and diagnosed, and poorly treated in outpatient settings. Many providers solely rely on clinical judgement instead of a screening tool or evidence-based toolkit when a patient presents with depression symptoms, resulting in underdiagnosis and inappropriate treatment. Utilization of resources can help a provider appropriately screen, diagnose and treat an individual with depression. Screening, Brief Intervention, Referral to Treatment (SBIRT) is an evidence-based model intended to improve these measures. Studies from the literature support the efficacy of the SBIRT model in depression treatment. This project focused on implementing the SBIRT model within two satellite primary care clinics. The purpose was to improve outcomes of patients with depression. During the 3-month implementation period, 10 patients had initial visits where the SBIRT model was utilized and 7 patients returned for follow-up visits. Results showed the average PHQ-9 scores decreased from 14.06 to 8.59 (p-value = 0.001, 95% CI [3.426, 7.512]), 7 referrals to counseling were made, 4 antidepressants were prescribed, and increased medication titration occurred for 5 patients. These results suggest that utilization of the SBIRT model improved adult depression in the outpatient setting.

*Keywords:* depression, screening, treatment, patient outcomes, SBIRT, PHQ-9, primary care

Abstract .....	2
----------------	---

### **Table of Contents**

Introduction.....	6
Assessment of the Organization.....	9
Framework for Assessment.....	9
Stakeholders .....	11
SWOT .....	11
Clinical Practice Question.....	12
Literature Review.....	12
Method .....	12
PRISMA.....	13
Summary .....	13
Evidence to be used for project.....	14
Model to Examine Phenomenon.....	19
Project Plan .....	21
Purpose of Project .....	21
Design for Evidence-Based Initiative .....	22
Setting and Participants.....	22
Implementation Model: PDSA Cycle .....	23
Implementation Steps, Strategies, and Timeline.....	26
Evaluation & Measures .....	30
Analysis of Evaluation Plan.....	30
Ethics and Human Protection.....	31
Resources and Budget.....	32
Results.....	32
Patient Demographics .....	32
PHQ-9 Scores.....	33
Referrals .....	33

Medication .....	33
Staff Compliance .....	34
Discussion .....	35
Implications for Practice .....	36
Limitations .....	37
Recommendations .....	38
Sustainability Plan .....	39
Reflection of DNP Essentials.....	40
Dissemination of Outcomes .....	44
Conclusion .....	44
References.....	46
Appendices	
Appendix A.....	51
Appendix B .....	52
Appendix C .....	54
Appendix D.....	55
Appendix E .....	56
Appendix F.....	57
Appendix G.....	61
Appendix H.....	62
Appendix I .....	63
Appendix J .....	64
Appendix K.....	65
Appendix L .....	66
Appendix M .....	67
Appendix N.....	69
Appendix O.....	70
Appendix P.....	71

Appendix Q.....72  
Appendix R.....73

## The Effect of the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model on Adult Depression in the Outpatient Setting

Depression is one of the most common chronic conditions in the world. In 2018, over 300 million individuals suffered from the disease globally, and it was considered the leading cause of disability worldwide (World Health Organization [WHO], 2018). Depression affects more than an individual's mental health; it affects their ability to function in everyday life (e.g. work, school, relationships, etc.) and increases their risk for adverse health outcomes such as cardiovascular disease, respiratory disease, and diabetes (Shim & Rust, 2013). Unfortunately, incidences of depression do not decrease as individuals get older. Approximately 15% of individuals over the age of 60 suffer from mental health issues, with 7% suffering from depression (WHO, 2017). Despite this, depression continues to be under-screened, inaccurately assessed and diagnosed, and poorly treated in outpatient settings (Bor, 2015; WHO, 2018).

While many reasons for this problem exist, the most common involves a lack of provider knowledge on how to care for a patient with depression (Bor, 2015). Many providers solely rely on clinical judgement, instead of a screening tool or evidence-based toolkit, when a patient presents with depression symptoms (Schaeffer & Jolles, 2019). However, research suggests this approach results in significant under-diagnosis and inappropriate treatment of depression (Tarricone et al., 2012; Carey et al., 2014; Fuchs et al., 2015). Utilization of resources can help a provider appropriately screen, diagnose and treat an individual with depression.

### **Patient Health Questionnaire-9**

Depression screening tools, such as the Patient Health Questionnaire-9 (PHQ-9), are recommended for adults of all ages in practice settings that have systems in place to accurately diagnose, treat and follow-up with patients (U.S. Preventative Services Task Force [USPSTF],

2016). The PHQ-9 has 9 questions that represent each of the nine DSM-IV criteria for major depression and scores them as “0” (not at all) to “3” (nearly every day). The PHQ-9 is found in Appendix A. The PHQ-9 has demonstrated a sensitivity of 88% and a specificity of 88% for the identification of major depression (Kroenke, Spitzer, & Williams, 2001). Scores of 5, 10, 15, and 20 represent mild, moderate, moderately severe, and severe depression (Kroenke et al., 2001).

When used appropriately, the PHQ-9 can help providers identify depression in patients.

However, it does not assist providers in determining appropriate treatment and follow-up care for patients.

### **Adult Depression Toolkit for Primary Care**

The Community Care of North Carolina (CCNC) Adult Depression Toolkit for Primary Care (2015) is an evidence-based algorithm that helps providers guide screening, treatment, and follow-up of depression in patients (Appendix B). It provides a step-by-step process for treatment selection and initiation for the provider to follow based on PHQ-9 scores. In addition, it provides a detailed overview of care processes in the treatment of depression for providers to reference during treatment selection and initiation, acute phase follow-up, and continuation or maintenance care (CCNC, 2015). The PHQ-9 and CCNC Toolkit emphasize that appropriate depression screening and timely evidence-based treatment should be utilized by providers to properly care for a patient with depression. However, both resources should be utilized together in order to yield benefits for depression (Schaeffer & Jolles, 2019). This can be done with the help of the SBIRT model.

### **SBIRT**

Screening, Brief Intervention, Referral to Treatment (SBIRT) is an evidence-based model originally developed to identify and treat substance use disorders but has recently shown success



when applied to mental health (Substance Abuse and Mental Health Services Administration [SAMHSA], 2011; Schaeffer & Jolles, 2019). It has the following six characteristics: (a) the screening and intervention are brief (e.g. 5-10 minutes); (b) the screening is universal; (c) specific behaviors are targeted; (d) services occur in a public health setting (e.g. primary care office); (e) it is comprehensive; and (f) evidence supports its use (SAMHSA, 2011). For depression, the PHQ-9 is often used as the initial screening tool, and the calculated score determines the next step the provider should take. For example, a score of 3-4 (indicating minimal/no depression) requires no further action from the provider, scores of 5-9 (mild depression) require brief intervention, scores of 10-14 (moderate depression) require brief treatment, and scores of 15 or more (moderately severe to severe depression) require referral to treatment from the provider (“SBIRT secondary depression screening guide”, n.d.).

Brief interventions consist of 5-minute discussions with patients using techniques such as behavioral activation, motivational interviewing or cognitive behavioral therapy (SAMHSA, 2011). These techniques educate patients and help increase their motivation to improve their depression via participation in daily activities or situations they find positively reinforcing and consistent with their long-term goals (SAMHSA, 2011). Brief treatment involves pharmacological treatment based on evidence-based guidelines (SAMHSA, 2011), such as the CCNC Adult Depression Toolkit for Primary Care. Finally, referral to treatment provides those patients identified as needing more extensive treatment with access to specialty care (SAMHSA, 2011), such as counseling or psychiatry.

### **Problem Statement**

It is evident that while depression is a common chronic condition, provider knowledge of appropriate care for depression is a significant gap in best practice. Resources, such as the PHQ-9 screening tool and CCNC Treatment Toolkit, are consistently underutilized and when utilized

alone, do not yield as many patient benefits as when used simultaneously (Schaeffer & Jolles, 2019). The SBIRT model can involve use of both resources during patient visits to improve patient outcomes. Therefore, the clinical question for this Doctor of Nursing Practice (DNP) project was as follows: Does the use of the screening, brief intervention, referral to treatment (SBIRT) model improve patient outcomes for patients with depression? The project included a review of the highest-level evidence regarding the SBIRT model's effect on patient depression outcomes and evaluated the proposed implementation guideline by comparing pre- and post-implementation data. Data including patient demographics, compliance to the designed process, PHQ-9 scores, referrals made, medications prescribed, and medication changes made were reviewed.

### **Assessment of Organization**

For the purpose of this paper, the Institutional and Organizational Assessment (IOA) Model (Universalialia, n.d.a.) was utilized to perform an organizational assessment of two satellite academic primary care clinics (Appendix C). Special attention was given to depression screening measures, because while screening is written into the clinics' policies, the clinics do not have a protocol in place for repeat PHQ-9 depression screening, or depression treatment based on PHQ-9 scores. Assessment included readiness for an institutional quality improvement project and an analysis of the strengths, weaknesses, opportunities and threats (SWOT) of the organization (Appendix D).

The IOA Model aims to help organizations define and subsequently improve its overall performance through analysis of its environment, motivation, and capacity (Universalialia, n.d.a.). Through four areas (performance, external environment, motivation, and capacity), the model offers a rich methodology to determine organization strengths and weaknesses (Universalialia, n.d.b.). Utilizing the four areas, assessment of the two organizations was performed. The

assessment yielded a wide variety of both facilitators and potential barriers to a quality improvement initiative at the two clinics.

A key facilitator involved the organizations' external environment, capacity and motivation, as the two clinics are funded by a two-year grant that runs from January 2019 through January 2021. The clinics are smaller satellite clinics of a larger nurse-managed, academic health care office in the same community. The primary care clinics serve the residents of two low-income apartments they are located in, which includes 60 residents for the first clinic and 174 Residents for the second clinic. Each resident must be 62 or older to live at each facility, or be greater than age 55 with a disability that prevents them from living independently. The partnership between the two primary care clinics and public housing communities is a unique collaboration that is new to the state of Michigan. Due to the community aspect, relationships between patients and providers are closer than average patient-provider relationships seen in primary care settings, and therefore providers often see the same patients' multiple times a month for appointments which are 60-minutes in length. Additional facilitators include the small size of the clinic allowing implementation of a project to confront less barriers and the providers' willingness to learn about appropriate depression treatment.

Identified barriers to initiating a quality improvement project at the primary care clinics involved the organizations' performance, as both clinics have a lack of established patients, which could amount to lower rates of depression among patients screened with the PHQ-9 and/or poor patient compliance of depression treatment prescribed. Furthermore, residents of the two apartments have voiced skepticism of the primary care offices. For example, multiple residents voiced concerns that the clinics would bring strangers into their home, as they were not familiar with the staff. This is another important barrier, as it prevents the possibility of establishing more

patients at the two primary care clinics. Currently all patients at the clinics are screened for depression using the PHQ-9 (Kroenke, Spitzer, & Williams, 2001) at each initial visit. This screening is written into the clinics' policies. However, the clinics do not have a protocol in place for repeat PHQ-9 depression screening, or depression treatment based on PHQ-9 scores. This is a need within the organization that must be addressed for optimal patient outcomes.

### **Stakeholders**

Key stakeholders are individuals within the identified organization who have an impact on the implementation and sustainment of the desired project (Moran, Burson & Conrad, 2017). Within the identified two organizations, key stakeholders included the two clinic nurse practitioners (NPs), one RN, one social worker, and the clinic patients, as all were involved in the implementation of the planned project. Further, the two housing authorities were stakeholders for the project, as the primary care clinics where the intended project took place were within low-income apartments overseen by separate housing authorities. Additionally, patients involved in the project were residents living at the two low-income apartments. Due to the new partnership between the two organizations and public housing communities, it was important to establish trust with the housing authorities to ensure they were comfortable with the intended project at their sites.

### **SWOT**

- A strengths, weaknesses, opportunities and threats (SWOT) analysis was performed at the two primary care clinics: Strengths of the organizations included that the organizations were an extension of a nurse-managed healthcare system in West Michigan, smaller clinic size which allowed for ease of implementation, evaluation, and sustainability of the project, the onsite location of the clinics which allowed for

development of relationships between patients and staff, and the clinics' electronic health record (EHR) which had the PHQ-9 built in.

- Weaknesses of the organizations included lack of staff knowledge on depression treatment options, the fact that both clinics were only open two days a week for four hours at a time and had minimal established patients, only one NP treated patients at a time, and there was a lack of time to provide care and document for complex patient populations, such as those with depression.
- Opportunities for the organizations include continuation of the clinic operations after the grant ends and the involvement of the macro organization's involvement in the practice change.
- Potential threats for the organizations involved loss of grant money based on quality measure reporting, lack of patient awareness of clinic, residents of apartments already had established primary care providers, were skeptical of the primary care clinics or misunderstood the purpose of the clinics, and lack of resident compliance to treatment.

### **Clinical Practice Question**

Accordingly, an evidence-based project to answer the following practice or clinical question was proposed: Does the use of the screening, brief intervention, referral to treatment (SBIRT) model improve patient outcomes for patients with depression?

### **Review of the Literature**

#### **Method**

The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guided this review (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009). A comprehensive electronic search was conducted in PubMed and CINAHL databases, limited to

reviews in the English language between years 2014 and 2019. Keywords were: “SBIRT”, “depression”, “improve”, “primary care”, “screening”, “treatment”, “implementation”, and “adult”. Studies were included if researchers focused on adult participants (age 18 and older) with depression in outpatient settings, included SBIRT in the intervention and/or comparison, and provided outcomes that encouraged the use of SBIRT. Studies were excluded if researchers focused on adolescent participants (less than 18 years old), did not include depression, were in inpatient settings, did not include SBIRT in the intervention and/or comparison and did not provide outcomes that encouraged the use of SBIRT.

### **Summary of Results**

The search yielded 61 results, 36 from CINAHL and 25 from PubMed. No duplicates were found. Each review was screened using the inclusion/exclusion criteria according to PRISMA criteria (Moher et al., 2009) (Appendix E). Initial review of titles, abstracts, and inclusion criteria resulted in the removal of 31 articles. The remaining 30 full-text articles were assessed resulting in the removal of 23 articles due to not meeting the criteria for the review. The remaining 7 articles were included in the review.

Table 1 summarizes the 7 studies that met the inclusion criteria and were included in the review (Appendix F). Five studies included only quantitative data: 2 quality improvement (QI), 1 quasi-experimental, 1 retrospective descriptive convenience cohort, and 1 prospective, 3-period, interrupted time series study. One study included both quantitative and qualitative data and was a descriptive longitudinal study. The last study included only qualitative data and was cross-sectional. Results are grouped based on SBIRT’s effect on (a) depression screening and diagnosis, and (b) depression treatment.

### **Evidence to be Used for Project**

**SBIRT Effect on Depression Screening and Diagnosis.** One of the QI studies (n=237) explored if implementation of SBIRT at a federally qualified health center improved the efficacy of patient depression screening, treatment and follow up (Schaeffer & Jolles, 2019). Findings indicated that PHQ-9 screening improved from 32.5% to 85.2% after SBIRT implementation (Schaeffer & Jolles, 2019). The descriptive longitudinal study (n=23,861) explored the same concept, except did not compare pre- and post-SBIRT implementation data, which was a limitation of the study (Hargraves et al., 2017). Out of 23,861 patients in the study, 3706 went on to complete full depression screening via the PHQ-9 and 2294 eventually screened positive for depression with the PHQ-9 (Hargraves et al., 2017). This suggests implementation of SBIRT helped identify that approximately 10% of the study participants had depression.

The quasi-experimental study (n=3255) examined the effectiveness of the SBIRT model at a community health center (Dwinnells, 2015). Out of 1570 participants in the experimental group, 793 or 50.5% screened positive for depression, 583 were diagnosed with depression, 516 had a brief intervention, and 97 were referred out for counseling (Dwinnells, 2015). The control group did not receive any form of screening. The study also screened for alcohol and substance abuse in addition to depression, which was a limitation of the study. Further, compared with 11.4% of the control site patients, 25.3% of the SBIRT intervention site patients were diagnosed with depression (Dwinnells, 2015). These findings were statistically significant.

The retrospective descriptive convenience cohort study (n=1716) examined if implementation of SBIRT in an electronic health record improved clinical outcomes for patients with behavioral health problems (Burdick & Kessler, 2017). In addition to depression, the study screened for alcohol and substance abuse. Sixty percent of the participants in the study screened positive for depression. Furthermore, researchers determined depression interventions and

referrals occurred twice as often during encounters when patients were screened (n=866) compared with encounters for control patients (n=850) who never received screening (Burdick & Kessler, 2017). For example, depression diagnosis occurred in 40% of participants screened versus only 19% of participants not screened, psychotropic medication changes occurred for 7% of participants screened versus 2% not screened, and referrals occurred for 10% of participants screened versus 4% not screened (Burdick & Kessler, 2017).

The cross-sectional study obtained qualitative data from patient participants (n=2482) and providers (n=8) to determine how they viewed SBIRT as part of an integrative healthcare program (Dwinnells, 2016). In addition to screening for depression, screening for alcohol and drug abuse also occurred, a limitation to consider. Surveys indicated a high level of patient satisfaction with behavioral health screens in the clinical setting (Dwinnells, 2016). Ninety-seven percent of patients were screened, indicating acceptance of the process, and 97% agreed they would recommend the screening to others in order to help providers improve care (Dwinnells, 2016). Ninety-four percent of patients indicated they were not upset by being asked screening questions. In addition, 95% of patients surveyed revealed they never received any form of counseling or treatment despite past indication of a behavioral health problem, and despite 51% of patients being “told” by past providers they have depression (Dwinnells, 2016).

**SBIRT Effect on Depression Treatment.** In the QI study (n=237) evidence-based depression treatment and follow up care increased from 30.0% to 75.0% and eventually, 15.5% of patients achieved complete remission of depression (Schaeffer & Jolles, 2019). No statistics were reported in the study. In the descriptive longitudinal study (n=23,861), after PHQ-9 screening, 1050 out of 2294 participants that screened positive with the PHQ-9 (45.8%) received interventions and treatment initiated and 693 participants (66%) received referrals for additional



treatment (Hargraves et al., 2017). For the quasi-experimental study (n=3255) [Dwinnells, 2015], after SBIRT implementation, depression treatment and referrals for counseling for the experimental group (12.4%) significantly exceeded the rates for the control group (1.0%). These findings were statistically significant. For the retrospective descriptive convenience cohort study (n=1716), compared to negative screens, positive screens led to two to five times higher rates of clinical intervention (Burdick & Kessler, 2017), although this also included screening for alcohol and substance abuse.

The prospective, three-period, interrupted time series study (n=4914) explored which of three different integrative behavioral health care screening and management processes were the most efficient and effective in prompting behavioral health screening, identification, interventions, and referrals (Dwinnells & Misik, 2017). A total of 99.5% of medical patients completed behavioral health screenings, including depression, alcohol and substance abuse. With SBIRT, brief intervention rates nearly doubled to 83% and 100% of identified at-risk patients had referrals made using a combination of electronic tablets, electronic medical record, and behavioral health care coordination (Dwinnells & Misik, 2017). These results were all statistically significant.

The second QI study (n=303) implemented a behavioral health program based on the SBIRT model and assessed its acceptability and effectiveness in improving quality of life of patients with chronic liver disease (Verma et al., 2019). Due to the specific population studied, generalizability of the results was limited. In addition to depression, the study screened for alcohol and substance abuse, which was another limitation of the study. Out of the participants in the study, 147 (48.4%) were positive for depression (Verma et al., 2019). For the 95 patients who underwent brief intervention and treatment, quality of life improved from baseline to 3 and 6

months and patients with depression improved the most (Verma et al., 2019). These results were statistically significant. Further, depression was the only independent predictor of change in quality of life over time. Of the enrolled patients, 82% agreed interventions and treatment improved their overall care and 87% indicated a desire to continue with the behavioral program (Verma et al., 2019). Finally, in the cross-sectional study, all 8 providers indicated that SBIRT aided in their behavioral health diagnostic abilities and treatment and enabled them to be more engaged in the process with the patient (Dwinnells, 2016).

## **Discussion**

Findings of this review suggest that implementation of the SBIRT model in outpatient settings improves depression screening, diagnosis and treatment by providers. Studies concluded that when all components of the SBIRT model were used, more patients screened positive for depression, received more interventions, and were more referred for additional treatment. Two of these studies focused only on using SBIRT for depression screening, intervention, and referral (Hargraves et al., 2017; Schaeffer & Jolles, 2019). However, five of these studies used SBIRT for alcohol and substance use in addition to depression (Dwinnells, 2015; Dwinnells, 2016; Burdick & Kessler, 2017; Dwinnells & Misik, 2017; Verma et al., 2019), although results of each condition were detailed and interpreted separately. Despite this, the additional conditions included are limitations of the studies to consider. Furthermore, it is important to note that the concept of utilizing SBIRT for depression, instead of alcohol or substance abuse, is still a new idea with limited empirical research (Schaeffer & Jolles, 2019). This is further evidenced by the fact that only 7 studies met inclusion criteria for this review. Therefore, more research should be conducted on implementing SBIRT for depression, especially since current literature available supports its use.

One study suggested that the use of SBIRT not only improved patient depression, but improved patient quality of life, a factor not always considered when treating depressed patients (Verma et al., 2019). In addition, one qualitative study (Dwinnells, 2016) suggested patients viewed the SBIRT process positively, despite never receiving treatment for depression in the past. This implies patients are accepting of the SBIRT process, and therefore it is appropriate to use for depression. Further, this study also concluded that providers believed SBIRT improved their diagnostic abilities and helped them be more engaged with their patients (Dwinnells, 2016), currently a common gap in practice for providers.

**Implications for Practice.** Reasons behind the success of SBIRT include having a step-by-step process for the provider to follow regarding screening for depression, conducting an intervention based on screening scores, and knowing when to refer the patient for additional treatment (SAMHSA, 2011). Further, it forces the provider to utilize effective screening tools (e.g. the PHQ-9) and evidence-based interventions (e.g. CCNC Toolkit) when caring for a patient with depression, two things providers often forego in exchange for their clinical judgement (Schaeffer & Jolles, 2019). Currently, providers consistently under-screen, misdiagnose, and inappropriately treat patients with depression (Bor, 2015; WHO, 2018). However, having these tools to reference can help a provider appropriately care for a patient with depression, and using the SBIRT model can guide them. Thus, the SBIRT model should be used more often in practice.

### **Limitations**

There are additional limitations in this review including those studies which relied on self-reported data, thereby demonstrating a need for randomized controlled trials. Participants providing self-reported data using screening tools and questionnaires can be subject to recall and

selection bias, questioning the validity of the findings. Further, only two studies in the review (Dwinnells, 2015; Burdick & Kessler, 2017) included both an experimental and control group, yet both lacked randomization. This threatens the internal validity of the studies, as randomization is central to internal validity, and allows researchers to make causal claims about the effect of what is being studied (McMillan, 2007). Lack of randomization can lead to research groups being nonequivalent, meaning that the effect of what is being studied might be a result of the groups being different at the start rather than different due to results of the study (McMillan, 2007). Therefore, this limitation questions the extent to which SBIRT improved depression screening, intervention, and referral in the studies.

It must also be noted that “interventions” within the studies were not always defined (Dwinnells, 2015; Dwinnells, 2016; Burdick & Kessler, 2017; Hargraves et al., 2017) and when they were, were not consistent in the studies. For example, interventions included Option Grid decision-making tools and the CCNC toolkit (Schaeffer & Jolles, 2019), “short discussions, recommendation of positive findings, and dissemination of literature relevant to the condition identified” (Dwinnells & Misik, 2017, p. 301) and motivational interviewing and cognitive behavioral therapy (Verma et al., 2019).

### **Phenomenon Conceptual Model**

The conceptual model utilized to explain the phenomenon of patient depression screening and treatment optimization for this project was the Chronic Care Model (Appendix G). This model focuses on six key aspects: self-management support, clinical information systems, delivery system design, decision support, health care organization, and community resource. The theoretical framework to assess and guide implementation of the project was the Plan-Do-Study-Act (PDSA) framework (Appendix H).

### **Self-Management Support**

Individuals with chronic conditions need support and information about their condition to effectively manage their own health (Bodenheimer, Wagner, & Grumbach, 2002). To help achieve this, providers must be knowledgeable about the disease, appropriate treatment, and additional resources that can help the individual manage their condition. Depression is considered a chronic condition (WHO, 2018). Optimized depression screening and treatment can help patients learn self-management techniques from providers, because providers will have knowledge regarding depression treatment backed by evidence.

### **Clinical Information Systems**

A registry (e.g. a system that can track individual patients) is a necessity when managing chronic illness (Bodenheimer et al., 2002). The care team uses the registry to guide the course of treatment, anticipate any problems, and track patient progress. Tracking PHQ-9 scores within the clinic EHR helps determine success of depression treatment, and if modifications or referrals are necessary. However, proper interpretation of PHQ-9 scoring and adequate provider knowledge regarding depression treatment is essential for this to occur, something currently lacking within the organizations.

### **Delivery System Design**

Delivery of care to individuals with chronic conditions requires not only determining what care is needed, but clarifying roles and tasks to ensure the patient gets the appropriate care (Bodenheimer et al., 2002). Further, making sure that providers who take care of a patient have up-to-date information about the patient's status and making appropriate follow-up a part of standard procedure is essential to patient care delivery (Bodenheimer et al., 2002). There is currently no standard of care when screening or treating depression at the offices. Therefore,

implementing an evidence-based model to follow can improve healthcare delivery to patients with depression within the organizations.

### **Decision Support**

Treatment decisions need to be based on explicit guidelines supported by evidence. These evidence-based guidelines provide standards for optimal chronic condition management and should be incorporated into provider practice (Bodenheimer et al., 2002). Current practice does not involve evidence-based screening and treatment guidelines, and therefore should be implemented.

### **Health Care Organization**

Efforts to improve patient care should be standard within the organization and aligned with a quality improvement effort (Bodenheimer et al., 2002). However, the entire organization must be committed to improvement efforts for chronic conditions and incorporate them into the policies and procedures. Therefore, all stakeholders of the primary care offices described earlier must agree on depression screening and treatment optimization for the project to succeed.

### **Community Resource**

Resources to support or expand care for chronically ill patients and prevention strategies are often overlooked in primary care (Bodenheimer et al., 2002). For mental health, programs that offer counseling can improve depression when utilized. The organizations' social worker, providers, or RN can become involved in this, and help facilitate referrals for patients who need additional help managing their depression.

## **Project Plan**

### **Purpose of Project and Objectives**

The purpose of the quality improvement (QI) DNP project was to improve care outcomes for patients with depression. The project sought to answer: Does the use of the screening, brief

intervention, referral to treatment (SBIRT) model improve patient outcomes for patients with depression? Objectives for the project were as follows:

1. Did utilization of the SBIRT model decrease patient PHQ-9 scores at follow up visits?
2. Did the RN adhere to screening patients independently with PHQ-9 during patient intake?
3. Did providers adhere to performing brief interventions and brief treatments using the treatment guidelines by the CCNC during patient care?
4. Did utilization of the SBIRT model improve the number of referrals made to outside psychiatric services (e.g. referrals to psychology, counseling, and/or psychiatry)?
5. What antidepressant medication classes were most often prescribed to patients?
6. Did utilization of the SBIRT model increase the number of antidepressant medication changes made?

### **Design for Evidence-based Initiative**

The PDSA cycle guided the design for this QI project. Each step of the PDSA cycle was analyzed to determine project relevance and appropriate implementation strategies to utilize. The DNP student submitted an Institutional Review Board (IRB) application to Grand Valley State University's (GVSU) Human Research Review Committee to determine if the student may proceed with the project. The GVSU's IRB determined that this project was a QI initiative and that the student could proceed with the project. See Appendix I. Furthermore, a letter of approval for conducting a QI project by the grant leader was gathered by the DNP student.

### **Setting and Participants**

The project took place at two satellite academic primary care clinics in West Michigan. Key stakeholders included a team of two NPs, a registered nurse, and a social worker. Additional participation included patients at the two clinics. The intervention was targeted to improve care

and treatment outcomes for patients with depression. The sample population included older adult patients 55 years and older who were underinsured (i.e. Medicaid, Medicare, or combination of both), and who were seen by providers at the primary care clinics during the dates of December 19, 2019 – March 12, 2020. Exclusion criteria included patients already managed by a psychiatrist and patients with known substance abuse disorders.

### **Model Guiding Implementation: Plan-Do-Study-Act**

For the project, the PDSA cycle (Institute for Healthcare Improvement [IHI], 2019) was used to evaluate if utilization of the SBIRT Model as a QI initiative improved care and treatment outcomes for patients with depression.

#### **Plan**

The proposed project plan was to implement a screening and treatment process change for patients with depression. The proposed change was the implementation of the evidence based SBIRT Model. Each specific part of the model was analyzed by the student regarding process and outcome metrics, and these were gathered and evaluated by the DNP student. The plan was divided into three separate phases: individual staff education, initial visit, and follow-up visit (Appendix J). Each step of the project is detailed under the Implementation Steps and Strategies of this paper.

#### **Do**

The next step of the PDSA cycle was doing the intervention. Shortly after receiving IRB approval for the project as a QI initiative, implementation began with individual staff education. All staff education was conducted through one group meeting and individualized sessions. Initially a group meeting was conducted to the staff to provide an idea of what the project entailed and allowed the DNP student to address questions and concerns from staff.



Individualized sessions were divided into education for the RN and two providers. The RN was provided training about the SBIRT model with a focus on the delivery of the PHQ-9 tool. The RN implemented and recorded in the electronic health record (EHR) the PHQ-9 score and determined the level of depression based upon the score. The RN communicated the score and interpretation to provider.

Training for the RN was in the form of a written hand-out developed as part of the DNP project that the RN could reference during the project implementation period. The hand-out included the responsibility of the RN and instructions regarding the RN's role in the project as outlined above. Objectives included (1) The RN will know to screen every patient with the PHQ-9 and record score in EHR; (2) The RN will understand how to interpret depression severity based on score; and (3) The RN will recognize to communicate the interpreted score to the provider. Evaluation of the RN's understanding of the education was done via the teach-back method and through chart audit.

The providers were educated on appropriate depression treatment based on PHQ-9 score to include the brief intervention and brief treatment portion of the SBIRT Model. The CCNC Adult Depression Toolkit for Primary Care (2015) was utilized as the evidence-based treatment guideline for specific severities of depression. The training included when to refer a patient for additional specialty treatment and appropriate follow up care. Training also included to add EHR documentation of brief intervention and/or brief treatment on patient's chart.

Training was in the form of a PowerPoint presentation with the addition of written hand-outs developed as part of the DNP project for the providers to reference during the implementation period. The training included the responsibility of the provider and instructions regarding the provider's role in the project as outlined above. Objectives included (1) The

provider will understand appropriate depression treatment based on PHQ-9 score including brief intervention and brief treatment; (2) The provider will know to follow the CCNC toolkit when treating patients; and (3) Providers will recognize when to refer patients and appropriate follow-up care. Evaluation of the provider's understanding of the education was done via the teach-back method and chart audit, as providers were educated to add EHR documentation of the intervention.

After completion of the education sessions, a go-live date for the DNP project was reviewed with the staff and stakeholders. Reminder emails containing the details of the project were distributed to the staff as the scheduled go-live date approached. The DNP student functioned as the project facilitator and coordinator by being in the primary care clinics throughout the entire implementation process.

### **Study**

Data was gathered from December 19, 2019 to March 12, 2020. The expected number of patients that met the inclusion criteria and would be seen between those dates was between 10-20 patients. Data included staff adherence to their individual roles in the SBIRT model. Further, PHQ-9 scores of patients at initial and follow-up visits during those dates were also gathered by the DNP student. Additional metrics included number of referrals made to outside psychiatric services (e.g. referrals to psychology, counseling, and/or psychiatry), antidepressant medication classes prescribed to patients and any antidepressant medication changes (from one antidepressant to another, different antidepressant or increases/decreases in medication dosage) made during the implementation period. Descriptive statistics analyzed a significant portion of data. Paired t-test analysis was used to determine if significant change in PHQ-9 scores pre and post intervention occurred.

**Act**

The DNP student tracked SBIRT model use and success weekly and provided education, reinforcement, and individual mentoring of the two providers and one RN if the SBIRT model was not used effectively. Further, based on data gathered, revisions to the project were determined. Results from this QI project drove modifications as to how the SBIRT model was utilized. Outcome and process metrics were evaluated to make future practice changes and necessary revisions to the PDSA cycle.

**Implementation Steps and Strategies**

Steps in this project were aimed to improve care and treatment outcomes for patients with depression by implementing the SBIRT Model into the current standard of care for depression. A monthly timeline including all required project steps was designed to ensure timely project management (Appendix K). This timeline consisted of required meetings to ensure adequate time for implementation of the project, data collection, analysis and the final project defense. The project steps with supporting implementation strategies included:

1. Educating staff on the SBIRT model by November 26th, 2019. Educating key stakeholders, including the providers, RN, and social worker regarding the evidence on the importance of utilizing the SBIRT model to improve depression screening, treatment, and patient outcomes was essential to achieve buy-in and approval. Educational meetings allowed for formal presentation and feedback through an open discussion and a “questions and answers” session conducted by the DNP student. Steps to achieve this objective included:
  - a. A formal educational meeting was held on November 21st, 2019 for the clinic staff. This meeting outlined specific steps of the intervention and feedback and questions were addressed. Conducting meetings and providing educational

material to key stakeholders was an important implementation strategy for successful QI (Powell et al., 2015).

- b. Educational sessions with individual RN were conducted on November 26<sup>th</sup>, 2019. Written hand-outs about the SBIRT model were provided to the RN during the educational sessions. The hand-out included the responsibility of the RN and instructions regarding the RN's role in the project as outlined under the "Do" section of this paper. Electronic copies were distributed by email to the RN prior to the go-live date for an additional reference.
  - c. Provider education on the SBIRT Model completed on November 26<sup>th</sup>, 2019. The DNP student met with each individual provider at the clinics during their free time. Training was in the form of a PowerPoint presentation with the addition of written hand-outs for the providers to reference during the implementation period. The training included the responsibility of the provider and instructions regarding the provider's role in the project as outlined under the "Do" section of this paper. Electronic copies were distributed by email to the providers prior to the go-live date for an additional reference.
  - d. Additional educational sessions were conducted in order to ensure that all clinic staff understood the SBIRT model and their individual roles. For all staff understanding (providers and RN), the student utilized the teach back method.
2. Collection of data allowed the DNP student to monitor the project progress, evaluate the effectiveness of the project interventions, and make modifications to the project. Data collection was done through chart audit. The data collection plan was as follows (see Appendix L for summary):

- a. The number of patients over the age of 55 seen between December 19, 2019 to March 12, 2020. Demographics collected included age, race, culture and gender. This was an aggregate level of data, not an individual level of data, and no patients were matched with the collected data. Data collection was done through chart review from the EHR. Identifiers were not collected in the report.
- b. PHQ-9 scores pre- and post-intervention. This was collected through chart review of the EHR at the first patient visit during the implementation period and at the patient's follow up visit during the implementation period. PHQ-9 scores were separated by numerical age, race, and gender. Bar graphs comparing the sets of data were created for the office staff to see. PHQ-9 scores of less than 4 (indicating minimal/no depression) were only collected as a statistical measure as part of the population but were not used as the denominator of return visits. No identifiers were collected.
- c. Compliance of the RN in using the PHQ-9 screening tool. This data was collected via chart audit. The student visited the clinic or collected data at least once every week between December 19, 2020 to March 12, 2020. The student recorded the number of times the RN screened the patient using the PHQ-9. No identifiers were collected.
- d. Compliance of the provider in performing brief interventions and brief treatments using the treatment guidelines by the CCNC. This data was collected through direct observation of the interaction between the provider and patients during random visits to the clinic and chart audit, as providers were educated to add EHR documentation of the intervention. The student visited the clinic or collected data

at least once every week between December 19, 2019 through March 12, 2020.

The student recorded the number of times the provider used brief interventions and brief treatment using the treatment guidelines by the CCNC. No identifiers were collected.

- e. Number of referrals made to outside psychiatric services (e.g. referrals to psychology, counseling, and/or psychiatry) during the implementation period.

This data was collected via chart audit. The student visited the clinic or collected data at least once every week between December 19, 2019 to March 12, 2020.

The student recorded the number of times referrals were made to outside services, and distinguished if they were psychiatric, psychology, or counseling services. No identifiers were collected.

- f. Patient compliance to attending referrals made during the implementation period.

This data was collected via chart audit. The student visited the clinic or collected data at least once every week between December 19, 2019 to March 12, 2020.

The student recorded the number of times patients were (compliant) to attending their ordered referrals. No identifiers were collected.

- g. Antidepressant medication classes prescribed to patients and any antidepressant medication changes (from one antidepressant to a different antidepressant, or increase/decrease in dosage of same medication) made during the implementation period. This data was collected via chart audit. The student visited the clinic or collected data at least once every week between December 19, 2019 to March 12, 2020. The student recorded the classes of antidepressant medications prescribed

and the number of antidepressant medication changes made. No identifiers were collected.

3. The final report of the QI project was provided to the organization as well as the educational institute. The DNP student defended her QI project on April 6, 2020. The final copy of the project defense was uploaded to Scholarworks. Refer to the timeline in Appendix K.
  - a. Presented results to clinic staff during final meeting in April 2020.
  - b. Posted results of the pre- and post-implementation PHQ-9 scores, number of referrals, medication classes, and medication changes to clinic whiteboard.
  - c. Included future recommendations for project revision during the final meeting.

### **Measures and Data Collection**

The DNP student conducting the project collected data independently on a weekly basis at the clinic. The DNP student also conducted random visits to reduce any Hawthorne effect on the clinic staff. This may have provided more accurate measures of staff compliance on the project's interventions. Data elements that were collected are outlined in Appendix M (data gathering plan can be found in Appendix L). The chart audit occurred in the clinic's designated EHR. The DNP student ensured that no patient identifiers were included in the data collected.

### **Data Management and Analysis**

Secured data from EHR was accessed from the organization through a username and password protected EHR log-in. De-identified data was logged into an excel data-dictionary/codebook which was stored in an encrypted flash drive.

This QI project included only quantitative data. Analysis of the quantitative data was represented by percentages and illustrated through pie charts. Descriptive statistics was utilized to analyze the demographics data, compliance to the SBIRT model, referrals made,

antidepressant medication classes, and medication changes. Outcome data including the PHQ-9 score pre- and post-intervention was analyzed using a Paired Sampled t-test to demonstrate significance. Data was gathered during the patient's first visit during the implementation period (despite being an already established patient) when intervention occurred, and again during subsequent follow-up visits. Upon the conclusion of this QI project, analysis reviewed the project as a whole to make future recommendations regarding depression screening and treatment at the clinic.

### **Ethics and Protection of Human Services**

The DNP student submitted an IRB application to GVSU's Human Research Review Committee to determine if the student may proceed with the project. The GVSU's IRB determined that this project was a QI initiative and that the student could proceed with the project. Furthermore, a letter of approval for conducting a QI project by the grant leader was gathered by the DNP student.

This project was a QI initiative among patients screened and treated for depression. No identifiable patient information was collected. Any potential identifiable patient information such as date of birth, address (home or office), telephone number (home or cell phone), social security number, insurance information, medical reconciliation numbers, and driver's license number was omitted during data gathering. Appropriate steps taken ensured that the project complied with the regulations at the clinic as well as the Health Insurance Portability and Accountability Act (HIPAA). Within the scope of this QI project, there were no identified physical, social, economic, or legal threat to patients included in this project. Furthermore, members of the team including the DNP student completed the human subject's protection training provided by the Collaborative Institute Training Initiative (CITI) prior to the implementation of the project. This was done to ensure that components of the project were designed to protect patient information.



No hard or electronic copy of the raw data left the organization premises. Only the de-identified data was put in the excel codebook in an encrypted flash drive and shared with the university statistician via email and in-person meeting for additional analysis.

### **Resources and Budget**

Considerations regarding human and financial resources were important to consider during implementation of this DNP project. The human resources required for this project included the interdisciplinary team at the two clinics including the NPs, RN, and social worker.

Material resources needed for this project included printed educational hand-outs for staff. Staff resources included RN to appropriately screen patients with PHQ-9 and providers to perform brief intervention and brief treatment following CCNC guidelines. Technology resources included utilizing the clinic's EHR and creating a PowerPoint presentation to educate providers. A visual projected budget was designed to assess the costs of the DNP project (Appendix N).

## **Results**

### **Patient Demographics**

A total of 35 patients were established between the two clinics. From those 35 patients, 27 (77%) had a diagnosis of a mental illness, and 22 patients (63%) had a diagnosis of depression. Further, 25 (71.4%) were prescribed psychopharmacological medications, and 21 patients (60%) were prescribed antidepressants.

During the implementation period of three months, 10 patients were seen pre-intervention for depression. Two patients (20%) were female and eight patients (80%) were male. Seven patients (70%) were Caucasian race and identified with Anglo American culture and three patients (30%) were African American race and identified with African American culture. Average age of the 10 patients was 64.6 years old. See Appendix O for patient demographics.

Nine patients (90%) were already established at the clinics, and one patient (10%) was a new patient establishing care at the clinics.

### **PHQ-9 Scores**

The average pre-intervention PHQ-9 score for the 10 patients who were seen pre-intervention for depression was 14.06 (SD 4.930). Seven patients returned for post-intervention follow-up appointments during the implementation period. The average post-intervention PHQ-9 score for the seven patients was 8.59 (SD 1.543). The mean score improved (i.e. the PHQ-9 scores decreased on average) by 5.471 points (p-value = 0.001, 95% CI [3.426, 7.512]). This suggests that implementation of the SBIRT model was successful at improving patient PHQ-9 scores. See Appendix P for statistical analysis details.

### **Referrals**

During the three-month implementation period, seven referrals were made to counseling services. None were made to psychiatric services. Out of those seven referrals, five patients (71%) were compliant with attending onsite counseling sessions, and two patients (29%) never attended. The DNP student was unable to determine why the two patients did not attend the onsite counseling sessions.

### **Medication**

Antidepressant medication management was also measured by the DNP student during the implementation period. Four patients (40%) were prescribed antidepressant medication therapy during the initial visit, and five patients (50%) were already previously prescribed antidepressant therapy. One patient (10%) was not on antidepressant therapy due to their lack of depression symptoms (i.e. PHQ-9 score was 1, and thus did not warrant any treatment based on the SBIRT model; this patient was not included in follow-up visit data). Out of the nine patients

on antidepressant therapy, Selective Serotonin Reuptake Inhibitors (SSRIs) were prescribed for three patients (33%) and were already previously prescribed to one patient (11%). Selective Norepinephrine Reuptake Inhibitors (SNRIs) were prescribed for one patient (11%) and were already previously prescribed to four patients (44%) (Appendix Q). No patients were prescribed or previously prescribed Norepinephrine Dopamine Reuptake Inhibitor (NDRIs), Tricyclic Antidepressants (TCAs) or Monoamine Oxidase Inhibitors (MAOIs).

Medication changes were made for five patients (56%). Each of these changes (100%) was a titration up of the patient's current antidepressant medication dosage, and did not include titration down of the dosage, nor change of antidepressant or antidepressant class. This data also did not include when the four patients were initially started an antidepressant therapy. Out of the five patients, three medication changes (60%) were made during the initial appointment, and two medication changes (40%) were made during follow-up appointments.

### **Staff Compliance**

The DNP student gathered RN compliance through chart review. The RN was compliant with screening patients with the PHQ-9 during all 17 (100%) patient appointments (10 initial appointments and seven follow-up appointments). However, the DNP student did add reminders in five patient's EHR as a visual cue to aid the RN in screening the patients with the PHQ-9. The DNP student also gathered provider compliance through chart review. During the implementation period, two patients scored a 7 and 8 on the PHQ-9 respectively, indicating a need for brief intervention. During these two patient appointments, providers indicated in the patient's EHR that cognitive behavioral therapy was given to the patient, although this was not directly observed by the DNP student. This indicates that providers were compliant with performing brief interventions during the two times it was indicated (100%). When prescribing

antidepressant therapy, providers either communicated directly with the DNP student or included in the EHR that the CCNC Toolkit was utilized during four out of the 10 initial patient appointments (40%). The DNP student was unable to determine if utilization of the CCNC Toolkit occurred more often but providers either were unable to communicate it or forgot to chart in the EHR that it was used. See Appendix R for details.

### **Discussion**

Utilization of the SBIRT model in this DNP project showed a significant decrease in patient PHQ-9 scores from initial pre-intervention appointments ( $M = 14.06$ ) to follow-up post-intervention appointments ( $M = 8.59$ ). This finding suggests that use of the SBIRT model in outpatient settings improves patient depression. Therefore, it is an appropriate tool for providers to utilize when seeing a patient with depression. Continued use of the SBIRT model at the two clinics will provide additional data to further support the use of the SBIRT model. Unfortunately, this DNP project had a small sample size of patients during the limited implementation period. However, this does not negate the statically significant results explained earlier. Paired sample t-tests are useful for sample sizes less than 30 (Mood, Graybill & Boes, 1973), and thus was utilized in this DNP project.

Strengths of the DNP project include the easy usability of the SBIRT model, the timeliness of the model, and that the model gave providers a tool to reference when addressing depression. For example, one provider commented on the ease of use of the SBIRT model, and that it did not add significant time to the patient appointment. Further, the other provider commented on how she enjoyed having visual cues for knowing what treatment was appropriate for patients based on their PHQ-9 scores. The RN also commented on how much she appreciated

the visual cues and made knowing when to screen patients and how to interpret the PHQ-9 much easier.

This DNP project emphasized the severity of mental illness within the two clinics and the importance of prioritizing mental health treatment. Further, the DNP project is evidence that behavioral health treatment should be imbedded into all outpatient clinics, especially ones with a patient population consisting of older, underinsured adults. This population (like the patient population in the DNP project) has three times the rate of depression compared to the average community dwelling older adult (Areán et al., 2010; WHO, 2017). However, when access to mental health treatment is integrated into outpatient clinics where this population is likely to use them, depression is treatable (Areán et al., 2010). Unfortunately, access to mental health treatment is not always available because behavioral health is often not integrated into outpatient clinics. Therefore, it is imperative that this changes so mental health treatment is easily accessible to patients that need it. This DNP project is an example of that.

### **Implications for Practice**

This DNP project had multiple practice implications. Depression is often poorly managed in outpatient settings because providers do not have the training or knowledge on how best to treat individuals presenting with depression symptoms. However, this DNP project suggests that depression can be managed appropriately and subsequently improve in the outpatient setting when the SBIRT model is used. By accomplishing this, patient health outcomes and quality of life are improved.

The SBIRT model was successful as it allowed providers to have a step-by-step process to follow regarding appropriate depression screening, the correct intervention based on the screening scores, and having the knowledge and confidence to refer patients for additional

psychiatric treatment. In addition, it forced the provider to utilize effective screening tools (e.g. the PHQ-9) and evidence-based interventions (e.g. CCNC Toolkit) when caring for a patient with depression. This allowed for each patient to receive the best evidence-based care for their mental health and improved their chance of successful treatment and eventual remission. Therefore, it is evident that the SBIRT model should be utilized in outpatient settings for the management of depression.

### **Limitations**

This project had a short implementation period of only three months and a small sample size. The small sample size made it difficult to evaluate statistical significance on the effect of utilization of the SBIRT Model on patient PHQ-9 scores. In addition, not all follow-up visits occurred during the implementation period, further limiting the sample size and the amount of data gathered. For example, data was gathered on 10 patients during the initial visit, but only 7 returned to the clinic to follow-up for their mental health during the implementation period. A longer implementation period of at least 6-12 months could help solve this limitation, as QI projects often take years with multiple cycles to confidently determine success or failure (Morner & Stevans, 2019). Further, the small sample size and overall population seen at the clinics limited the generalizability of this DNP project, since the intervention only involved older, underinsured adults. This suggests the results cannot be generalized to other patient populations.

Physical health concerns continued to be the priority concerns addressed during each patient visit with the provider, as each patient had numerous co-morbidities. While mental health was addressed during appropriate follow-up appointments, it was never the only concern addressed, suggesting that providers continued to not prioritize mental health diagnoses despite

the intervention. Further, the DNP student occasionally had to take the initiative to state when patients should be screened with the PHQ-9 instead of the RN/providers taking the initiative.

This improved as the implementation period progressed.

The DNP student was unable to make weekly visits to the clinic as originally planned due to scheduling conflicts or occasional closure of the clinics, although data was collected remotely each week. This limited the presence of the DNP student at the clinics, and thus staff compliance of their roles within the project possibly decreased because of this. Finally, while the study was attempting to determine if utilization of the SBIRT model improved patient depression, the only way to quantify this data was by using the PHQ-9. However, despite a sensitivity of 88% and a specificity of 88% for the identification of major depression, the PHQ-9 is not always an accurate portrayal or measurement of depression. For example, patients can lie when performing the screening, or be having a particularly good/bad day that inaccurately skews the results, increasing the chances of false negative or false positive results (Mueller, 2019). As noted, the DNP project had multiple limitations, but overall implementation of the SBIRT model improved patient follow-up PHQ-9 scores, suggesting an improvement in depression.

### **Recommendations**

There are changes to the DNP project that should occur during the second PDSA cycle. Provider compliance on utilization of the CCNC toolkit was low (only 40%), and therefore a change is necessary to improve this. One recommendation to improve provider compliance (and continue all staff compliance) involves monthly “check-ins” with staff and key stakeholders during the implementation period. During these meetings, roles in the project should be reviewed with individual staff members and questions/concerns should be addressed. In addition, there should be a discussion with staff and stakeholders about what is working and not working in the

project, and what improvements can be made. Monthly meetings should improve staff compliance in the project because they will be reminded of their roles and the importance of them. Monthly meetings will also allow the next project facilitator to know what is not working in the project early on, so improvements can be made while the project is running, instead of at the end of the project. In the case of the current DNP project, if monthly meetings had occurred, the DNP student could have determined why provider compliance with utilization of the CCNC toolkit was low.

Monthly meetings should also occur to discuss gaps in depression care. One example includes the challenges the providers continue to face with depression treatment despite the intervention. This will allow the project facilitator to re-educate the providers or provide additional education based on the identified gaps. Another important gap in care to discuss is whether certain depression severity levels (i.e. when the patient's PHQ-9 indicates mild, moderate, or severe) are not prioritized by providers. For example, if patients with severe depression are always given appropriate treatment, but not patients with moderate or mild depression. The meeting can help determine why this is occurring and solutions to overcome this problem.

### **Sustainability Plan**

Untreated mental health was a significant problem for the residents living at the two apartments where the clinics reside, and an issue commonly seen by the providers at the two clinics. This led to key stakeholder support of the SBIRT model intervention, which was crucial for successful implementation of the SBIRT model. This strong support suggests that the DNP project will be sustainable.



Implementation of the SBIRT model improved patient depression scores, making it a likely tool to remain in place for providers to utilize when managing patients with depression. One provider commented on the ease of use of the SBIRT model, and that it did not add significant time to the patient appointment. Further, the other provider commented on how she enjoyed having visual cues for knowing what treatment was appropriate for patients based on their PHQ-9 scores. Additionally, key stakeholders of the project are currently involved in creating a Michigan Health Endowment Fund (MHEF) grant to fully integrate behavioral health services at the clinics, in addition to other low-income housing organizations in the West Michigan area. The DNP student is involved as a collaborator for the grant and will provide the project data as evidence for the grant application. Since the SBIRT model is an evidence-based tool endorsed by SAMHSA and the Health Resources Services Administration (HRSA) [HRSA, 2020], it has the opportunity to be included into the new grant. Additional behavioral health areas the grant hopes to integrate include therapy, peer support, patient technology support, care management, and primary care. If awarded, this grant could allow integration of the SBIRT model along with additional behavioral health strategies to more organizations in the West Michigan area, further increasing the sustainability of this project and providing increased behavioral health access.

### **Reflection of DNP Essentials**

The American Association of Colleges of Nursing (AACN) requires that all DNP students meet the eight DNP essential competencies in order to graduate (AACN, 2006). These eight essential competencies provide a foundation for the NP in any role and were met throughout the development, implementation, and dissemination of this DNP project.

### **Scientific Underpinnings for Practice**

The scientific background of nursing practice is constantly changing to reflect the most up-to-date evidence-based practice (AACN, 2006). Further, conceptual frameworks and theories guide doctoral nursing practice. At the beginning of the QI project, scholarly evidence was utilized to evaluate the efficacy of the SBIRT model to determine if it was an appropriate QI project. Further, conceptual frameworks were utilized during the project. For example, the conceptual model utilized to explain the phenomenon of patient depression screening and treatment optimization for this project was the Chronic Care Model (Bodenheimer et al., 2002). In addition, the PDSA framework (IHI, 2019) guided the implementation of the project. This DNP project was created based on evidence and implemented using theoretical frameworks.

### **Organizational and Systems Leadership**

Organizational and systems leadership are critical for DNP graduates to improve patient and healthcare outcomes (AACN, 2006). The DNP student demonstrated organizational and systems leadership by meeting with organizational stakeholders and conducting an assessment of the organization's needs. By doing this, the DNP student was allowed to put together a project to help meet organizational needs and eventually implement the project. Throughout the implementation process, leadership and communication skills were utilized. For example, communication with the two providers, social worker, RN and housing committees occurred frequently via face-to-face, email and flyers. The DNP student also was a leader in facilitating the project and enforcing compliance by all staff involved in the project. The project was submitted to the university IRB committee and was deemed non-research.

### **Clinical Scholarship and Analytical Methods**

Scholarship and research are the hallmarks of doctoral nursing education. Doctoral nursing practice is characterized by the discovery of new phenomena and the application of these

discoveries during practice (AACN, 2006). The DNP student analyzed existing literature and other evidence to determine the best evidence for the project. Based on this evidence, the student designed, directed and evaluated a QI project to improve patient care at the organization.

Information technology was used to gather EHR data regarding staff compliance, PHQ-9 scores, and additional measures. This information was then analyzed to determine the efficacy of the project. Statistics were used to analyze project data. Results were disseminated from this evidence-based QI project to improve patient outcomes.

### **Information Systems Technology**

DNP graduates use information systems and technology to support and improve patient care and healthcare systems (AACN, 2006). Information systems and technology was utilized by the DNP student during the entirety of the project. For example, the DNP student used an EHR to monitor the QI project. The DNP student also performed chart audits from the EHR to gather project data. Microsoft Excel was utilized to analyze the data collect during the project. Further, emails were utilized as the primary source of communication between the DNP student and organization stakeholders.

### **Advocacy for Healthcare Policy**

It is an expectation of DNP graduates to design, influence, and implement healthcare policy (AACN, 2006). This DNP project included the DNP student analyzing the organization's current policy regarding depression screening and treatment. This project did not include policy change at a state, federal, or international level.

### **Interprofessional Collaboration**

Interprofessional collaboration is essential to provide the best care for patients. The DNP must function in highly collaborative teams with other healthcare professionals to provide

excellent patient-centered care (AACN, 2006). The DNP student participated in collaboration and effective communication with organizational key stakeholders, including two providers, one RN, and one social worker, during the development and implementation of the project. The DNP student worked closely with staff members to provide SBIRT model education, reinforce education, and answer questions during DNP project implementation.

### **Clinical Prevention and Population Health**

The implementation of clinical prevention and population health activities is central to improving the health of the population (AACN, 2006). DNP graduates must engage in leadership to integrate evidence-based clinical screening and prevention to patients during their practice. The project focused on implementing an evidence-based model to improve both screening and treatment of depression in an older-adult population. The student attempted to improve the health outcomes of patients through implementation of the SBIRT model. The environmental, cultural, and occupational health needs of the organization were taken into consideration when developing the quality improvement project.

### **Advanced Nursing Practice**

A DNP graduate is prepared to practice in an area of specialization within the larger domain of nursing (AACN, 2006). This project focused on the older-adult population suffering from depression. The DNP student demonstrated advanced nursing practice by facilitating the SBIRT model QI project. The DNP student developed relationships with clinic patients and staff to facilitate optimal care and patient outcomes. The DNP student guided and supported the clinic RN to engage in the project and improve her nursing practice. The DNP student guided and educated clinic staff through implementation of the QI project. The DNP student demonstrated

advanced levels of clinical judgement by delivering the evidence based SBIRT model to improve patient depression outcomes.

### **Dissemination of Outcomes**

On April 6, 2019, the DNP student presented the final defense after the conclusion of the project. This event was open to community members including other DNP students, faculty members at the university, family members and organization members. In addition, the outcomes of this QI project were presented to the staff at the organization during the month of April (exact date TBD). The presentation included a summary of key project results, limitations, future recommendations, evolving data, and current literature. The final draft of the scholarly project paper was uploaded to ScholarWorks©.

### **Conclusion**

The aim of this QI project was to implement the SBIRT model to improve care for patients with depression at two satellite primary care clinics. Evidence suggested that the utilization of the SBIRT Model at primary care clinics improved depression screening, diagnosis and treatment by providers (Dwinnells, 2015; Burdick & Kessler, 2017; Dwinnells & Misik, 2017; Hargraves et al., 2017; Schaeffer & Jolles, 2019). While PHQ-9 screening was written into the clinics' policies to occur at initial patient visits to establish care, the clinics did not have a protocol in place for repeat PHQ-9 depression screening at follow-up appointments, or appropriate depression treatment based on PHQ-9 score severity. If appropriate repeat screening does not occur, providers may not recognize patients with poor treatment response and therefore no treatment changes will occur. Further, individuals with low, middle, and high PHQ-9 scores require different treatment options (CCNC, 2015). If patients are not treated appropriately based on their severity of depression, patients may have poorer clinical outcomes. Thus, the DNP student identified a QI initiative designed to address these issues which is the implementation of

the SBIRT model. After a 3-month implementation period, average PHQ-9 scores decreased from 14.06 to 8.59 (p-value = 0.001, 95% CI [3.426, 7.512]). These results suggest that utilization of the SBIRT model improved adult depression in the outpatient setting. The SBIRT model, in addition to other behavioral health strategies, have the opportunity to be extended to other West Michigan organizations through a MHEF-funded grant. Continued use of the SBIRT model at the two clinics should remain to provide additional data to further support the use of the SBIRT model.

## References

- Areán, P. A., Mackin, S., Vargas-Dwyer, E., Raue, P., Sirey, J. A., Kanellopolos, D., & Alexopoulos, G. S. (2010). Treating depression in disabled, low-income elderly: a conceptual model and recommendations for care. *International journal of geriatric psychiatry*, 25(8), 765–769. <https://doi.org/10.1002/gps.2556>
- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *Journal of the American Medical Association*, 288, 1775–1779. <https://doi.org/10.1001/jama.288.14.1775>
- Bor, J. S. (2015). Among the elderly, many mental illnesses go undiagnosed. *Health Affairs*, 34, 727–731. <https://doi.org/10.1377/hlthaff.2015.0314>
- Burdick, T. E., & Kessler, R. S. (2017). Development and use of a clinical decision support tool for behavioral health screening in primary care clinics. *Applied Clinical Informatics*, 8, 412–429. <https://doi.org/10.4338/ACI-2016-04-RA-0068>
- Carey, M., Jones, K., Meadows, G., Sanson-Fisher, R., D’Este, C., Inder, K., ... Russell, G. (2014). Accuracy of general practitioner unassisted detection of depression. *Australian & New Zealand Journal of Psychiatry*, 48, 571–578. <https://doi.org/10.1177/0004867413520047>
- Community Care of North Carolina. (2015). *Adult depression toolkit for primary care*. Retrieved from <https://www.communitycarenc.org/media/related-downloads/ccnc-depression-toolkit.pdf>

- Dwinnells, R. (2015). SBIRT as a vital sign for behavioral health identification, diagnosis, and referral in community health care. *Annals of Family Medicine, 13*, 261–263.  
<https://doi.org/10.1370/afm.1776>
- Dwinnells, R. (2016). Experiences with screening, brief intervention, and referral to treatment (SBIRT) in community healthcare. *Journal of Community Medicine & Health Education, 6*, 1-7. <https://doi.org/10.4172/2161-0711.1000395>
- Dwinnells, R., & Misik, L. (2017). An integrative behavioral health care model using automated SBIRT and care coordination in community health care. *Journal of Primary Care & Community Health, 8*, 300–304. <https://doi.org/10.1177/2150131917740245>
- Fuchs, C. H., Haradhvala, N., Hubley, S., Nash, J. M., Keller, M. B., Ashley, D., ... Uebelacker, L. A. (2015). Physician actions following a positive PHQ-2: Implications for the implementation of depression screening in family medicine practice. *Families, Systems, & Health, 33*, 18–27. <https://doi.org/10.1037/fsh0000089>
- Hargraves, D., White, C., Frederick, R., Cinibulk, M., Peters, M., Young, A., & Elder, N. (2017). Implementing SBIRT (Screening, Brief Intervention and Referral to Treatment) in primary care: Lessons learned from a multi-practice evaluation portfolio. *Public Health Reviews, 38*, 1-11. <https://doi.org/10.1186/s40985-017-0077-0>
- Health Resources and Services Administration. (2020). *Screening, brief intervention, referral to treatment (sbirt) services*. Retrieved from <https://www.hrsa.gov/behavioral-health/screening-brief-intervention-and-referral-treatment-sbirt-services>
- Institute for Healthcare Improvement. (2019). *Plan-Do-Study-Act (PDSA) worksheet*. Retrieved from <http://www.ihi.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx>



- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9. *Journal of General Internal Medicine, 16*, 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- McMillan, J. (2007). Randomized field trials and internal validity: Not so fast my friend. *Practical Assessment, Research & Evaluation, 12*, 1-6. Retrieved from <https://pareonline.net/getvn.asp?v=12&n=15>
- Mood, A., Graybill, F., & Boes, D. (1973). *Introduction of the theory of statistics*. (3<sup>rd</sup> ed.). East Windsor, NJ: McGraw Hill.
- Moran, K., Burson, R., & Conrad, D. (2017). *The doctor of nursing practice scholarly project: A framework for success*. Burlington, MA: Jones & Bartlett Learning.
- Mormer, E., & Stevans, J. (2019). Clinical quality improvement and quality improvement research. *Perspectives of the ASHA Special Interest Groups, 4*, 27–37. [https://doi.org/10.1044/2018\\_PERS-ST-2018-0003](https://doi.org/10.1044/2018_PERS-ST-2018-0003)
- Mueller, P. (2019). *Using the patient health questionnaire-9 to screen for major depression*. Retrieved from <https://www.jwatch.org/na48935/2019/04/18/using-patient-health-questionnaire-9-screen-major>
- Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., ... & Kirchner, J. E. (2015). A refined compilation of implementation strategies: Results from the Expert Recommendations for Implementing Change (ERIC) project. *Implementation Science, 10*, 1-14. doi: 10.1186/s13012-015-0209-1

- SBIRT secondary depression screening guide (PHQ9). (2011). Retrieved from [http://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP\\_PHQ9\\_Depression\\_Scoring\\_Guide.pdf](http://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP_PHQ9_Depression_Scoring_Guide.pdf)
- Schaeffer, A. M., & Jolles, D. (2019). Not missing the opportunity: Improving depression screening and follow-up in a multicultural community. *Joint Commission Journal on Quality and Patient Safety*, 45, 31–39. <https://doi.org/10.1016/j.jcjq.2018.06.002>
- Sewell, D. (2016). *Older adults are being overlooked when it comes to mental health care*. Retrieved from <http://careforyourmind.org/older-adults-are-being-overlooked-when-it-comes-to-mental-health-care/>
- Shim, R., & Rust, G. (2013). Primary care, behavioral health, and public health: Partners in reducing mental health stigma. *American Journal of Public Health*, 103, 774–776. <https://doi.org/10.2105/AJPH.2013.301214>
- Substance Abuse and Mental Health Services Administration. (2011). *Screening, brief intervention and referral to treatment (SBIRT) in behavioral healthcare*. Retrieved from [https://www.samhsa.gov/sites/default/files/sbirtwhitepaper\\_0.pdf](https://www.samhsa.gov/sites/default/files/sbirtwhitepaper_0.pdf)
- Tarricone, I., Stivanello, E., Poggi, F., Castorini, V., Marseglia, M. V., Fantini, M. P., & Berardi, D. (2012). Ethnic variation in the prevalence of depression and anxiety in primary care: A systematic review and meta-analysis. *Psychiatry Research*, 195(3), 91–106. <https://doi.org/10.1016/j.psychres.2011.05.020>
- Universalialia. (n.d.a). *Institutional and organizational performance assessment*. Retrieved from <https://www.universalialia.com/en/services/institutional-and-organizational-performance-assessment>

- Universalialia. (n.d.b). *Pocket guide for organizational assessment*. Retrieved from <https://www.universalialia.com/sites/default/files/outils-evaluation/fichiers/pocket-guide-en.pdf>
- U.S. Preventative Services Task Force. (2016). *Depression in adults: Screening*. Retrieved from <https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/depression-in-adults-screening1>
- Verma, M., Horrow, J., & Navarro, V. (2019). A behavioral health program for alcohol use disorder, substance abuse, and depression in chronic liver disease. *Hepatology Communications*, 3, 646–655. <https://doi.org/10.1002/hep4.1328>
- World Health Organization. (2017). *Mental health of older adults*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults>
- World Health Organization. (2018). *Depression*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/depression>

Appendix A

Patient Health Questionnaire-9

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

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 figety 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	0	1	2	3

add columns  +  +

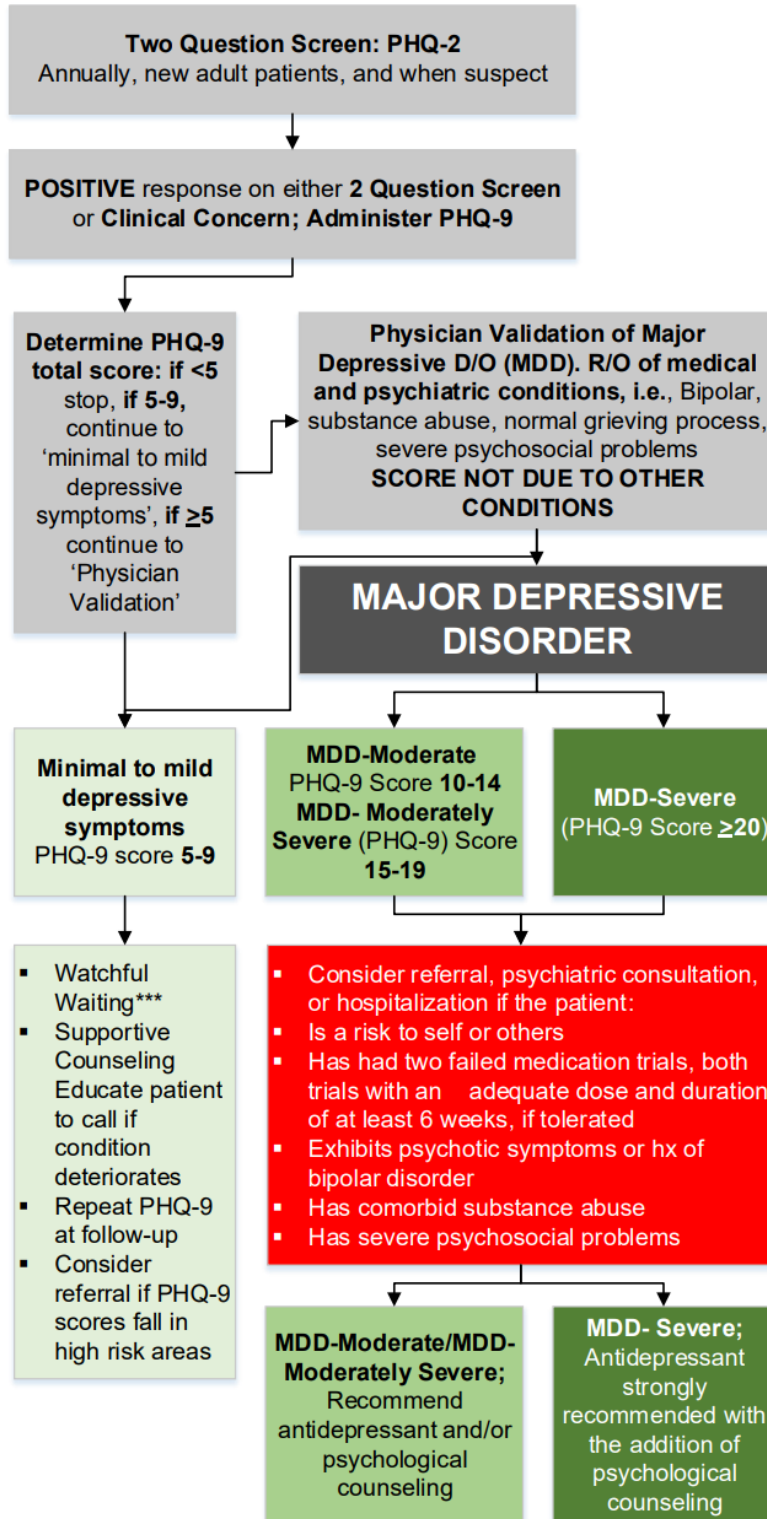
(Healthcare professional: For interpretation of TOTAL, TOTAL:   
please refer to accompanying scoring card).

10. 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	_____

Appendix B

CCNC Adult Depression Toolkit for Primary Care

**Adult (>18 years) Depression Flow Chart (Generic)**



## Overview of Care Process in the Treatment of Depression

### STEP 1: SCREENING AND DIAGNOSIS

- Display of risk factors and warning signs for possible Depressive Diagnosis
- Completion of **2 QUESTION** screening for all patients
- Completion of **PHQ-9** for patients with positive screening
- **Scoring** PHQ-9 for diagnosis and severity
- **Additional Screening** for Suicide Risk, Substance Abuse, Bipolar Disorder, Psychosis, or comorbidity as indicated with referral to a mental health provider for urgent/emergent cases

### STEP 2: TREATMENT SELECTION

1. **Clinical Interview** to identify previous history/treatment of depression or other mental health disorder
2. Utilize PHQ-9 Score and patient preference to drive selection of treatment plan:
  1. Referral to Mental Health provider for **Urgent/Emergent Care**
  2. **Wait and Observe**
  3. **Medication** alone
  4. **Medication plus Counseling**
  5. **Counseling** alone
3. **Referral** to Clinical phone follow up for Education and Follow---Up Plan

### STEP 3: INITIATION OF TREATMENT PLAN

- Provide the following:
  1. **Educational Materials** with **Verbal Instruction** during office visit or by Phone Call and Mailing within
  2. Provide assistance with **obtaining medication** (samples, sliding scale) to include written medication
  3. Establish **Treatment Care Plan** with patient engagement
  4. **Schedule** time for first clinical phone follow---up contact

### STEP 4: ACUTE PHASE FOLLOW-UP (See Clinical Decision Points (CDPs below))

- **1<sup>st</sup> FOUR MONTHS of treatment – Goal: achieve remission**
- Clinical phone call follow-up at set intervals per protocol, to include:
  1. Documentation of repeat PHQ-9 to determine treatment response
  2. Use of **Medication Effectiveness/Side Effect Evaluation** tool to determine patient's medication compliance and effectiveness of therapy if patient experiences sub-optimal response
  3. Reminders to foster patient adherence to follow-up appointment schedule with Primary Care Provider schedule with Primary Care Provider (**Initial Visit + 3 PCP/MHP Visits** over the first 12 weeks of treatment is recommended by HEDIS)
- Continued assistance with obtaining medication at no charge / reduced charge
- Ongoing communication with PCP regarding patient's progress

### STEP 5: CONTINUATION AND MAINTENANCE CARE

- **Goal: Prevent relapse/recurrence**
- Continue pharmacologic and/or counseling treatment for:
  - 1<sup>st</sup> episode – 7 to 12 months of continuous pharmacotherapy
  - 2<sup>nd</sup> episode – 1 to 2 years OR lifetime with complicating factors
  - 3<sup>rd</sup> episode – lifetime therapy if all 3 episodes occur within one 5 year period
- Provide patient education related to **symptoms of relapse**
- Continue schedule of **repeat PHQ-9** per phone call to monitor patient adherence to treatment plan and to provide support/re-teaching as needed
- Ensure that patient is scheduled for further **PCP visits** if PHQ-9 scoring indicates recurrence/worsening of symptoms
- PCP to determine patients at highest risk for need of **Long Term Prophylactic Treatment**
- Follow patients requiring treatment > 6 months per protocol

Appendix C

Institutional and Organizational Assessment (IOA) Model



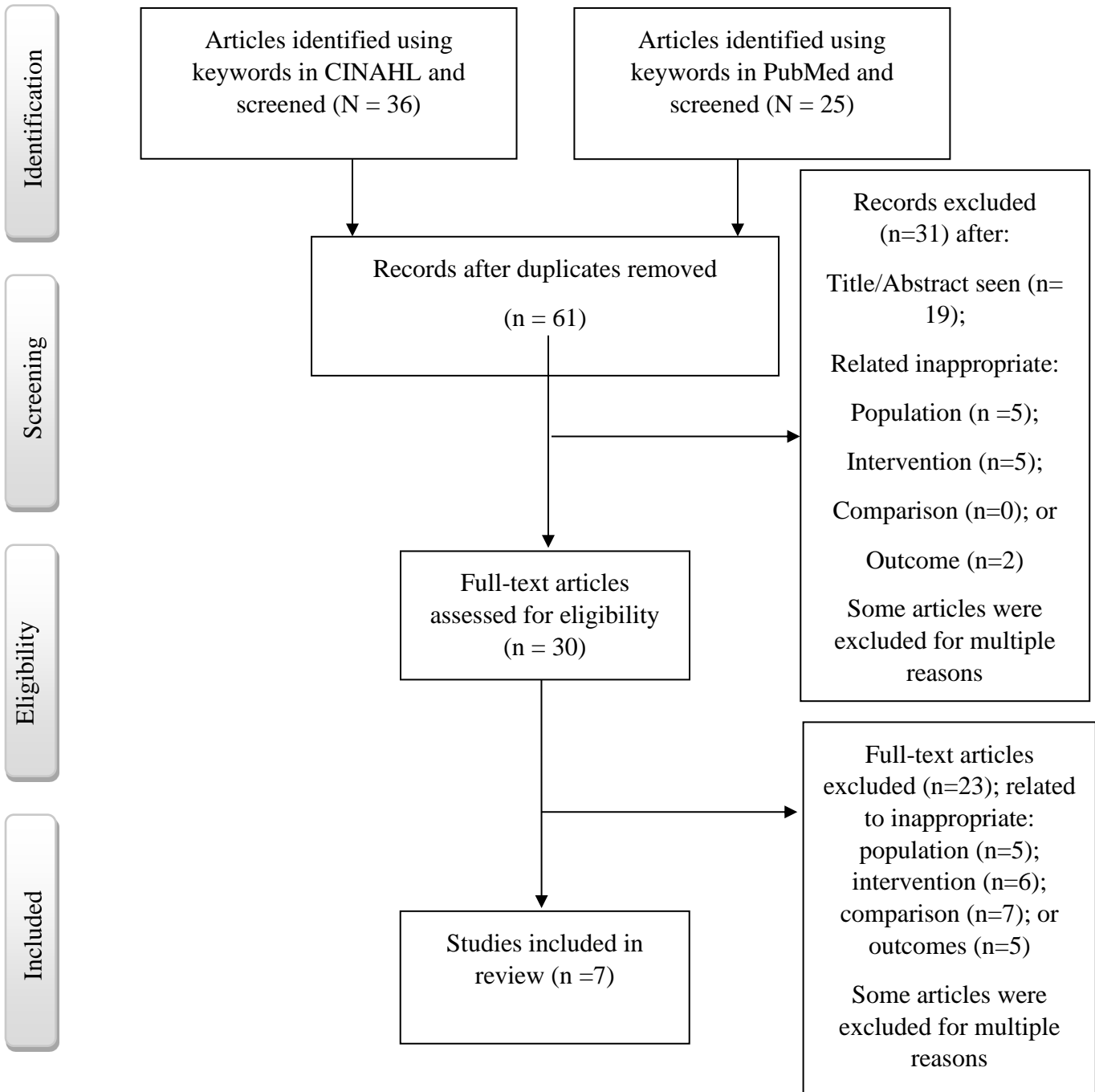
## Appendix D

## SWOT Analysis of Two West Michigan Satellite Clinics

<b><i>SWOT Analysis</i></b>	
<b><i>Strengths</i></b>	<b><i>Weaknesses</i></b>
<ul style="list-style-type: none"> <li>• An extension of a nurse-managed healthcare system in West Michigan</li> <li>• Clear and concise goals and quality measures for depression</li> <li>• Committed employees who strive to help the underserved population</li> <li>• Desire to learn more about depression treatment</li> <li>• Small clinic size allows of ease of implementation and evaluation of project</li> <li>• Built-in PHQ-9 questionnaire in Athena EHR</li> <li>• Onsite location allows for development of relationships between patients and staff</li> <li>• 60-minute appointment times for patients</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of staff knowledge on depression treatment options</li> <li>• Both clinics only open for two days a week, four hours at a time</li> <li>• Only one NP treating patients at a time</li> <li>• Brand new clinic with minimal established patients</li> <li>• Complex patient population with multiple comorbidities and competing factors of health, including socio-economic issues</li> </ul>
<b><i>Opportunities</i></b>	<b><i>Threats</i></b>
<ul style="list-style-type: none"> <li>• Continue running independently once grant period is finished (after 1/2021)</li> <li>• Brand new clinic</li> <li>• Improving quality documentation</li> <li>• Fully utilize the tools available in the EHR</li> <li>• Additional time/days allotted when more patients become established</li> <li>• Macro organization's involvement in practice changes</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of grant based on quality measure reporting</li> <li>• Lack of patient awareness of clinic</li> <li>• Residents of apartments already have established PCP</li> <li>• Resident skepticism of clinics</li> <li>• Resident misunderstanding of clinic purpose</li> <li>• Resident lack of compliance to visit and treatment</li> </ul>



Appendix E  
PRISMA Diagram



Appendix E. Flow diagram of search selection process. Adapted from “Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement,” by D. Moher, A. Liberati, J. Tetzlaff, D. Altman, and PRISMA Group. Copyright 2009 by PLoS Medicine.

## Appendix F

Literature Review Table

Author (Year) Purpose	Design (N)	Inclusion Criteria	Intervention vs Comparison	Results	Conclusion
Shaffer & Jolles (2019) To determine if implementation of SBIRT at a FQHC improved the efficacy of patient depression screening, treatment and follow up	Quality Improvement N=237	Adult population (>18 years old); Outpatient setting; Depression	Pre-test Post-test that compared screening, treatment and follow up before and after SBIRT implementation	PHQ-9 screening improved from 32.5% to 85.2% Evidence-based depression treatment and follow up care increased from 30.0% to 75.0% 15.5% of patients achieved complete remission of depression	Rapid-cycle improvement with a population health focus demonstrated improved depression screening and follow-up within a multicultural community health center.  Outcomes were attributed to team engagement and the use of standardized tools.  These processes can be applied to other primary care settings
Hargraves et al. (2017) To determine if SBIRT implementation improved depression screening and referral to treatment	Descriptive Longitudinal Design N=23,861	Adult population (>18 years old); Outpatient setting; Depression	No comparison was used in the study; it looked at screening, intervention and referral to treatment after SBIRT implementation	Out of 23,861 patients: 14,062 pre-screens completed with PHQ2 3659 positive pre- screens 3706 full screens completed with PHQ9 2294 screened positive with PHQ9 1050 (45.8%) interventions initiated 693 (66%) referrals for treatment	SBIRT is an effective tool that can empower primary care providers to identify and treat patients with mental health problems before costly symptoms emerge.
Dwinnells (2015) The purpose of was to examine the effectiveness of the behavioral health	Quasi- experimental design N=1,570 experimental N=1,685 control	Adult population (>18 years old); Outpatient setting; Depression	compared screening, treatment and counseling with SBIRT implementation (experimental)	Compared with 11.4% of the control site patients, 25.3% of the SBIRT intervention site patients had positive findings for depression ( $P < .001$ ). Referral rates for treatment and	SBIRT is an effective tool to improve rates for diagnosis of behavioral health problems, rates of brief

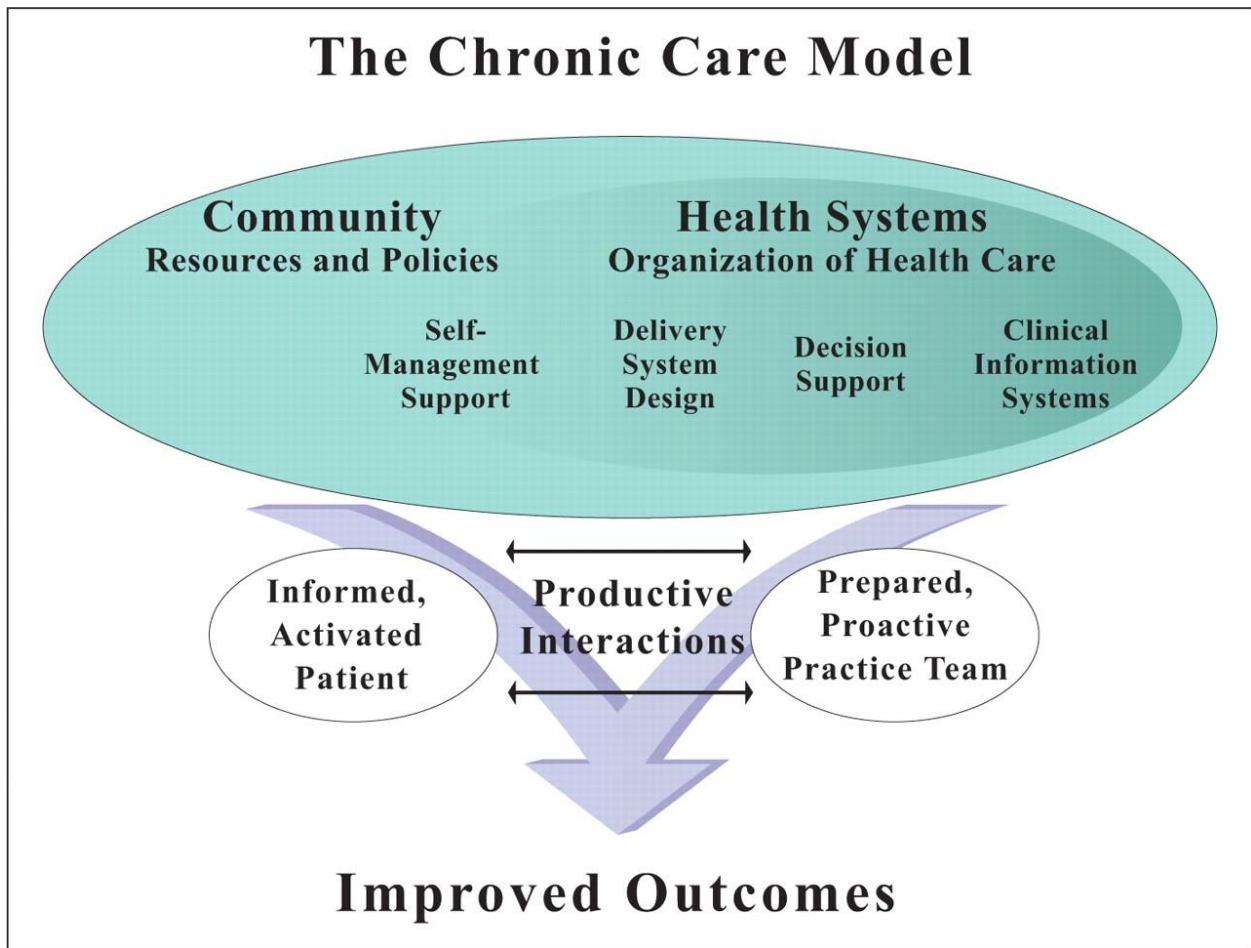
<p>Screening, Brief Intervention, and Referral to Treatment (SBIRT) program at a community health center.</p>			<p>and no SBIRT (control)</p>	<p>counseling at the test site significantly exceeded the rates for the control site (12.4% vs 1.0%, respectively; <math>P &lt; .001</math>)  <math>n = 793</math> screened positive for depression with PHQ9                      516 (65.1%) had brief intervention                      583 (73.5%) diagnosed with depression                      97 (12.2%) referred out for counseling</p>	<p>intervention, and referrals of patients.</p>
<p>Burdick &amp; Kessler (2017)                      To determine if implementation of SBIRT in EHR improved clinical outcomes for patients with behavioral health problems</p>	<p>Retrospective descriptive convenience cohort with age-matched comparison group  <math>N=866</math> experimental  <math>N=850</math> control</p>	<p>Adult population (&gt;18 years old);                      Outpatient setting;                      Depression</p>	<p>compared screening, diagnosis, treatment and referral with EHR SBIRT implementation in experimental and control group</p>	<p>60% positive for depression.                      Positive and negative screens led to higher rates of documentation of brief intervention (BI) compared with a matched sample who did not receive screening, including changes in psychotropic medications, updated BH terms on the problem list, or referral for BH intervention.                      Clinical process outcomes changed even when screening was negative.</p>	<p>Using SBIRT tools changed clinical process metrics even when screening was negative, perhaps due to conversations about BH not captured in the screening flowsheet.</p>
<p>Dwinnells &amp; Misik (2017)                      To explore which of 3 different integrative behavioral health care screening and management processes were the most efficient and effective in prompting behavioral health screening, identification, interventions, and referrals</p>	<p>Prospective, 3-period, interrupted time series study  <math>N=1821</math> for period 1;  <math>N=1585</math> for period 2; and  <math>N=1508</math> for period 3</p>	<p>Adult population (&gt;18 years old);                      Outpatient setting;                      Depression</p>	<p>Three SBIRT processes were tested and studied for clinical efficiency and effectiveness during three periods and compared:                      (A) patients using electronic tablets to complete both a screening tool and personal demographic and insurance intake data with care coordinator to support the</p>	<p>A total of 99.5% (<math>P &lt; .001</math>) of medical patients completed behavioral health screenings;                      Using SBIRT, brief intervention rates nearly doubled to 83% (<math>P &lt; .001</math>) and 100% (<math>P &lt; .001</math>) of identified at-risk patients had referrals made using a combination of electronic tablets, electronic medical record, and behavioral health care coordination.</p>	<p>The findings of this investigation indicate the best behavioral health integrative health care delivery process in a large clinical outpatient setting includes the combined use of EMR, e-tablets to efficiently screen and identify at-risk patients using SBIRT, and</p>

			<p>patient and the process.                  (B) patients using a paper screening tool only with no care coordinator support                  (C) patients using electronic tablets to complete a screening tool with care coordinator support</p>		<p>incorporating care coordinators to improve effectiveness and efficiency of screening, identifying, and treating patients.</p>
<p>Dwinnells (2016)                  To determine how patients and providers view behavioral health screening (SBIRT) as part of an integrative healthcare program</p>	<p>Cross sectional                  N=2482 patients                  N=8 providers</p>	<p>Adult population (&gt;18 years old);                  Outpatient setting;                  Depression</p>	<p>Stratified random sampling was used to recruit patients and healthcare providers through quota and census sampling designs respectively. The primary outcome measure was to determine the satisfaction of patients and providers in the outpatient clinical setting with regards to SBIRT. No comparisons were measured.</p>	<ul style="list-style-type: none"> <li>• Surveys indicate a high level of satisfaction with behavioral health screens in the clinical setting</li> <li>• Ninety seven percent of patients chose to participate in the survey indicating acceptance of the process and 97% agreed they would recommend the screening to others in order to help doctors improve care.</li> <li>• 94% of patients indicate they were not upset by being asked these questions.</li> <li>• 95% of patients surveyed reveal they have never had counseling or treatment despite past indication of a behavioral health problem.</li> <li>• All 8 providers indicated that SBIRT aided in their behavioral health diagnostic abilities and enabled them to be</li> </ul>	<p>Satisfaction with behavioral health screening by patients and providers with improved time efficiency makes SBIRT an effective and efficient tool to support integrative healthcare in a clinical setting and improves screening, diagnosis and treatment of depression in patients.</p>

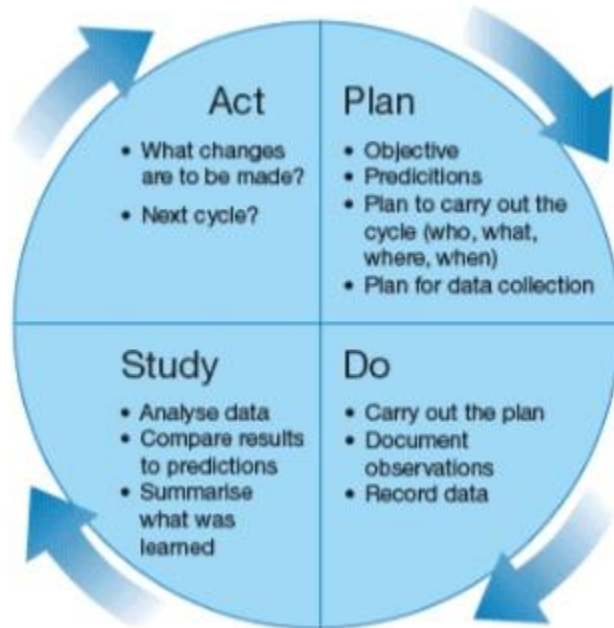
				more engaged in the process with the patient	
Verma, Horrow & Navarro (2019) To implement a behavioral health program based on the SBIRT model and assess its acceptability and effectiveness in improving quality of life of patients with chronic liver disease.	Quality Improvement N=303	Adult population (>18 years old); Outpatient setting; Depression	PHQ9 scores completed at baseline, 3 months, and 6 months and compared. At 6 months, participants also completed an end of study acceptability survey.	<ul style="list-style-type: none"> <li>• Out of 303 participants, depression was most common (48.4%).</li> <li>• For the 95 patients who underwent brief intervention, quality of life improved from baseline to 3 and 6 months (<math>P &lt; 0.001</math>) and patients with depression improved the most.</li> <li>• Depression was the only independent predictor of change in quality of life over time.</li> <li>• Of the enrolled patients, 82% agreed BIs improved their overall care and 87% indicated a desire to continue with the behavioral program</li> </ul>	An outpatient behavioral health program based on the SBIRT model is acceptable to patients with chronic liver disease and may help improve quality of life over time. SBIRT model should be applied to other patient populations to determine its effectiveness.

Table 1. Articles included in review with author, year, purpose, design, inclusion, results, conclusions.

Appendix G  
Chronic Care Model



Appendix H  
PDSA Framework



Appendix I  
IRB Letter of Determination



DATE: October 22, 2019

TO: Della Hughes-Carter  
FROM: Office of Research Compliance & Integrity  
PROJECT TITLE: The Effect of the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model on Adult Depression in an Outpatient Setting  
REFERENCE #: 20-102-H  
SUBMISSION TYPE: IRB Research Determination Submission

ACTION: Not Research  
EFFECTIVE DATE: October 22, 2019  
REVIEW TYPE: Administrative Review

Thank you for your submission of materials for your planned scholarly activity. It has been determined that this project does not meet the definition of research\* according to current federal regulations. The project, therefore, does not require further review and approval by the IRB. Scholarly activities that are not covered under the Code of Federal Regulations should not be described or referred to as "research" in materials to participants, sponsors or in dissemination of findings. While performing this project, you are expected to adhere to the institution's code of conduct and any discipline-specific code of ethics.

A summary of the reviewed project and determination is as follows:

The purpose of this quality improvement project is to implement evidence-based practice to improve depression screening and treatment in geriatric patients using the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model at two local primary care clinics. This systematic project is being implemented to improve the care provided to patients at these two clinics. Because it is not an investigation and it is not designed to contribute to generalizable knowledge, it does not meet the federal definition of research and IRB oversight is not needed.

This determination letter is limited to IRB review. It is your responsibility to ensure all necessary institutional permissions are obtained prior to beginning this project. This includes, but is not limited to, ensuring all contracts have been executed, any necessary Data Sharing Agreements and Material Transfer Agreements have been signed, and any other outstanding items are completed.

An archived record of this determination form can be found in IRBManager from the Dashboard by clicking the "\_xForms" link under the "My Documents & Forms" menu.

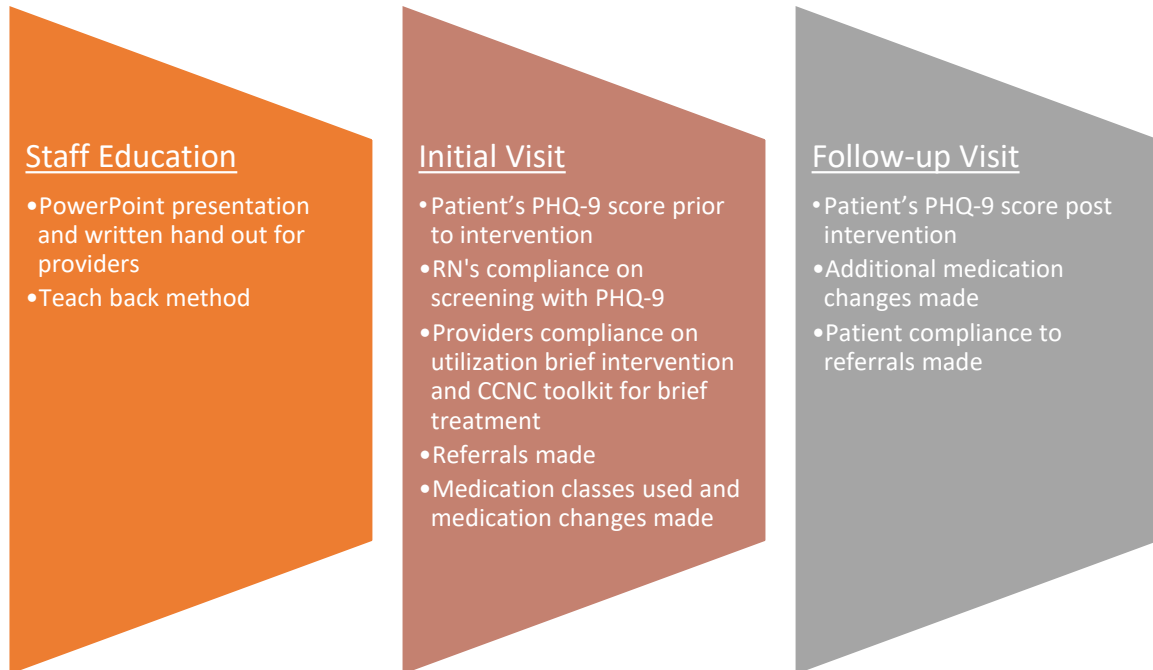
If you have any questions, please contact the Office of Research Compliance and Integrity at (616) 331-3197 or [rci@gvsu.edu](mailto:rci@gvsu.edu). Please include your study title and study number in all correspondence with our office.

\*Research is a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge (45 CFR 46.102 (d)).



## Appendix J

## SBIRT Model Project Plan



Appendix K  
Monthly timeline

October	November	December	January	February	March	April
IRB application submission 10/7/2019	Proposal defense 11/7/2019	Determine expected go-live date	Meet with statistician	Address any staff concerns on the project	Complete data collection	Project defense
Pending IRB approval	Educational staff meeting 11/19/2019	Review pre-implementation on patient data	Weekly chart reviews and compliance visit	Weekly chart reviews and compliance visit	Write project defense	Present findings to staff
	Staff educational sessions complete by 11/26/2019					Upload to Scholarworks

Appendix L  
Excel Codebook for Data Collection

1	SAS Descriptor Code	Data Code	Data Description	Type of Data
2	Prepost	1= pre 2= post	Pre or post SBIRT intervention	numeric
3	Gender	1= female; 2= male; 3=other	Gender identity	Numeric
4	Race	1=Caucasian; 2=African American; 3=Hispanic; 4=Asian; 5=Other	Race	Numeric
5	Culture	1=Anglo American; 2=Latin American; 3=African American; 4=Other	Culture identity	
6	Age	Exact numerical age	Age in years	Numeric
7	Visit	1= initial evaluation; 2= follow up visit	Current Visit type during implementation period	Numeric
8	PHQ9_Score	Exact PHQ-9 numerical score	Patient's PHQ-9 score	Numeric
9	RN_Comp	1=yes; 2=no	RN screened patient with PHQ-9 on their own initiation	Numeric
10	Prov_BI	1=yes; 2=no	Provider compliance with performing brief intervention	numeric
11	Prov_Toolkit	1=yes; 2=no	Provider compliance using CCNC Toolkit treatment guidelines during patient visit	
12	Referrals	1=Psychiatric services; 2=Counseling Services	Type of Referral Made	Numeric
13	Ref_Comp	1=yes; 2=no	Patient compliance to referral made	
14	Med_Class	1=SSRI; 2=SNRI; 3=NDRI; 4=TCA; 5=MAOI	Antidepressant medication class prescribed	numeric
15	Med_Change	1=yes; 2=no	Antidepressant medication changes (change in dosage or medication class) made during implementation period	numeric
16				

## Appendix M

## Data Gathering Tool and Plan

**Staff Education Phase**

- Did the RN understand the educational materials given?
  - Teach back method
  - No statistical measure gathered
- Did the providers understand the educational materials given?
  - Teach back method
  - No statistical measure gathered
- Did the social work intern understand the educational materials given?
  - Teach back method
  - No statistical measure gathered

**Initial Visit**

- Did the RN screen the patient with the PHQ-9 on their own initiative?
  - Measured: 1=yes; 2=no
  - Represented as a percentage
  - Date will be gathered by chart audit during random weekly visits
- Did the providers perform a brief intervention with the patient when the social work intern was unable/unavailable?
  - Measured: 1=yes, 2=no
  - Represented as a percentage
  - Data will be gathered through direct observation by DNP student during random weekly visits
- Did the providers use the CCNC treatment guidelines during patient visit?
  - Measured: 1=yes, 2=no
  - Represented as a percentage
  - Data will be gathered through direct observation by DNP student during random weekly visits
- What was the patient's PHQ-9 score during initial visit?
  - Exact PHQ-9 numerical score
  - Represented as real number
  - Data will be gathered through chart reviews
- What type of referral was made during initial patient visit?
  - Measured: 1=psychiatric services, 2=counseling services
  - Represented as a percentage
  - Data will be gathered through chart reviews
- What type of antidepressant medication class was prescribed during initial visit?
  - Measured: 1=SSRI; 2=SNRI; 3=NDRI; 4=TCA; 5=MAOI
  - Represented as a percentage
  - Data will be gathered through chart reviews
- Were antidepressant medication changes made during initial visit?
  - Measured: 1=yes, 2=no

- Represented as a percentage
- Data will be gathered through chart review

**Follow-up Visit**

- What was the patient's PHQ-9 score during the follow-up visit?
  - Exact PHQ-9 numerical score
  - Represented as real number
  - Data will be gathered through chart reviews
- Was there a decrease in PHQ-9 score during this visit compared to the initial visit?
  - Measured: % change in comparison to data from initial visit
  - Analyzed through t-test analysis
- Were additional antidepressant medication changes made during follow-up visit?
  - Measured: 1=yes, 2=no
  - Represented as a percentage
  - Data will be gathered through chart review
- Were patients compliant with referrals made?
  - Measured: 1=yes, 2=no
  - Represented as a percentage
  - Data will be gathered through chart review

## Appendix N

## Doctor of Nursing Practice Project Financial Operating Plan

Revenue	
Project Manager Time (in-kind donation) <i>Note.</i> Based on the DNP student hourly rate over a period of three semesters	\$15,500.00
Cost avoidance for inpatient stay at psychiatric hospital Inpatient stay at psychiatric hospital ~ \$875.00/day x ~ 20 patients	\$17,500.00
<b>Total</b>	<b>\$33,000.00</b>
Expenses	
Project Manager Time (in-kind donation) <i>Note.</i> Based on the DNP student hourly rate over a period of three semesters	\$15,500.00
Loss of Productivity due to Staff Education: 1. RN ~\$23/hour wage x 1-hour 2. NP ~\$125/hour wage x 1-hour x 2 NPs	\$23.00 \$250.00
Copies of handouts \$0.05 x 8 copies of handouts <i>Note.</i> \$0.05 is the average cost of printing a black and white paper. Copies of handouts include all needed printed documents for this project (i.e. handout for RN and NPs)	\$0.40
<b>Total</b>	<b>\$15,773.40</b>
<b>Net Operating Plan</b>	<b>\$17,211.60</b>

Appendix O  
Patient Demographics Table

Demographic	Value	Frequency	Percentage (%)
Gender	Male	8	80.0
	Female	2	20.0
Race	Caucasian	7	70.0
	African American	3	30.0
	Hispanic	0	0.0
	Asian	0	0.0
	Other	0	0.0
Culture	Anglo American	7	70.0
	Latin American	0	0.0
	African American	3	30.0
	Other	0	0.0
Age	55-59	1	10.0
	60-64	4	40.0
	65-69	3	30.0
	70-74	2	20.0

Appendix P

Statistical Analysis of PHQ-9 scores

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PHQ9_Score	14.06	17	4.930	1.196
	Post_PHQ9	8.59	17	1.543	.374

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	PHQ9_Score & Post_PHQ9	17	.718	.001

**Paired Samples Test**

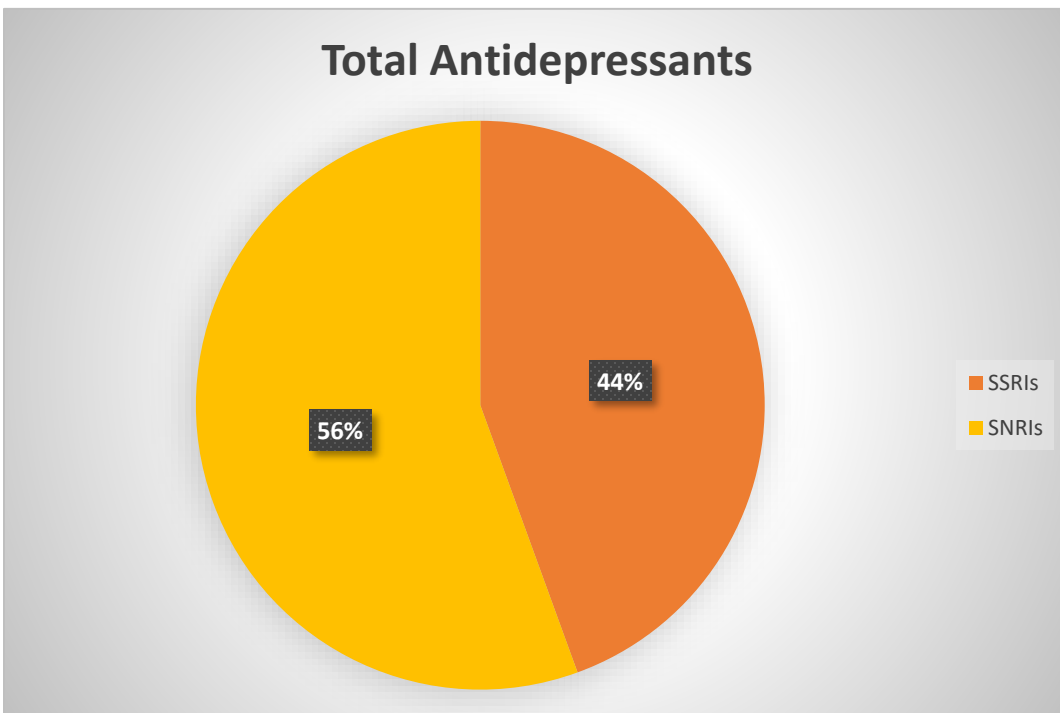
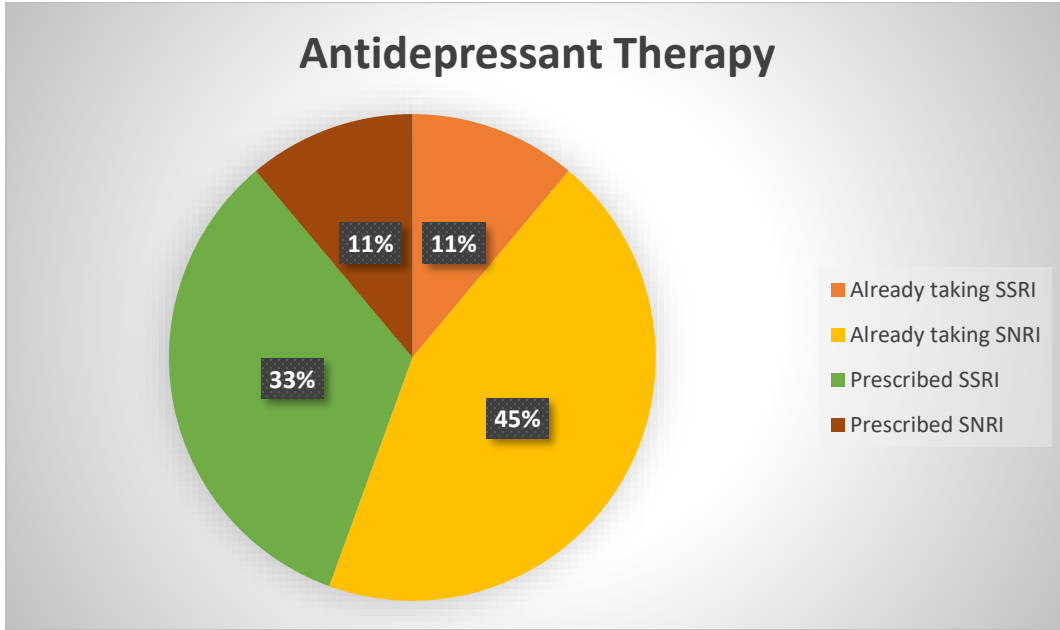
		Paired Differences					t
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	PHQ9_Score - Post_PHQ9	5.471	3.970	.963	3.429	7.512	5.681

**Paired Samples Test**

		df	Sig. (2-tailed)
Pair 1	PHQ9_Score - Post_PHQ9	16	.000



Appendix Q  
Graphs of Antidepressant Therapy

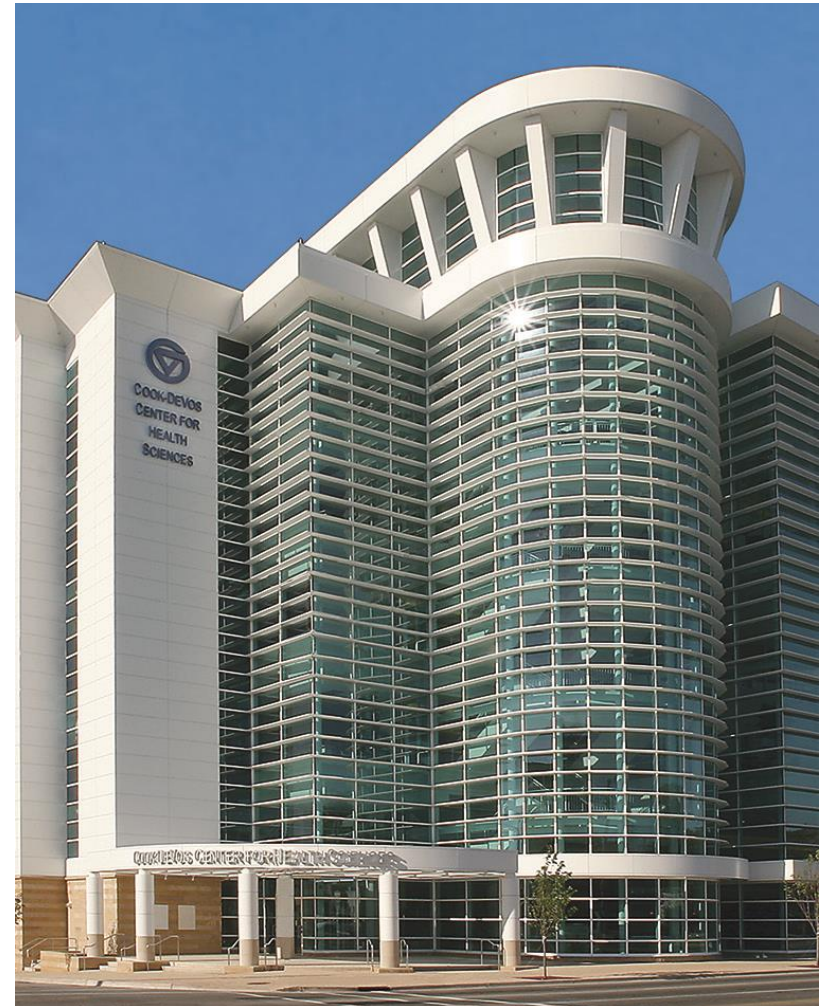


Appendix R  
Staff Compliance Table

Variable		
RN's compliance with screening patient's with PHQ-9	Yes	17
	No	0
Provider's compliance with performing Brief Intervention	Yes	2
	No	0
Provider's compliance with utilizing CCNC Toolkit during initial visit	Yes	4
	No	6

# The Effect of the Screening, Brief Intervention, Referral to Treatment (SBIRT) Model on Adult Depression in an Outpatient Setting

Genevieve E. Sweeney BSN, RN  
DNP Project Final Defense  
4/6/2020



# Acknowledgements

- **Project Advisor:** Dr. Della Hughes-Carter, DNP, RN, BC-GNP
- **Advisory Team:** Dr. Joy Washburn, EdD, RN, WHNP-BC
- **Site Mentor:** Sarah Faubert, LLMSW

# Objectives for Presentation

- Identify the clinical problem
- Review evidence-based solutions
- Review project plan
- Discuss QI project implementation, results, practice implications, and sustainability plan
- Discuss enactment of the DNP essentials throughout the project

# Introduction

- Depression is one of the most common chronic conditions in the world
  - In 2018, over 300 million individuals suffered from the disease globally, and it was considered the leading cause of disability worldwide (WHO, 2018)
- 15% of individuals over 60 suffer from a mental health condition, 7% suffering from depression (WHO, 2017)
  - Despite this, depression continues to be **under-screened, inaccurately assessed and diagnosed, and poorly treated** in outpatient settings (Bor, 2015; WHO, 2018)

# The Problem

- Providers lack knowledge to care for patients with depression (Bor, 2015)
- Rely on clinical judgement, instead of a screening tool or evidence-based toolkit, when a patient presents with depression symptoms (Schaeffer & Jolles, 2019)
  - This results in significant under-diagnosis and inappropriate treatment of depression (Tarricone et al., 2012; Carey et al., 2014; Fuchs et al., 2015)



# Optimization of Depression Care

- Utilization of resources can help providers appropriately **screen, diagnose** and **treat** an individual with depression
  - PHQ-9 (Kroenke, Spitzer, & Williams, 2001)
  - CCNC Adult Depression Toolkit for Primary Care (2015)

## How to include in patient care?

Screening, Brief Intervention, Referral to Treatment (SBIRT) Model



# Organizational Assessment

# Overview of Organizations

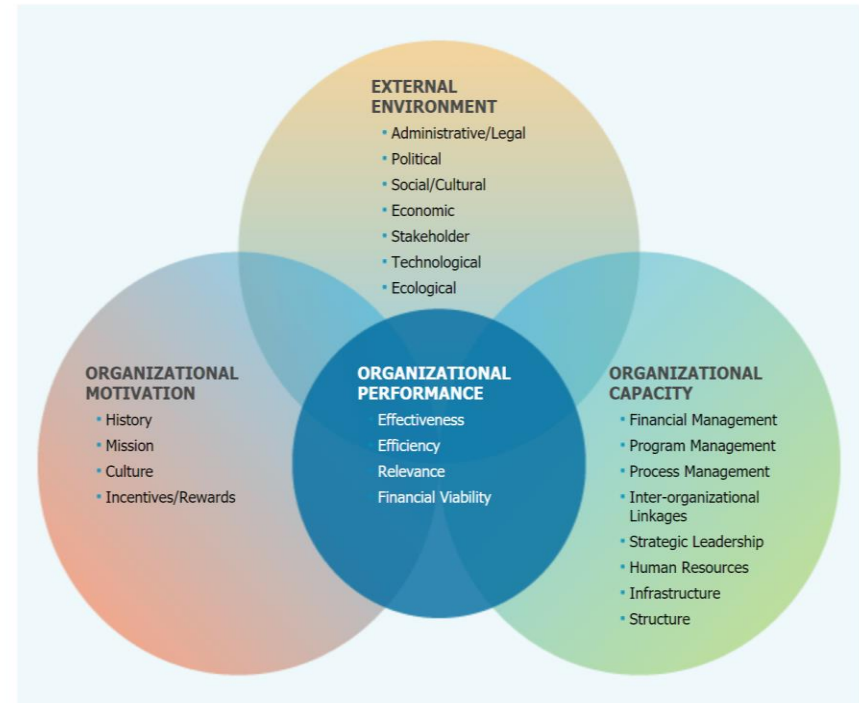
- Two satellite, academic primary care clinics
  - Serve residents of two low-income apartments
    - 60 residents for first clinic, 174 Residents for second clinic
    - Must be 62 or older to live at each facility, or be greater than 55 with a disability that prevents them from living independently
- Unique collaboration new to Michigan
- Currently grant-funded through January 2021

# Current Practices

- New patients at the two clinics are screened for depression using PHQ-9 at initial visit
  - This screening is written into the clinics' policies.
- Currently **no** protocol in place for repeat PHQ-9 screening at follow-up appointments, or appropriate depression treatment based on PHQ-9 score severity

# Framework: Institutional & Organizational Assessment Model

- Offers a rich methodology to determine organization strengths and weaknesses
  - Performance
  - External environment
  - Motivation
  - Capacity



# IRB Approval

- Grand Valley State University approved this project as a Quality Improvement (QI) project
- Letter of approval is available upon request

# SWOT

- **Strengths**
  - Extension of larger organization
  - Onsite location
- **Weaknesses**
  - New clinic
  - Lack of knowledge
- **Opportunities**
  - Macro organization involvement
  - Continue running
- **Threats**
  - Resident skepticism
  - PCP already established

SWOT Analysis	
Strengths	Weaknesses
<ul style="list-style-type: none"> <li>• An extension of a nurse-managed healthcare system in West Michigan</li> <li>• Clear and concise goals and quality measures for depression</li> <li>• Committed employees who strive to help the underserved population</li> <li>• Desire to learn more about depression treatment</li> <li>• Small clinic size allows of ease of implementation and evaluation of project</li> <li>• Built-in PHQ-9 questionnaire in Athena EHR</li> <li>• Onsite location allows for development of relationships between patients and staff</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of staff knowledge on depression treatment options</li> <li>• Both clinics only open for two days a week, four hours at a time</li> <li>• Only one NP treating patients at a time</li> <li>• Brand new clinic with minimal established patients</li> <li>• Lack of time to provide care and document for complex patient population</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>• Continue running once grant ends</li> <li>• Brand new clinic</li> <li>• Improving quality documentation</li> <li>• Fully utilize the tools available in the EHR</li> <li>• Additional time/days allotted when more patients become established</li> <li>• Macro organization's involvement in practice changes</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of grant based on quality measure reporting</li> <li>• Lack of patient awareness of clinic</li> <li>• Residents of apartments already have established PCP</li> <li>• Resident skepticism of clinics</li> <li>• Resident misunderstanding of clinic purpose</li> <li>• Resident lack of compliance to visit and treatment</li> </ul>

# Stakeholders

- Nurse Practitioners
- Registered Nurse
- Project Manager
- Patients
- Housing Committees



# Clinical Practice Question

Does the use of the screening, brief intervention, referral to treatment (SBIRT) model improve patient outcomes for patients with depression?



# Literature Review

# Purpose and Aim

- To explore the SBIRT model and whether there was evidence to support the protocol for a Doctor of Nursing Practice (DNP) project. The question that guided the review was:
  - In outpatient settings, does the use of the SBIRT model improve the screening, diagnosis and treatment of depression in adult patients?

# Review Method



- Rapid Integrative Review
- PubMed and CINAHL
  - English
  - 2014 and 2019
  - Keywords: “SBIRT”, “depression”, “improve”, “primary care”, “screening”, “treatment”, “implementation”, and “adult”
- Inclusion criteria:
  - adult participants (18+) with depression in outpatient settings,
  - included SBIRT in intervention and/or comparison,
  - provided outcomes that encouraged the use of SBIRT
- Exclusion criteria:
  - adolescent participants (<18),
  - did not include depression,
  - inpatient settings,
  - did not include SBIRT in the intervention and/or comparison
  - did not provide outcomes that encouraged the use of SBIRT

# PRISMA

## PRISMA Diagram

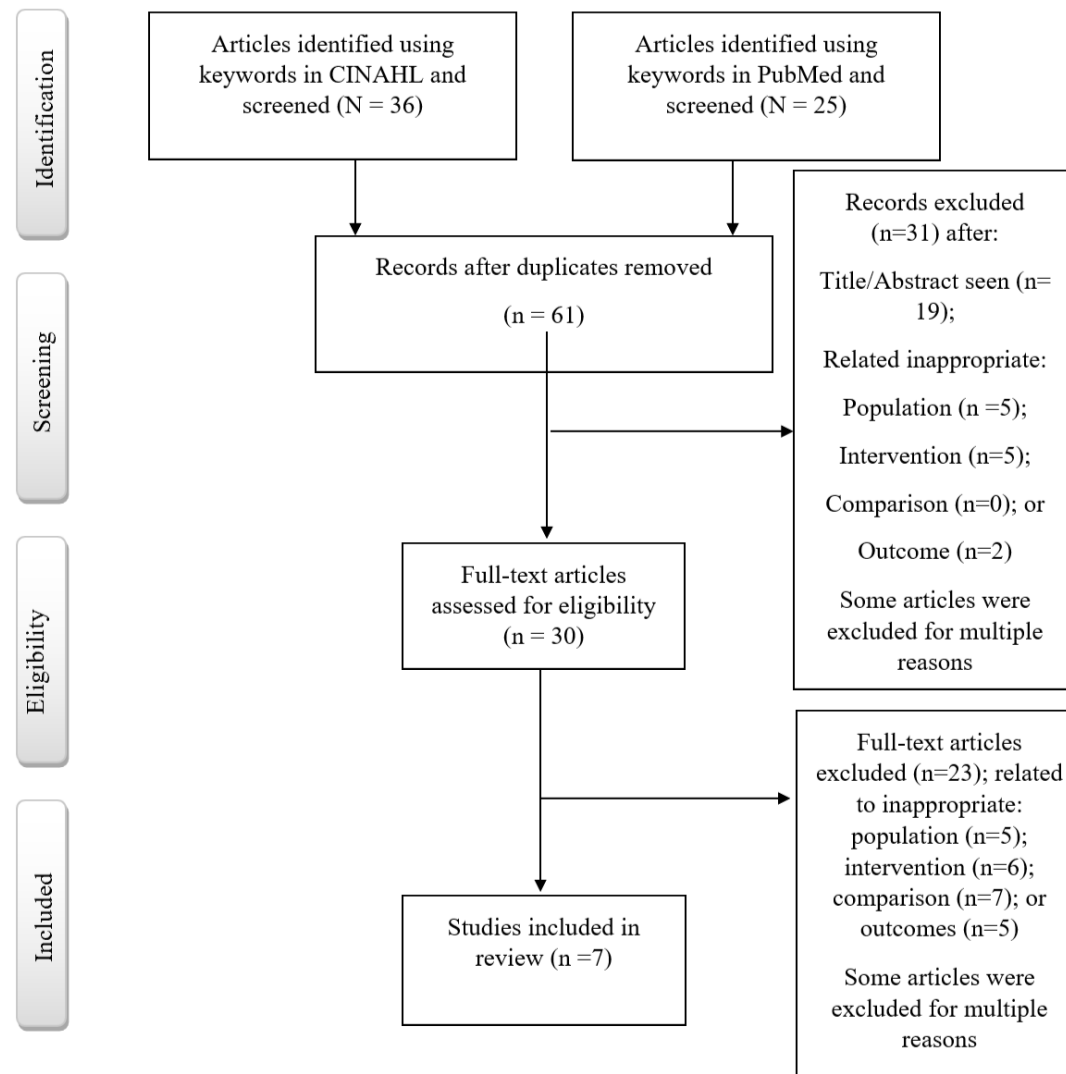


Figure 2.. Flow diagram of search selection process. Adapted from “Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement,” by D. Moher, A. Liberati, J. Tetzlaff, D. Altman, and PRISMA Group. Copyright 2009 by PLoS

# Results: Literature Review

- Utilization of the SBIRT Model improves depression screening, diagnosis and treatment by providers
  - When all components of the SBIRT model were used:
    - More patients **screened positive** for depression,
    - Received **more interventions** and **treatment**,
    - Were **more referred** for additional treatment (Dwinnells, 2015; Burdick & Kessler, 2017; Dwinnells & Misik, 2017; Hargraves et al., 2017; Schaeffer & Jolles, 2019)
    - Improved patient **quality of life** (Verma et al., 2019)

# Summary of Table

## Depression Screening & Diagnosis

- PHQ-9 screening improved from 32.5% to 85.2% (Schaeffer & Jolles, 2019)
- Out of 1570 participants, 793 or 50.5% screened positive for depression, 583 were diagnosed with depression, 516 had a brief intervention, and 97 were referred out for counseling (Dwinnells, 2015)
- Depression diagnosis occurred in 40% of participants screened versus only 19% of participants not screened, psychotropic medication changes occurred for 7% of participants screened versus 2% not screened, and referrals occurred for 10% of participants screened versus 4% not screened (Burdick & Kessler, 2017)
- 97% patients would recommend (Dwinnells, 2016)

## Depression Treatment

- Evidence-based depression treatment and follow up care increased from 30.0% to 75.0% and eventually, 15.5% of patients achieved complete remission of depression (Schaeffer & Jolles, 2019).
- 1050 out of 2294 participants that screened positive with the PHQ-9 (45.8%) received interventions and treatment initiated and 693 participants (66%) received referrals for additional treatment (Hargraves et al., 2017).
- Depression treatment and referrals for counseling for the experimental group (12.4%) significantly exceeded the rates for the control group (1.0%) [Dwinnells, 2015]

# Evidence for Project

- SBIRT Model
  - Evidence-based
  - Tailors treatment plan based on PHQ-9 score
  - PHQ-9 for screening
  - CBT for brief intervention
  - CCNC Toolkit for pharm treatment

## SBIRT Secondary Depression Screening Guide (PHQ9)

- Add the numbers associated with the corresponding answers plus the total from the 2 PHQ questions in the initial screen.
- Score of 3-4 = No Further Action
- Score of 5-9 = Conduct Brief Intervention (BI)
- Score of 10-14 = Conduct Brief Treatment (BT)
- Score of 15+ = Referral to Treatment (RT)

Over the last 2 weeks, how often have you been bothered by any of the following problems?				
Trouble falling or staying asleep, or sleeping too much	0 Not at all	1 Several days	2 More than half the days	3 Nearly every day
Feeling tired or having little energy	0 Not at all	1 Several days	2 More than half the days	3 Nearly every day
Poor appetite or overeating	0 Not at all	1 Several days	2 More than half the days	3 Nearly every day
Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0 Not at all	1 Several days	2 More than half the days	3 Nearly every day
Trouble concentrating on things, such as reading the newspaper or watching television	0 Not at all	1 Several days	2 More than half the days	3 Nearly every day
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 Not at all	1 Several days	2 More than half the days	3 Nearly every day
Thoughts that you would be better off dead or of hurting yourself in some way	0 Not at all	1 Several days	2 More than half the days	3 Nearly every day
For Office Use Only				TOTAL :
<b>Interpretation: 3-4 (Nothing); 5-9 (BI); 10-14 (BT); 15+ (RT)</b>				
<b>SBIRT CLASS</b>				
___ * Brief Intervention conducted				PT REF
___ ** Brief Treatment plan of care made & scheduled _____				PT REF
___ ***Referral to Treatment : referral to provider made & assessment scheduled				PT REF
<b>NEXT STEPS FOR DATA COLLECTION</b>				
BI * ---> [Complete Section B]			BT** or RT*** [Anticipate Completion of B-H]	

Figure 3. SBIRT secondary depression screening guide (PHQ9). (2011). Retrieved from [http://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP\\_PHQ9\\_Depression\\_Scoring\\_Guide.pdf](http://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP_PHQ9_Depression_Scoring_Guide.pdf)

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

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	0	1	2	3

add columns  +  +

(Healthcare professional: For interpretation of TOTAL, TOTAL:   
please refer to accompanying scoring card).

10. 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	_____



## Adult (>18 years) Depression Flow Chart (Generic)

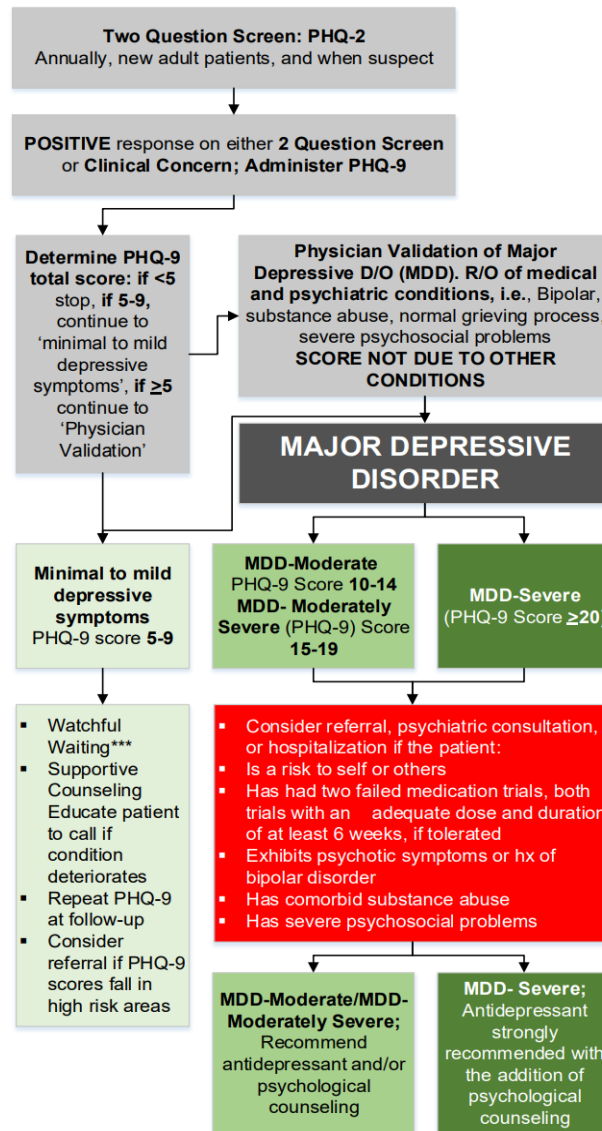
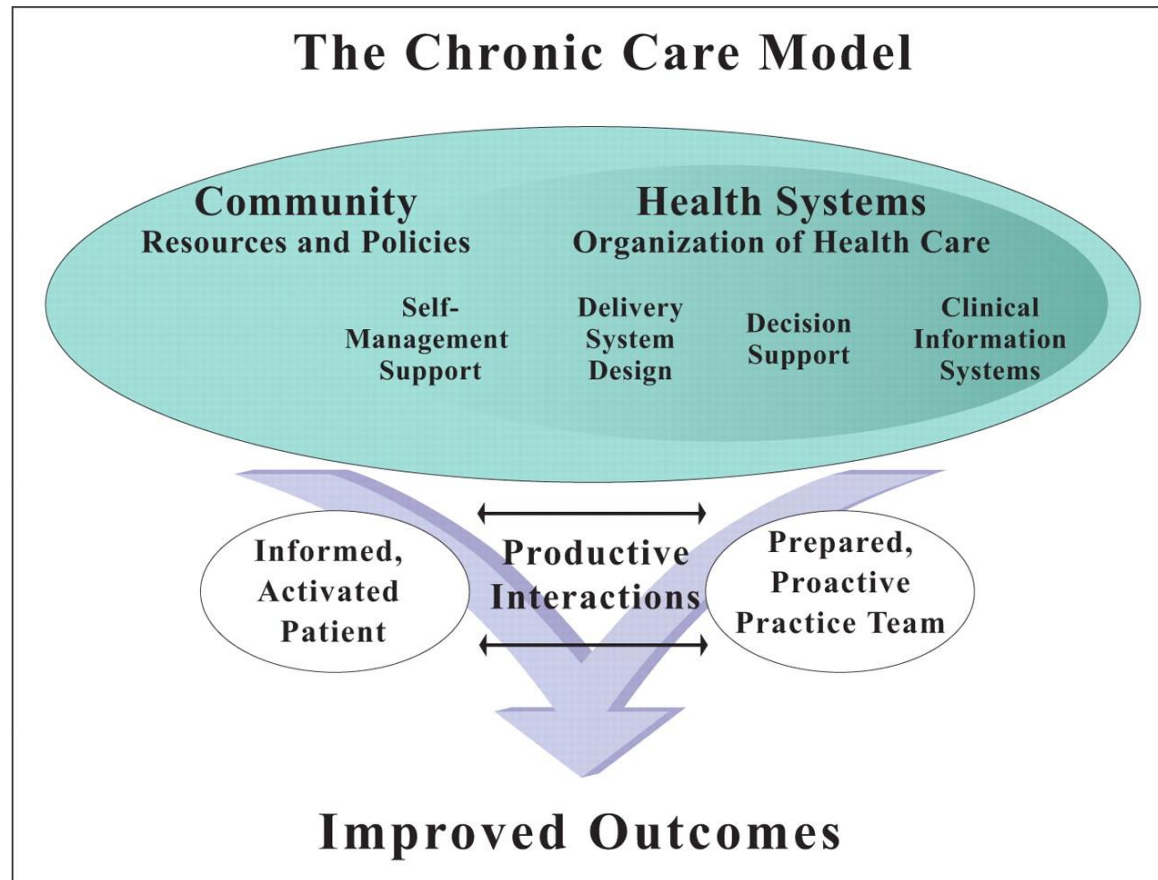


Figure 5. Community Care of North Carolina. (2015). *Adult depression toolkit for primary care*. Retrieved from <https://www.communitycarenc.org/media/related-downloads/ccnc-depression-toolkit.pdf>

# Model to Examine Phenomenon



# Project Plan

# Project Purpose & Objectives

**Purpose:** Improve care for patients with depression

**Method:** Implementation of SBIRT Model

**Project type:** Quality improvement

**Setting:** Two satellite primary care clinics in West Michigan

**Subjects:** Established patients at two clinics 55 years and older who are underinsured

- Exclusion criteria: patients managed by psychiatrist and patients with known substance abuse disorders

**Resources:** Financial, Human, Material & Technology

- Key stakeholders
- Printed educational hand-outs for staff
- PowerPoint presentation for providers
- Electronic health record

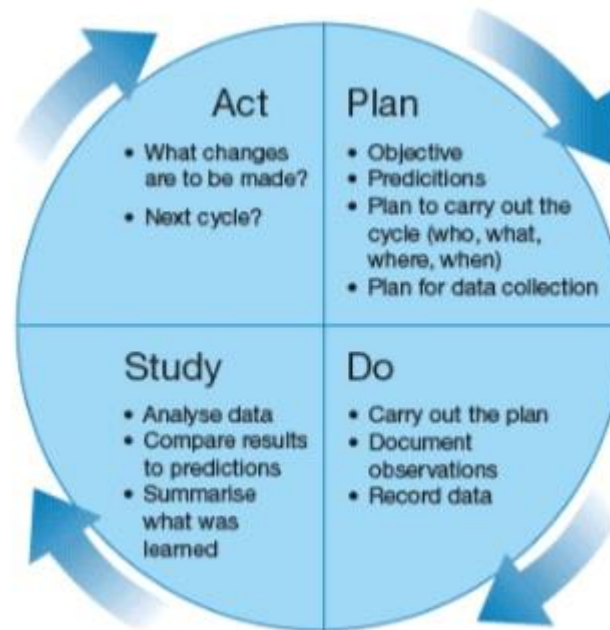
# Project Objectives

1. Does utilization of the SBIRT model decrease patient PHQ-9 scores at follow up visits?
2. Did the RN adhere to screening patients independently with PHQ-9 during patient intake?
3. Did providers adhere to performing brief interventions and brief treatments using the treatment guidelines by the CCNC during patient care?
4. Does utilization of the SBIRT model improve the number of referrals made to outside psychiatric or counseling services and are patients compliant to referrals?
5. What antidepressant medication classes are most often prescribed to patients?
6. Does utilization of the SBIRT model increase the number of antidepressant medication changes made?

# Setting & Participants

- Where: Two satellite primary care clinics in West Michigan
- Who:
  - Registered Nurse
  - Healthcare providers (Two NPs)
  - Patients

# Implementation Model



# Implementation Strategy & Element

## 1. Educated staff on the SBIRT model by November 26<sup>th</sup>, 2019.

- A formal educational meeting was held on November 21<sup>st</sup>, 2019 for clinic staff.
  - This meeting outlined specific steps of the intervention.
  - Feedback and questions were addressed.
- Educational session with individual RN was conducted on November 26<sup>th</sup>, 2019.
  - Written hand-outs
  - Teach back method to confirm understanding
- Provider education on the SBIRT Model was conducted on November 26<sup>th</sup>, 2019.
  - PowerPoint presentation
  - Written hand-outs
  - Teach back method to confirm understanding



# Implementation Strategy & Element

2. Gathered data through chart audit and direct observation December 19, 2019 – March 12, 2020

- Weekly chart audits
- Compliance report through random visits

# Implementation Strategy & Element

## 3. Final project defense presented in April 2020

- Present results to clinic staff during final virtual meeting in April 2020
  - Include future recommendations for project revision during the final meeting.
- Post results to clinic workroom
- Upload completed manuscript to Scholarworks

# Data Measures

## Initial Visit

- Patient's PHQ-9 score prior to intervention
- RN's compliance on screening with PHQ-9
- Providers compliance on utilization brief intervention and CCNC toolkit for brief treatment
- Referrals made
  - Counseling, psychiatry
- Antidepressant medication classes prescribed and medication changes made
  - Increase/decrease in dosage or change of medication class

## Follow-Up Visit

- Patient's PHQ-9 score post intervention
- Additional medication changes made
- Patient compliance to referrals



# Analysis Plan

- Aggregate data
- Quantitative data
- Descriptive statistics
  - Patient demographics
  - Compliance
  - Referrals made
  - Antidepressant classes
  - Medication changes
- Outcome data
  - Pre-post implementation PHQ-9 scores
  - Paired T-test for significance



# Project Timeline

October	November	December	January	February	March	April
IRB application submission 10/7/2019	Proposal defense 11/7/2019	Determine expected go-live date	Meet with statistician	Address any staff concerns on the project	Complete data collection	Project defense
Pending IRB approval	Educational staff meeting 11/19/2019	Review pre-implementation on patient data	Weekly chart reviews and compliance visit	Weekly chart reviews and compliance visit	Write project defense	Present findings to staff
	Staff educational sessions complete by 11/26/2019					Upload to <u>Scholarworks</u>

# Results

# Staff Participation

- Staff educated and involved in the project included:
  - 2 NPs
  - 1 RN



# Patient Demographics

A total of 35 patients are established between the two clinics:

- 27 patients (77%) have mental illness diagnosis
  - 22 patients have depression diagnosis
- 25 patients (71.4%) prescribed psychopharmacological medications
  - 21 patients prescribed antidepressants.



# Patient Demographics (n=10)

<b>Demographic</b>	<b>Value</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Gender</b>	Male	8	80.0
	Female	2	20.0
<b>Race</b>	Caucasian	7	70.0
	African American	3	30.0
	Hispanic	0	0.0
	Asian	0	0.0
	Other	0	0.0
<b>Culture</b>	Anglo American	7	70.0
	Latin American	0	0.0
	African American	3	30.0
	Other	0	0.0
<b>Age</b>	55-59	1	10.0
	60-64	4	40.0
	65-69	3	30.0
	70-74	2	20.0

# PHQ-9 Scores

- Average pre-intervention PHQ-9 score for the 10 patients was 14.06 (SD 4.930)
- 7 patients returned for post-intervention follow-up appointments during the 3-month implementation period.
- The average post-intervention PHQ-9 score for the 7 patients was 8.59 (SD 1.543).
- The mean score improved by 5.471 points (p-value = 0.001, 95% CI [3.426, 7.512]).

This suggests that implementation of the SBIRT model was successful at improving patient PHQ-9 scores.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PHQ9_Score	14.06	17	4.930	1.196
	Post_PHQ9	8.59	17	1.543	.374

Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	PHQ9_Score & Post_PHQ9	17	.718	.001

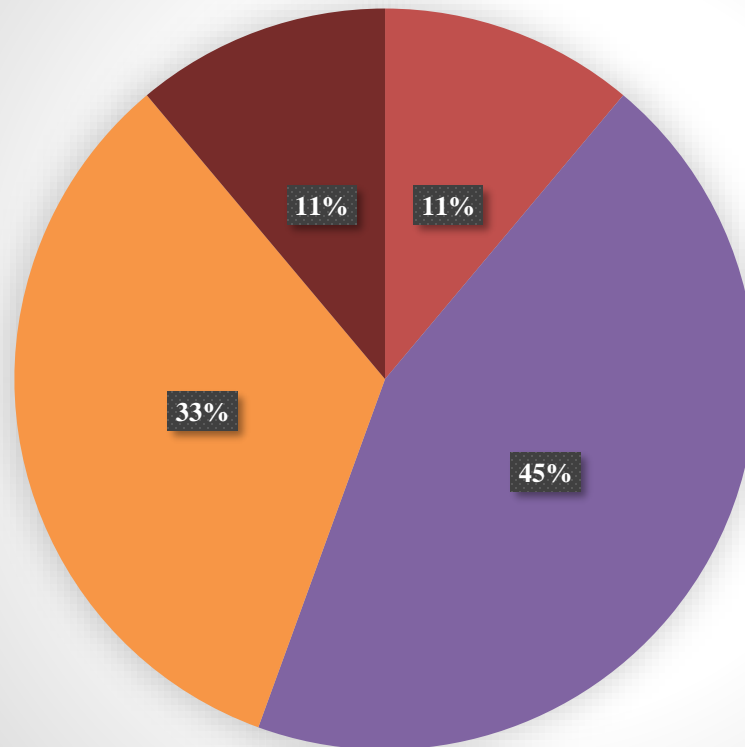
Paired Samples Test							
		Paired Differences					t
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		
					Lower	Upper	
Pair 1	PHQ9_Score - Post_PHQ9	5.471	3.970	.963	3.429	7.512	5.681

# Referrals

- During the 3-month implementation period:
  - 7 referrals were made to counseling services. None were made to psychiatric services.
  - Out of those 7 referrals, 5 patients were compliant with attending onsite counseling sessions, and 2 patients never attended.

# Antidepressant Therapy

Patient Antidepressant Therapy



- Already taking SSRI
- Already taking SNRI
- Prescribed SSRI
- Prescribed SNRI

# Medication Changes

- Medication changes were made for 5 patients
- Each of these changes was a titration up of the patient's current antidepressant medication dosage
  - This data did not include when the 4 patients were initially started an antidepressant therapy.
- Out of the 5 patients, 3 medication changes were made during the initial appointment, and 2 medication changes were made during follow-up appointments.

# Staff Compliance

Variable		
RN's compliance with screening patient's with PHQ-9	Yes	17
	No	0
Provider's compliance with performing Brief Intervention	Yes	2
	No	0
Provider's compliance with utilizing CCNC Toolkit during initial visit	Yes	4
	No	6

# Discussion



# Discussion

- Utilization of the SBIRT model showed decrease in patient PHQ-9 scores from initial (M = 14.06) to follow-up appointments (M = 8.59)
- This suggests that use of the SBIRT model in outpatient settings improves patient depression
  - It is an appropriate tool for providers to utilize when seeing a patient with depression

# Discussion

- Strengths of SBIRT model:
  - Easy usability
  - Does not add extra time to patient appointment
  - Gave providers a tool to reference when addressing depression

# Discussion

- DNP project emphasized the severity of mental illness within the 2 clinics and importance of prioritizing mental health treatment
- DNP project is evidence that behavioral health treatment should be imbedded into all outpatient clinics, especially ones with a patient population consisting of older, underinsured adults

# Implications for Practice

- Depression is poorly managed in outpatient settings because providers do not have the training/knowledge on how best to treat individuals
- The DNP project suggests that depression can be managed appropriately and improve when SBIRT model is used
- How?
  - Allowed providers to have a step-by-step process to follow
  - Forced the provider to utilize effective screening tools and evidence-based interventions when caring for a patient with depression.

# Limitations

- Short implementation period of only 3 months and small sample size.
- Limited generalizability
- Physical health concerns continued to be the priority concerns addressed during each patient visit
- DNP student unable to make weekly visits
- Easy to have false-negatives or false-positives with PHQ-9

# Conclusions

- The aim of this QI project was to implement the SBIRT model to improve care for patients with depression at two satellite primary care clinics.
- After a 3-month implementation period, average PHQ-9 scores decreased from 14.06 to 8.59 (p-value = 0.001, 95% CI [3.426, 7.512]).
- These results suggest that utilization of the SBIRT model improved adult depression in the outpatient setting.
- Continued use of the SBIRT model at the two clinics should remain to provide additional data to further support the use of the SBIRT model.

# Resources & Budget

## Resources: Financial, Human, Material & Technology

- Key stakeholders
- Printed educational handouts for staff
- PowerPoint presentation for providers
- Electronic health record

Revenue	
Project Manager Time (in-kind donation)	\$15,500.00
Note. Based on the DNP student hourly rate over a period of three semesters	
Cost avoidance for inpatient stay at psychiatric hospital	\$17,500.00
Inpatient stay at psychiatric hospital ~ \$875.00/day x ~ 20 patients	
<b>Total</b>	<b>\$33,000.00</b>
Expenses	
Project Manager Time (in-kind donation)	\$15,500.00
Note. Based on the DNP student hourly rate over a period of three semesters	
Loss of Productivity due to Staff Education:	
1. RN ~\$23/hour wage x 1-hour	\$23.00
2. NP ~\$125/hour wage x 1-hour x 2 NPs	\$250.00
Copies of handouts	
\$0.05 x 8 copies of handouts	\$0.40
Note. \$0.05 is the average cost of printing a black and white paper.	
Copies of handouts include all needed printed documents for this project (i.e. handout for RN and NPs)	
<b>Total</b>	<b>\$15,773.40</b>
<b>Net Operating Plan</b>	<b>\$17,211.60</b>

# Sustainability Plan

- Key stakeholder support
  - Untreated mental health was a significant problem for the residents living at the two apartments where the clinics reside, and an issue commonly seen by the providers at the two clinics
- Michigan Health Endowment Fund grant
  - Integration of behavioral health services



# Dissemination

- On April 6, 2020, the DNP student presented the final defense after the conclusion of the project.
- Outcomes of this QI project will be presented virtually to the staff at the organization during the month of April.
  - The presentation will include a summary of key project results, limitations, future recommendations, evolving data, and current literature.
- The final draft of the scholarly project paper will be uploaded to ScholarWorks©

# DNP Essentials Reflection

- This project achieved all DNP essentials:
  - Literature search for evidence-based practice (I, III)
  - Performed organizational assessment (II)
  - Evaluating outcomes of practice changes (III)
  - Utilization of the EHR to evaluate outcomes of the project (IV)
  - Analyzed clinic's current depression screening policy (V)
  - Advanced communication with and leadership of interprofessional team (VI)
  - Implementation of SBIRT model improved depression outcomes of clinic's patient population (VII)
  - Facilitated QI project, guided staff through practice change, and delivered SBIRT model to improve patient outcomes (VIII)

# Implications for DNP Practice

- Dissemination of project results
  - Professional conferences
  - Scholarly publication
- Improvement of professional practice
  - Greater knowledge of depression screening, diagnosis and treatment

# References

- Bodenheimer, T., Wagner, E. H., & Grumbach, K. (2002). Improving primary care for patients with chronic illness. *Journal of the American Medical Association*, 288, 1775–1779. <https://doi.org/10.1001/jama.288.14.1775>
- Bor, J. S. (2015). Among the elderly, many mental illnesses go undiagnosed. *Health Affairs*, 34, 727–731. <https://doi.org/10.1377/hlthaff.2015.0314>
- Carey, M., Jones, K., Meadows, G., Sanson-Fisher, R., D’Este, C., Inder, K., ... Russell, G. (2014). Accuracy of general practitioner unassisted detection of depression. *Australian & New Zealand Journal of Psychiatry*, 48, 571–578. <https://doi.org/10.1177/0004867413520047>
- Community Care of North Carolina. (2015). *Adult depression toolkit for primary care*. Retrieved from <https://www.communitycarenc.org/media/related-downloads/ccnc-depression-toolkit.pdf>
- Dwinnells, R. (2015). SBIRT as a vital sign for behavioral health identification, diagnosis, and referral in community health care. *Annals of Family Medicine*, 13, 261–263. <https://doi.org/10.1370/afm.1776>
- Dwinnells, R. (2016). Experiences with screening, brief intervention, and referral to treatment (SBIRT) in community healthcare. *Journal of Community Medicine & Health Education*, 6, 1-7. <https://doi.org/10.4172/2161-0711.1000395>
- Dwinnells, R., & Misik, L. (2017). An integrative behavioral health care model using automated SBIRT and care coordination in community health care. *Journal of Primary Care & Community Health*, 8, 300–304. <https://doi.org/10.1177/2150131917740245>
- Fuchs, C. H., Haradhvala, N., Hubley, S., Nash, J. M., Keller, M. B., Ashley, D., ... Uebelacker, L. A. (2015). Physician actions following a positive PHQ-2: Implications for the implementation of depression screening in family medicine practice. *Families, Systems, & Health*, 33, 18–27. <https://doi.org/10.1037/fsh0000089>
- Hargraves, D., White, C., Frederick, R., Cinibulk, M., Peters, M., Young, A., & Elder, N. (2017). Implementing SBIRT (Screening, Brief Intervention and Referral to Treatment) in primary care: Lessons learned from a multi-practice evaluation portfolio. *Public Health Reviews*, 38, 1-11. <https://doi.org/10.1186/s40985-017-0077-0>
- Institute for Healthcare Improvement. (2019). *Plan-Do-Study-Act (PDSA) worksheet*. Retrieved from <http://www.ihl.org/resources/Pages/Tools/PlanDoStudyActWorksheet.aspx>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. W. (2001). The PHQ-9. *Journal of General Internal Medicine*, 16, 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>

# References Cont.

- SBIRT secondary depression screening guide (PHQ9). (2011). Retrieved from [http://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP\\_PHQ9\\_Depression\\_Scoring\\_Guide.pdf](http://www.healthvermont.gov/sites/default/files/documents/pdf/ADAP_PHQ9_Depression_Scoring_Guide.pdf)
- Schaeffer, A. M., & Jolles, D. (2019). Not missing the opportunity: Improving depression screening and follow-up in a multicultural community. *Joint Commission Journal on Quality and Patient Safety*, 45, 31–39. <https://doi.org/10.1016/j.jcjq.2018.06.002>
- Tarricone, I., Stivanello, E., Poggi, F., Castorini, V., Marseglia, M. V., Fantini, M. P., & Berardi, D. (2012). Ethnic variation in the prevalence of depression and anxiety in primary care: A systematic review and meta-analysis. *Psychiatry Research*, 195(3), 91–106. <https://doi.org/10.1016/j.psychres.2011.05.020>
- Universalialia. (n.d.a). *Institutional and organizational performance assessment*. Retrieved from <https://www.universalialia.com/en/services/institutional-and-organizational-performance-assessment>
- Verma, M., Horrow, J., & Navarro, V. (2019). A behavioral health program for alcohol use disorder, substance abuse, and depression in chronic liver disease. *Hepatology Communications*, 3, 646–655. <https://doi.org/10.1002/hep4.1328>
- World Health Organization. (2017). *Mental health of older adults*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/mental-health-of-older-adults>
- World Health Organization. (2018). *Depression*. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/depression>