

Screening for Depression in Primary Care Practice

by

Sarah Ruff

Under Supervision of

Debra Scrandis, PhD, CRNP-F, CRNP-PMH

Second Reader

Kathleen Michael, PhD, RN, CRRN

A DNP Project Manuscript  
Submitted in Partial Fulfillment of the Requirements for the  
Doctor of Nursing Practice Degree

University of Maryland School of Nursing  
May 2019

## Abstract

### Title

Screening for Depression in Primary Care Practice

### Background

Ineffective screening of depression in primary care practice contributes to the number of patients with poor quality of life and mismanaged care, leading to fatalities and higher healthcare costs to repair the system brokenness. Primary care providers have a leading role in communicating patient information, such as risk for depression and treatment options. National guidelines and goals exist for providers to effectively screen the general adult population for depression, in order to provide appropriate care and help patients to avoid suicide. Implementing a standardized screening tool can improve patient outcomes and reduce costs in primary care practice.

### Local Problem

Ineffective screening of depression was an observed and verbalized practice problem at a primary care doctor's office in a suburban location of Maryland. The purpose of this Doctor of Nursing Practice quality improvement project was to implement and evaluate the Patient Health Questionnaire-9 (PHQ-9) as a standardized screening tool to increase the detection of depression and appropriate treatment options for the general adult population.

### Interventions

This quality improvement project occurred over a total of 14 weeks, including eight weeks of an implementation phase. During the first two weeks, a medical doctor and two medical assistants at a primary care office were instructed on how to implement and score the PHQ-9. The primary provider was also educated on the proposed treatment actions. The project leader assessed facilitators and barriers, and randomly selected patient charts of participants to review for data collection. Pender's Health Promotion Model (HPM) was used to guide this practice change.

### Results

During the implementation phase, the primary care provider reported observing an increase in the number of patients diagnosed with depression, referred to psychiatry, and/or treated with a new antidepressant, based on PHQ-9 results. A significant number of adult patients completed the PHQ-9 questionnaire, while a smaller sample size was randomly selected for further data analysis ( $n=95$ ). Based on the ease of implementation and improved detection rates of depression, the staff within this primary care office continued to administer the PHQ-9 beyond the implementation phase. Results were saved within the patients' electronic health record.

### Conclusion

Ineffective screening for depression in primary care practice continues to lead to adverse events. National guidelines supporting use of the PHQ-9 are recommended but not required for the general adult population. The large number of questionnaires administered during the implementation phase of this project was both a benefit and limitation, considering the extent of data analysis to be completed in a short timeframe. Other limitations included the small number of staff involved and a two-week outage of the electronic health system in this office. Sustainability of this project may be obtained, as key stakeholders accept the organizational changes, benefit from the cost savings, and continue to improve quality of life.

### **Background and Significance**

About 10% of American adults are living with depression, but often without detection or treatment (Davison, Karantzas, Mellor, McCabe, & Mrkic, 2013). Subsequently, this patient population is lacking the care needed to improve their quality of life and reduce the risk of suicide. Also, these undetected patients are often unaware of inexpensive resources to prevent the progression of depression which leads to greater health care costs to cover disability rates across the nation, especially in the primary care setting (Pfoh, Mojtabai, Bailey, Weiner, & Dy, 2015).

The Patient Health Questionnaire-9 (PHQ-9) is a questionnaire based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders, 5<sup>th</sup> edition* (DSM-5), in order to identify and treat more adults with depression (American Psychiatric Association, 2013). The questionnaire consists of nine self-assessment questions. The responses are scored numerically on a Likert-scale, and then added by the provider to determine the severity of depression in correlation with clinical findings. Since then, insurance groups and employers with quality improvement projects have begun to value evidence that supports screening the general population for depression. Studies show that it is feasible to screen the general population with a self-administered questionnaire, such as the PHQ-9, and then use clinical judgment to weigh risk factors and comorbid conditions to determine if additional measures are necessary (Siu, 2016).

### **Purpose Statement**

The purpose of this doctorate of nursing practice (DNP) project was to implement and evaluate the PHQ-9 in a primary care setting. The setting for this project was an outpatient primary care doctor's office that sees an average of 30 adult patients per day. The purpose of this practice change was to identify more patients with depression and improve the pathway from

primary to psychiatric care. Additionally, the primary care provider in this setting was interested in identifying patients with depression who may need medication adjustments.

### **Anticipated Outcomes**

The key stakeholders for this project included the primary care physician (PCP), office manager, and medical assistants (MAs). Short-term goals of this project included educating 80% of the key stakeholders on the importance of screening adults for depression in the primary care setting, and teaching 90% of the MAs how to administer the PHQ-9 and enter scores in the electronic health record (EHR). In addition, the PCP was expected to be educated on PHQ-9 evaluation and relevant care plan options. Upon retrospective chart review, the project leader assessed the number of patients referred to psychiatric care and/or treated with antidepressant(s) by the PCP alone. The PHQ-9 form was completed on paper by adult patients in the primary care setting, and filed on site by date along with each patient's treatment summary letter to support the clinical assessment and follow-up plan. After the implementation phase, the staff began scanning the PHQ-9 forms into each patient's electronic health record. One long-term goal was to continue administering the PHQ-9 to detect depression in patients at the PCP's office for at least eight months, starting from the implementation date. Throughout the project, 100% of PHQ-9 scores remained accessible to the project leader and office staff, in order to efficiently manage care, track milestones, and ensure sustainability.

### **Theoretical Framework**

The chosen framework to support this DNP project was Pender's Health Promotion Model (HPM). According to Pender (2011), the purpose of this model is to promote healthy lifestyles by providing health care professionals a way to detect patient characteristics that may require behavior counseling. The key concepts described in the HPM are person, environment,

nursing, health, and illnesses (Pender, 2011). With these concepts in mind, a provider may relate an individual's behavior to their environment or health, collaborate with the patient on how to make positive lifestyle modifications, and identify key persons to support their journey.

The HPM was chosen to support this DNP project because it contains clear assumptions related to nursing practice and behavioral change (Pender, 2011). In this project setting, the MAs were responsible for multiple tasks such as checking vital signs, updating patient problem lists, entering verbal orders, and documenting within the EHR. Additionally, they were expected to administer the PHQ-9 if indicated at time of check-in. After a patient completed the PHQ-9, the PCP was expected to review it during the visit and determine if any further action was needed. The HPM was also used to help the MAs identify the appropriate patients to provide the PHQ-9 questionnaire and briefly educate them on why they are being screened for depression. Patients who completed the PHQ-9 gained the opportunity to self-assess their personal experiences and beliefs related to depression, which aligns with the concepts outlined by the HPM. The HPM was applied to this DNP project to empower patients and help them to manage their depression with personalized goals. With the HPM as its framework, this DNP project had an adequate outline of concepts and assumptions in place to help identify patients with depression and improve the pathway from primary to psychiatric care.

### **Literature Review**

A literature review was conducted to find evidence related to implementing the PHQ-9 questionnaire in an adult primary care setting with an emphasis on screening the general population for depression. The review began broadly with data supporting the need to screen adults for depression and establishing the validity of the PHQ-9. A more thorough review of literature on the PHQ-9 was conducted to validate the project intervention and the effects of

screening adults for depression. Two of the strongest publications were a meta-analysis of 40 studies and a systematic review of five randomized controlled trials. The evidence reviewed within the literature was rated between 1-4 with a quality grade “B” (Table 1). Overall, the evidence supporting use of the PHQ-9 among the general adult population was significant for moving forward with the implementation phase.

### **Analysis of Research**

The studies mentioned within this literature review were analyzed to evaluate their design, sample size, setting, methods, and data for internal or external threats to validity. The United States Preventive Services Task Force (USPSTF) recommends screening adults for depression in primary care settings where care plans are available for managing depression (Thombs et al, 2014). According to the APA (2018), the PHQ-9 is considered a valid tool with sound psychometric properties for assessing depression (scores >10 had a sensitivity of 88% and a specificity of 88%). Once an adequate screening tool is chosen, such as the PHQ-9, then primary care providers may evaluate results and determine the appropriate plan of care. Effective management of depression includes patient engagement, evidence-based treatments, collaborating with mental health specialists, and monitoring patients closely to improve patient outcomes and reduce overall health care costs (Unützer & Park, 2012).

The largest sample size was of 5,000 patients who participated in a cross-sectional study conducted by Pfoh et al, (2015). Multilevel logistic regression analyses were used to determine about 17% of Medicare patients received the recommended screening for depression, and additional follow-up care is needed to meet quality measures for depression in the primary care setting (Pfoh et al, 2015). Mitchell, Yadegarfar, & Gill (2016) conducted a meta-analysis

representing over 26,000 adults; which indicated the PHQ-9 was suitable for screening (sensitivity 81.3%; and specificity 85.3%).

Evidence suggests that implementing the PHQ-9 in addition to standard practice is beneficial for identifying more adults with depression. Meyers, Groh, Binienda (2014) used a sample size of 674 patients to screen for depression using the PHQ-9, then compared results to the baseline number of patients diagnosed with depression; resulting in a 22% increase of patients diagnosed with depression. Additionally, the EHR Incentive Program 2014 Clinical Quality Core Measure supports electronic documentation of depression screening for adults. This project initiative is supported by quality measures outlined by the Centers for Medicare and Medicaid Accountable Care Organization and based on USPSTF recommendations, but the ideal frequency of screening for depression remains unknown (Pfoh et al, 2015).

### **Synthesis of Similarities and Differences**

A synthesis was conducted to compare the study findings and draw conclusions. The studies using PHQ-9 were prioritized over those using PHQ-2, based on the amount of evidence supporting each questionnaire. Two articles highlighted similar design, sample size, setting, methods, and data, emphasizing the importance of screening the general population for depression (Pfoh et al, 2015; Horton & Perry, 2016). Horton & Perry (2016), however, compared the PHQ-9 to the PHQ-2 and found no significant difference between the levels of depression identified with each questionnaire. Mitchell, Yadegarfar, & Gill (2016) determined the diagnostic accuracy of the PHQ-9 was similar to the PHQ-2, but neither can be used to confirm a clinical diagnosis. Therefore, additional clinical questions may be indicated when assessing the patient's history of present illness (HPI) in comparison to the PHQ-9 results. With this evidence and the theoretical framework in place, it is important for the provider to add

clinical insight and determine the appropriate plan of care. Thombs (2014) suggests that more randomized controlled trials are needed to support implementing the PHQ-9 to screen the general population for depression because the USPSTF recommendations are not generalizable to the rest of the world. The reasoning for this may be that some general practitioners in America are only recognizing the high scores on the screening questionnaires, but they may not be improving their plan of care for treating depression.

### **Implementation Plan**

#### **Project Type, Sample, and Setting**

This DNP project focused on the development of a clinical pathway plan for the screening and management of depression among adults in an outpatient primary care setting in a suburban Maryland community. Inclusion criteria for the target population included patients age 18 or older with the ability to understand and speak English. Per the information technology (IT) leader on site- the PCP at this office sees an average of 45 adult patients per day. The estimated sample size ( $n$ )= 1,350 patients was based on 30 patients completing the PHQ-9 each day, five days per week, for nine weeks (Week 4- Week 12). Ultimately, a total of 1,053 patients were scheduled to see the PCP during the implementation phase.

#### **Procedures and Timeline**

This project was anticipated to take place over a 14-week period in the Fall of 2018. The first two weeks of this period included preparations, such as employee training, prior to implementing the practice change itself (see Appendix B). Two medical assistants were chosen as “champions;” based on their willingness and availability to assist with training other staff members and oversee the project implementation. By the end of the third week, the champions completed educating other medical assistants on the administration of the PHQ-9 to the targeted

population; including role-play amongst staff. The following nine weeks (Week 4- Week 12) included the core implementation phase: administration and evaluation of the PHQ-9. During the core implementation phase, the PCP was responsible for determining the appropriate plan of care, based on national guidelines and the clinical pathway plan (see Appendix D).

### **Data Collection and Analysis**

Within the final two weeks, trailing into December 2018, the project leader collected data, including random PHQ-9 scores, treatment plans, patient compliance, and employee feedback (see Appendix C). The majority of data was retrieved from the paper PHQ-9 results, in addition to patient notes from the EHR, verbal feedback from staff, and observation. According to the APA (2018), the PHQ-9 is considered a valid tool with sound psychometric properties for assessing depression (scores >10 had a sensitivity of 88% and a specificity of 88%). Within Microsoft Excel, the number of patients identified with depression at baseline was compared to the number of patients identified with depression during the implementation period. Additionally, data was analyzed to determine compliance and the percentage of patients who started an antidepressant or other psychiatric measures due to their PHQ-9 scores. The majority of data analysis included descriptive statistics, comparing pre and post implementation data, such as the number of patients identified with depression.

### **Protection of Human Subjects**

This project, including the modification of a clinical pathway plan, is considered non-human subjects research (NHSR). Per University of Maryland Baltimore (UMB) policy, the project proposal was submitted via CICERO to the school's Institutional Review Board (IRB) in Baltimore, Maryland (see Appendix E). IRB approval was verified prior to implementing the project. In order to protect human subjects, all necessary data and PHQ-9 results were de-

identified. Data retrieved from the EHR was stored in password-protected computers.

Retrospective chart review of random participants from the implementation period were used for future data analysis in order to determine a range of PHQ-9 scores ( $n$ )= 95.

### **Findings**

The implementation phase of this DNP project was initiated in the fall of 2018 and aimed towards screening the general adult population for depression in the primary care setting. The preliminary tasks completed included collaborating with key stakeholders, delegating tasks, and completing a midterm progress report. During the final six weeks of the project, there was a greater focus on streamlining the implementation process and collecting data. The computer technician (IT) worked with the project leader and medical assistants to develop standard operations for scanning in the completed PHQ-9 forms to the electronic database, in addition to using the appropriate ICD-10 codes for depression. The primary care physician (PCP) spent extra time reviewing the PHQ-9 scores with each respondent at time of visit, and determining the plan of care, based on the instruction guide (Appendix B). The office manager and medical assistants also filed hardcopies of the completed questionnaires by date for future analysis. Aside from a few instances, the majority of the office staff remained readily available and willing to meet with the project leader as needed.

Short-term goals were achieved; the expected outcomes were met for educating staff. The long-term goals continued after the implementation phase and initial data analysis, as the primary care provider decided to continue dissemination of the PHQ-9 forms to adult patients in her practice, while the MAs worked with IT to scan results into the electronic health record. As previously reported, prior to the implementation phase, there were 568 patients diagnosed with depression (out of a total of 12,053 in the primary care office). The cutoff point for data

collection was achieved on November 30, 2018 as planned. A total of 1,053 patients were scheduled for primary care appointments within the eight-week implementation phase, not calculating for cancelations or no-shows. During the implementation phase, a total 983 patients completed the PHQ-9 (out of the 1,053 scheduled). Of those patients who completed the PHQ-9, 327 were billed with an ICD-10 code of depression (i.e., F33). Thirty five of those patients were considered *new* diagnoses of depression. Additionally, 236 patients were adjusted/placed on new antidepressants, and 160 patients were referred to psychiatry for additional follow-up. A random selection of PHQ-9 participants (n= 95) evaluated based on retrospective chart review. The range of scores in relation to the proposed treatment actions was based on Appendix D. During the eight-week implementation phase, 59% of the sample size scored within zero to four, indicating no proposed treatment actions; 25% scored within five to nine, indicating mild depression, watchful waiting, and additional screening at follow-up; and 16% scored between 10-27, indicating moderate to severe depression and additional treatment measures as outlined in Appendix D. Per the PCP, an unexpected benefit of administering the PHQ-9 was an increase in the number of referrals to psychiatry due to having more objective data to support it. Also, for those patients on antidepressant medications prior to completing the questionnaire, more adjustments were made to their treatment plans based on their PHQ-9 scores.

Minimal modifications were needed during the implementation phase of the project, which ran from October 2<sup>nd</sup> through November 30<sup>th</sup> of 2018. The IT person held a pivotal role for data collection, running reports based on the scanned PHQ-9 forms and ICD-10 codes for depression in comparison to the total number of patients in office. One limitation of data collection was the lack of an efficient way to group the PHQ-9 results to determine the range of scores. For example, grouping the results would help to determine the number of patients who

scored 0-4, indicating no proposed treatment action. Subsequently, preliminary findings revolved around the number of completed questionnaires and the number of patients diagnosed with depression. After the implementation phase, secondary plans were made to further assess a sample of PHQ-9 responses (i.e., the 95 participants noted above). One key stakeholder from the billing department provided additional means for completing a cost analysis. In this office setting, screening for depression with the PHQ-9 was coded as “G04444” for Medicare patients, resulting in \$18.16 receivable per visit per year. Additionally, the code “96160” was used for screening non-Medicare patients for depression, resulting in \$19.60 receivable per visit per year. The sum of expected receivable payments from both Medicare and non-Medicare visits totaled \$18,898.16 during the eight-week period. Overall, this quality improvement project unexpectedly proved to be beneficial for the financial goals of this primary care office.

### **Discussion**

The findings of this quality improvement project were comparable to other publications, including an increase in the number of patients diagnosed with depression. In addition to better detection rates, evidence suggests that subsequent treatments reduce the burden of depression. Additionally, the PHQ-9 may be used as a follow-up measure to determine if treatment plans need to be adjusted (Meyers, Groh, & Binienda, 2014). The range of PHQ-9 scores in this project were similar to those found by Pfoh et al (2015), indicating that most patients have none or minimal depression and no proposed treatment actions. Unützer & Park (2012) also emphasized the importance of adding the PHQ-9 scores to electronic health records for easier identification of patients with depression who are not improving as expected.

The sustainability of this project was determined by patient compliance and the key stakeholders' engagement. Due to the minimal tools and staff required for this project, it was

likely for financial resources to be available for maintaining the process improvement beyond the project end. Also, there is a clear need within this office setting to screen for depression, based on national guidelines and the high volume of patients who meet the inclusion criteria. As staff members change, a training plan will need to be in place to ensure future employees are able to sustain this initiative. Outcome measures and chart audits will need to occur about every six months to verify compliance and progress.

Throughout the 14-week implementation period, the project leader was in contact with the office staff to ensure action items were completed as expected. Future use of the PHQ-9 to screen for depression should be determined based on employee feedback and evaluation of PHQ-9 scores. Additional data analyses may be needed to determine the effectiveness of the clinical pathway plan. Other limitations included the small number of staff involved and a two-week outage of the electronic health system in this office. Sustainability of this project may be obtained, as key stakeholders accept the organizational changes, benefit from the cost savings, and continue to improve quality of life.

### **Conclusion**

Ineffective screening for depression in primary care practice continues to lead to adverse events. National guidelines supporting use of the PHQ-9 are recommended but not required for the general adult population. The large number of questionnaires administered during the implementation phase of this project was both a benefit and limitation, considering the extent of data analysis to be completed in a short timeframe. This project may be generalizable within other primary care office settings, considering the wide inclusion criteria of the general adult population. Evidence shows the PHQ-9 is a valid tool for detecting depression, but additional data analysis is needed to verify if the PHQ-9 scores are a reliable measure for determining

effective treatment options. Additionally, the PHQ-9 score alone should not be used as a sole determinant for diagnosing depression.

### References

American Psychiatric Association (APA). (2013). Diagnostic and statistical manual of mental disorders, 5<sup>th</sup> edition (DSM-5). *American Psychiatric Association*, Arlington.

American Psychiatric Association (APA). (2018). Patient health questionnaire (PHQ-9 & PHQ-2): Description of measure. Retrieved from:  
<http://www.apa.org/pi/about/publications/caregivers/practice-settings/assessment/tools/patient-health.aspx>

Davison, T. E., Karantzas, G., Mellor, D., McCabe, M.P., & Mrkic, D. (2013). Staff-focused interventions to increase referrals for depression in aged care facilities: A cluster randomized controlled trial. *Aging And Mental Health*, 17(4), 449-455.

Horton, M., & Perry, A.E. (2016). Screening for depression in primary care: a Rasch analysis of the PHQ-9. *Bjpsych Bulletin*, 40(5), 237-243.

Kroenke, K., Spitzer, R.L., Williams, J.B. (2001). The PHQ-9: Validity of a brief depression severity measure. *Journal of General Internal Medicine*, 16(9): 606-13.

Melnyk, B.M. & Fineout-Overholt, E. (2014). *Evidence-based practice in nursing & healthcare: A guide to best practice* (3rd ed.). New York: Lippincott, Williams & Wilkins.

Meyers, M., Groh, C., & Binienda, J. (2014). Depression Screening and Treatment in Uninsured Urban Patients. *Journal of the American Board of Family Medicine*, 27(4), 520-529.

Mitchell, A. J., Yadegarfar, M., Gill, J., & Stubbs, B. (2016). Case finding and screening clinical utility of the Patient Health Questionnaire (PHQ-9 and PHQ-2) for depression in primary

care: a diagnostic meta-analysis of 40 studies. *BJPsych Open*, 2(2), 127- 138.

<http://doi.org/10.1192/bjpo.bp.115.001685>

Newhouse, R.P. (2006). Examining the support for evidence-based nursing practice. *Journal of Nursing Administration*, 36(7-8), 337-40.

Pender, N.J., Murdaugh, C., & Parsons, M.A. (2011). *Health Promotion in Nursing Practice*, (6th Ed). Boston, MA: Pearson. Retrieved from:

[https://deepblue.lib.umich.edu/bitstream/handle/2027.42/85350/HEALTH\\_PROMOTION\\_MANUAL\\_Rev\\_5-2011.pdf](https://deepblue.lib.umich.edu/bitstream/handle/2027.42/85350/HEALTH_PROMOTION_MANUAL_Rev_5-2011.pdf)

Pfoh, E. R., Mojtabai, R., Bailey, J., Weiner, J. P., & Dy, S. M. (2015). Conformance to depression process measures of Medicare Part B beneficiaries in primary care settings. *Journal Of The American Geriatrics Society*, 63(7), 1338-1345.

Siu, A. (2016). Screening for depression in adults: US Preventive Services Task Force recommendation statement. *JAMA*, 315(4): 380-387. doi:10.1001/jama.2015.18392.

Thombs, B.D., Ziegelstein, R.C., Roseman, M., Kloda, L.A., & Ioannidis, J.A. (2014). There are no randomized controlled trials that support the United States Preventive Services Task Force Guideline on screening for depression in primary care: A systematic review. *BMC Medicine*, 1213. doi:10.1186/1741-7015-12-1.

Unützer, J., & Park, M. (2012). Strategies to improve the management of depression in primary care. *Primary Care*, 39(2), 415–431. <http://doi.org/10.1016/j.pop.2012.03.010>

Appendix A

Evidence Review Table

Study #	Author, year	Study Design	Sample Size (n)	Study objective/ Intervention	Outcomes measured; Findings	Evidence Rating Level, Quality
1	Pfoh et al., 2015	Cross-sectional	5,000 patients; average age 74yo	Retrospective EHR data collection in 34 primary care practices to determine number of patients with depression and its severity, using the PHQ-9.	Eight hundred sixty-nine (17%) participants had at least one PHQ-9 score recorded in the EHR, of whom 69% (n = 603) had a maximum score of 0, indicating no depressive symptoms. Ninety-two (11%) participants scored greater than 5 on any screen, suggesting mild or more severe depressive symptoms. 47 (5%) had a PHQ-9 score greater than 9, indicating moderate depression, on any screen. Only a small proportion of Medicare beneficiaries received the recommended screening and follow-up care needed to conform to the quality measures for depression in the primary care setting. (Pfoh et al., 2015).	4B
2	Horton & Perry, 2016.	Cross-sectional; with randomization; Rasch analysis	767 adults aged 18 and above; diagnosed with depression; in the primary care setting.	PHQ-9 was conducted at baseline (prior to randomization), and at 4, 12 and 24 months post-randomization as part of a battery of tests for the larger REEACT study during the recruitment period. Trained interviewers at each of the four trial sites read or asked participants to self-report their responses on the PHQ-9 items and recorded the responses. The data included all screened participants (Horton & Perry, 2016).	The findings offer support for the use of PHQ-2 as a screening tool, as the person estimates of level of depression provided by the PHQ-2 do not significantly differ from the estimates provided by the PHQ-9 (Horton & Perry, 2016).	4B
3	Davison, Karantzas, Mellor,	A cluster randomized controlled	216 aged care residents (M age 87 years), who	Random allocation into one of three conditions: staff training; staff training plus a screening and referral protocol; and wait-list	Staff training in depression, supplemented with a protocol for routine screening and guidelines on referring residents, can improve pathways to	2B

	McCabe, & Mirkic, 2013.	design	agreed to a 12-month audit of their facility file (Davison et al., 2013).	control to compare the referral rates for residents in seven facilities (Davison et al., 2013).	care. However, strategies to overcome barriers to appropriate subsequent treatment of depression are required for staff-focused initiatives to translate into better outcomes for depressed older adults (Davison et al., 2013).	
4	Thombs et al., 2014.	Systematic review	5 RCTs	Re-evaluated RCTs included in the 2009 USPSTF evidence review on depression screening, including only trials that compared depression outcomes between screened and non-screened patients (Thombs et al., 2014).	Of the nine RCTs included in the USPSTF review, four fulfilled none of three criteria for a test of depression screening, four fulfilled one of three criteria, and one fulfilled two of three criteria. There were two additional RCTs included only in the Cochrane review, and each fulfilled one of three criteria. No eligible RCTs were found via the updated review (Thombs et al., 2014).	1B
5	Meyers, Groh, Binienda (2014)	Prospective repeated measure	674 patients	To screen for depression using the PHQ-9; then compare to the baseline number of patients diagnosed with depression.	A comparison of standard practice to the new screening practice resulted in a 22% increase of patients diagnosed with depression.	4B
6	Mitchell, Yadegarfar, & Gill (2016)	Meta-analysis	40 studies within 26 publications; representing 26,902 people (median 502).	To determine the diagnostic accuracy of the PHQ-9-linear, PHQ-9-algorithm and PHQ-2 questionnaires to detect major depressive disorder (MDD) among adults (Mitchell, Yadegarfar, & Gill, 2016).	For case finding (ruling in a diagnosis), none of the methods were suitable but for screening (ruling out non-cases), all methods were encouraging with good clinical utility, although the cut-off threshold must be carefully chosen. The PHQ can be used as an initial first step assessment in primary care and the PHQ-2 is adequate for this purpose with good acceptability. However, neither the PHQ-2 nor the PHQ-9 can be used to confirm a clinical diagnosis (Mitchell, Yadegarfar, & Gill, 2016).	1B

**Key: Rating System for Hierarchy of Evidence**

I Level of the Evidence      Type of the Evidence  
 Evidence from systematic review, meta-analysis of randomized controlled trials (RCTs), or practice-guidelines

- based on systematic review of RCTs.
- II Evidence obtained from well-designed RCT.
- III Evidence from well-designed controlled trials without randomization.
- IV Evidence from well-designed case-control and cohort studies
- V Evidence from systematic reviews of descriptive and qualitative studies
- VI Evidence from a single descriptive or qualitative study
- VII Evidence from the opinion of authorities and/or reports of expert committees

Source: *Melnyk, B.M. & Fineout-Overholt, E. (2014). Evidence-based practice in nursing & healthcare: A guide to best practice (3rd ed.). New York: Lippincott, Williams & Wilkins.*

**Key: Rating Scale for Quality of Evidence**

- A: High:** Consistent results with sufficient sample, adequate control, and definitive conclusions; consistent recommendations based on extensive literature review that includes thoughtful reference to scientific literature
- B: Good:** Reasonably consistent results; sufficient sample, some control, with fairly definitive conclusions; reasonably consistent recommendations based on fairly comprehensive literature review that includes some reference to scientific evidence
- C: Low/major flaw:** Little evidence with inconsistent results; insufficient sample size; conclusions cannot be drawn

Source: *Newhouse, R.P. (2006). Examining the support for evidence-based nursing practice. Journal of Nursing Administration, 36(7-8), 337-40.*

## Appendix B

**Employee Training Objectives**

- Importance of screening the general population for depression, based on current evidence.
- Project procedures and timeline.
- Administration of the PHQ-9 to the target population.
- Evaluation of the PHQ-9 by the Primary Care Provider and Project Leader based on PHQ-9 instructions:

“PHQ-9 Depression Severity. This is calculated by assigning scores of 0, 1, 2, and 3, to the response categories of —not at all,| —several days,| —more than half the days,| and —nearly everyday,| respectively. PHQ-9 total score for the nine items ranges from 0 to 27. In the above case(see table 3, page 5), the PHQ-9 depression severity score is 16 (3 items scored 1, 2 items scored 2, and 3 items scored 3). Scores of 5, 10, 15, and 20 represent cutpoints for mild, moderate, moderately severe and severe depression, respectively. Sensitivity to change has also been confirmed” (Pfizer, 2014).

- Determination of patient care plan, based on PHQ-9 scores in relation to Clinical Pathway Plan (see Appendix D).
- Plan for sustainability.

*Source: Pfizer. (2014). Instruction manual: Instructions for Patient Health Questionnaire (PHQ) and GAD-7 measures. Retrieved from:*  
<https://phqscreeners.pfizer.edrupalgardens.com/sites/g/files/g10016261/f/201412/instructions.pdf>



Appendix D

**PHQ-9 Scores and Proposed Treatment Actions**

PHQ and GAD-7 Instructions

P.7/9

**Psychometrics.** The psychometrics of the PHQ and its component scales are described in the validation articles for specific measures (see Selected References on page 9) and are summarized in a review article on the PHQ-9, GAD-7, and PHQ-15.[10]

**Table 4. PHQ-9 Scores and Proposed Treatment Actions \***

PHQ-9 Score	Depression Severity	Proposed Treatment Actions
0 – 4	None-minimal	None
5 – 9	Mild	Watchful waiting; repeat PHQ-9 at follow-up
10 – 14	Moderate	Treatment plan, considering counseling, follow-up and/or pharmacotherapy
15 – 19	Moderately Severe	Active treatment with pharmacotherapy and/or psychotherapy
20 – 27	Severe	Immediate initiation of pharmacotherapy and, if severe impairment or poor response to therapy, expedited referral to a mental health specialist for psychotherapy and/or collaborative management

\* From Kroenke K, Spitzer RL, *Psychiatric Annals* 2002;32:509-521

**TRANSLATIONS**

There are numerous translations of the PHQ as well as the PHQ-9 and GAD-7 available in many languages, which are freely downloadable on the PHQ website ([www.phqscreeners.com](http://www.phqscreeners.com)). The abbreviated versions of these measures – PHQ-8, PHQ-2, GAD-2, and PHQ-4 – can simply be derived from the translations by selecting the relevant items (see Table 1, page 3). The PHQ-15 can also be simply derived by selecting the 13 somatic items (1a-1m), plus the *sleep* and *tired* items (2c and 2c) from the PHQ translations.

Many of the translations have been developed by the MAPI Research Institute using an internationally accepted translation methodology. Thus, most of the translations are linguistically valid. However, unlike the English versions of the PHQ and GAD-7, few of the translations have been psychometrically validated against an independent structured psychiatric interview.

## Appendix E

**Project Proposal Summary**

About 1 in 10 American adults are living with depression, but often without detection or treatment (Davison, Karantzas, Mellor, McCabe, & Mrkic, 2013). Primary care providers are being urged to improve quality of life, prevent the progression of depression, and reduce disability rates across the nation (Pfoh, Mojtabai, Bailey, Weiner, & Dy, 2015). The purpose of this project is to implement and evaluate the PHQ-9 as a tool for screening the general adult population for depression; leading to an improved pathway from primary to psychiatric care. The anticipated outcome is an increase in the number of patients identified with depression, and then managed appropriately. Meyers, Groh, & Binienda (2014) screened 674 adults for depression using the PHQ-9, then compared results to the baseline number of patients diagnosed with depression; which resulted in a 22% increase of patients diagnosed with depression.

The level of evidence supporting this project is outlined by USPSTF recommendations, including the implementation of the PHQ-9 as a valid screening tool (Thombs et al, 2014). Within the first two weeks of implementing this project, the staff at an outpatient primary care office will be educated on the practice problem and the actions planned for the following 12 weeks. After meeting inclusion criteria, adult patients will be asked to complete a paper copy of the PHQ-9 upon checking in for their scheduled visit with the primary care provider (PCP). Subsequently, the PCP will review the PHQ-9 results at the time of patient visit and determine an appropriate plan of care, based on national guidelines and a clinical pathway plan. This implementation period will occur five days per week for twelve weeks (from September through November of 2018).

Data analysis, staff feedback, and sustainability measures will be initiated in December of 2018. The questionnaires and data will be deidentified to protect human subjects. Within Microsoft Excel, the number of patients identified with depression at baseline will be compared to the number of patients identified with depression during the implementation period. Additionally, data will be analyzed to determine compliance and the percentage of patients who started an antidepressant or other psychiatric measures due to their PHQ-9 scores. The primary care provider and medical assistants will be surveyed on how feasible it would be to continue screening their patients for depression using the PHQ-9; and to sustain best practice measures for improving the pathway from primary to psychiatric care.