

Screening for Depression in a Rural Primary Care Setting

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Abstract

Problem and Purpose: The United States Preventative Services Taskforce recommends depression screening in the general adult population. Patients with untreated depression have higher morbidity rates in many diagnosis groups. Detecting and managing depression allows patients to better self-manage chronic diseases and contributes to an overall sense of improved well-being. In a private primary care setting a practice gap existed in which patients were not routinely screened for depression. The purpose of this quality improvement (QI) project was to implement a screening process for adults in a primary care practice to detect depression symptoms and offer treatment if indicated.

Methods: The primary aim of this QI project was to implement a depression screening process for adults in a primary care practice using the Patient Health Questionnaire-9 (PHQ-9), a validated depression screening instrument. Primary outcomes measured: provider compliance in obtaining depression screenings and calculating the percentage of patients identified with depression. Eligible patients were aged 18-64 being seen for an annual exam with two Nurse Practitioners (NP). The NPs were provided PHQ-9 education and weekly reminders to complete the screening. During each patient annual exam, the patient was provided a copy of the PHQ-9. The NP reviewed results and treated when indicated. Charts were audited weekly for: provider compliance and depression classification.

Results: Depression screening compliance was 67%, (n=30/45) and 30% of patients screened (n=9/30) were diagnosed with depression. All depressed patients were offered treatment. 20% were new depression diagnoses (n=6/30) and 10% had a history of depression (n=3/30). 13% (n=4/30) of patients were provided referrals to psychotherapy and 7% (n=2/30) were started on a

medication for depression. The majority of the positive depression screenings (67%, n=6/9) were detected as mild.

Conclusion: Depression screening using the PHQ-9 instrument is an effective way to detect depression. This will reduce the untreated depression rates in the practice and connect patients to proper treatment. Once depression is managed, patients are able to better self-manage chronic diseases. Implementation of the PHQ-9 into the provider workflow will increase depression screening compliance. As a result of this project, the primary care practice built the PHQ-9 instrument into the electronic health record to facilitate provider compliance.

Introduction

Depression is a common disorder of patients in the Primary Care setting yet is not consistently detected. According to the National Institute of Mental Health (2017), 6.7% of all adults in the United States experienced at least one major depressive episode in the last year and 37% of those patients did not receive any treatment. Depression accounts for more than \$17 billion in lost productivity, and continues to rise as a major contributor of disability (Maurer, 2012). Despite these alarming statistics and depression screening being identified as a quality measure by the National Quality Forum (2014), screening for depression in the Primary Care setting remains inconsistent.

Untreated depression is associated with worse outcomes in patients that have various medical conditions; including stroke, diabetes, and coronary artery disease (Maurer, 2012). Suicide is an extreme consequence of depression. Rates of suicide in the United States have increased by 33% from 1999 through 2017 (Center for Disease Control and Prevention, 2018). Screening for and treating depression may help reduce the suicide rate.

The providers in a rural Primary Care office routinely treat depression, however were not screening adults for depression per the USPTF recommendations. This paper will examine this practice gap and the available evidence that was used to implement depression screening. The purpose of this quality improvement project was to implement a depression screening process for adults in a primary care practice to detect depression symptoms and offer treatment if indicated.

Literature Review

This literature review will examine available evidence that supported the practice change of screening adults for depression in the Primary Care setting using the PHQ-9 instrument. An

analysis of two topics were included in this literature review: depression screening in Primary Care and the use of the PHQ-9 instrument as an appropriate intervention to screen.

The United States Preventative Services Task Force (USPTF, 2016) initially recommended screening adults for depression in 2009. This recommendation was updated in 2016 based on an Agency for Healthcare Research and Quality funded systematic review (USPTF, 2016). This review was conducted by O'Connor et al. (2016) and included 71 studies. It concluded that there is sufficient evidence to recommend depression screening in the general adult population as well as pregnant and postpartum patients. The review included 4,783,780 total patients. Many of the included studies target the population of this DNP project. There were 5 studies that specifically addressed screening in general adult populations (n=2,924). The review determined for the screening to offer a health benefit, available treatment for depression must be in place. An identified weakness of this systematic review is that it is an update of the previous review so the authors relied heavily on synthesized work of the previous reviewers. This is the largest systematic review conducted on screening for depression in primary care, therefore is the most influential for this DNP project practice change.

Studies that researched the Patient Health Questionnaire instrument were reviewed and conclude that the PHQ-9 is a valid tool to use for depression screening. Arroll et al. (2010) conducted a randomized controlled trial of 2,642 Primary Care patients to validate the use of the PHQ instrument to screen for depression in the Primary Care setting. They found the PHQ-2 to have a sensitivity of 86% and a specificity of 78% and the PHQ-9 to have a sensitivity of 74% and specificity of 91% when the score was greater than 10 (Arroll et al., 2010). A weakness of the study is it was conducted in New Zealand and may not be entirely generalizable to other Primary Care settings.

A recent meta-analysis was completed to examine the accuracy of the PHQ-9 instrument to detect major depression (Levis, Benedetti, & Thombs, 2019). The authors included studies that compared PHQ-9 scores with major depression diagnoses from validated interviews. The analysis included 58 studies (n=17,357) and included structured interviews that were compared with PHQ-9. The authors found a sensitivity of 88% (95% CI 0.83 to 0.92) and a specificity of 85% (95% CI 0.82 to 0.88) (Levis, Benedetti, & Thombs, 2019). Identified weaknesses include heterogeneity across studies and the potential variability of diagnostic interviews by clinicians.

The original research will be discussed in this section. The PHQ-9 instrument is a nine item self-report depression assessment that uses the DSM-IV criteria (Kroenke, Spitzer, & Williams, 2001). The instrument can be self-administered by the patient or administered by a clinician. The original publication aimed to study the validity of the PHQ-9 and was conducted by way of a randomized controlled trial. The study included 6,000 patients; 3,000 were Primary Care patients and 3,000 were obstetrics-gynecologic patients. Criterion validity of the PHQ-9 was assessed against a structured mental health professional interview in a sample of 580 patients. Using these interviews as the criterion standards, the authors concluded that a PHQ-9 score of 10 or greater signifies major depression (sensitivity 88% and specificity 88%) (Kroenke, Spitzer, & Williams, 2001). The specific scores classify a patient as having the following severities of depression: none, mild, moderate, moderately severe, or severe.

This literature review supports the implementation of depression screening of general adults in the primary care setting and was used to help garner support to implement this DNP project. Screening patients is only recommended if adequate support systems are in place. The Patient Health Questionnaire 9 tool has been validated as a depression screening tool according to the current literature.

Theoretical Framework

This DNP project used The Individual and Family Self-Management Theory to facilitate implementation. This middle-range nursing theory has been used successfully to improve health outcomes by promoting self-management behaviors of the patient and family (Ryan & Sawin, 2009). Chronic conditions cannot be properly managed until individuals and families purposefully participate in healthy behaviors. These behaviors are learned behaviors and come from healthcare professional programs or interventions. The goal is to prepare the patient and family to assume responsibility for managing their chronic diseases or engaging in health promoting activities (Ryan & Sawin, 2009). The Individual and Family Self-management Theory is based on work from previous nursing theorists. Ryan and Sawin (2009) report self-management tasks that were common across chronic diseases in adults and older adults in previous self-management literature. They report 12 common self-management tasks, including one that was used in this project: managing emotions.

For a patient to self-manage their chronic diseases, they must first manage their emotions. In this project, the concept of managing emotions was operationalized by screening for depression. If the PHQ-9 score is positive for depression symptoms, the provider assisted the patient to assume responsibility of their mental health. The project also applied the theory concept of patient beliefs. Patient beliefs were taken into account by the providers when determining the best treatment options. The providers created treatment plans based on the individual and offered a variety of depression support options. Examples included behaviors such as making appointments for psychotherapy and office follow up. This promotes patient accountability and gives the patient control of managing their disease. If a person's depression is identified and treated, a patient can properly self-manage all of their chronic diseases.

Methods

This QI project was implemented in a rural Maryland primary care setting. The general adult population was the target group for this project, which was defined as adults ages 18-64. A project champion team was created during the planning phase that included two nurse practitioners and two medical assistants.

The implementation period was 10 weeks. Prior to the implementation, the DNP student created QI procedures for this project with active input from the project champions. The procedures can be found in Appendix C. The medical assistant provided all annual exam patients ages 18-64 with the PHQ-9 questionnaire to fill out while waiting for the provider. They were instructed to answer questions based on how they have felt over the prior two weeks. Next, the provider reviewed the results during the visit and offered treatment when indicated. PHQ-9 scores alone do not diagnose depression, so a positive score warranted further assessing from the providers. Providers used clinical judgement to manage positive results. All PHQ-9 scores were documented in the electronic health record. If the score yielded a result of greater to or equal to 5, the provider documented a depression care plan. The process included a psychotherapy resource handout that the provider was to offer to patients if they scored above 15 (moderately severe) on the PHQ-9.

Education huddles were held during week one of implementation and then again every two weeks during the project. The education huddles reviewed the procedures and response to PHQ-9 results. The DNP student was in the office weekly to check in with the project champions to monitor the implementation and provide screening reminders. During each encounter, barriers and facilitators were discussed to improve project sustainability.

The primary measures collected each week were provider compliance in obtaining depression screenings and the percentage of patients identified with depression. Charts were audited weekly for these primary outcomes and a data analysis was performed. The weekly data was tracked on a run chart and shared with the nurse practitioners on the implementation team (*Figure 1*). The chart demonstrates the percentage of eligible patients screened (y-axis) by week of implementation (x-axis). The percentage of eligible patients was calculated using the number of patients screened by the total number of patients that were 18-64 that had an annual physical during the implementation period. The percentage of patients identified with depression was calculated by the total number of PHQ-9 screenings with a positive score by the total number of eligible patients screened.

Results

Depression screening compliance was 67% (n=30/45) and 30% of the patients screened were diagnosed with depression (n=9/30). 20% were new depression diagnoses (n=6/30) and 10% had a history of depression (n=3/30). 13% (n=4/30) of patients were provided referrals to psychotherapy and 7% (n=2/30) were started on a medication for depression. The majority of the positive depression screenings (67%, n=6/9) were detected as mild. All depressed patients were offered treatment.

Throughout the implementation process, key facilitators and barriers were identified that impact provider compliance. The DNP student would regularly discuss with the implementation team what was impacting depression screening compliance. Initially, the providers were eager to screen. During week one, a patient that had previously shown no signs of depression screened positive for one of the providers. The patient informed the provider that they had never been asked before about mood. This encounter was a key facilitator to gain momentum and project

buy in from the providers. Another facilitator was the provider's experience with managing depression. They regularly treat depression in this population and were well equipped to handle positive screening results. This was an important facilitator because the literature states that patients should only be screened when adequate support is in place to treat depression. The PHQ-9 instrument was an additional facilitator. Both providers were aware of the strong validity of the instrument and supported its use in this project.

The main barriers that were reported regularly from the implementation team that impacted the project's outcomes were forgetting to screen, limited time with patients, and the challenge of using a hard copy of the PHQ-9 instrument and then entering data. The run chart shows a decrease in screening eligible patients during week 3, 5, 9, and 10. The same three barriers came up on a weekly basis and overcoming them were discussed with the implementation team.

We were unable to increase the time allowed with patients, so we focused our efforts on the amount of time required to complete the depression screening process. The PHQ-9 instrument was a hard copy in this project, because the electronic health record did not have the PHQ-9 questions built in. The providers stated that it was time consuming to transfer the score from the hard copy to the psychiatric assessment in the electronic record. During week 2 we adjusted this step in the process and had providers document in a general area of the note, where they already have it open.

To increase provider compliance and create a sustainable plan, it was evident that the PHQ-9 had to be built into the provider note in the electronic health record. The implementation team worked with the information technology department and was able to change this structure, but this did not occur until the end of the implementation period. The annual exam provider note

template now includes the PHQ-9 instrument. This structure change may also improve the barrier of forgetting to screen. The instrument is now a visible tab within the provider note which will function as a reminder. The providers were 67% compliant with screening using the hard copy and with the new structure change of the annual exam note including the PHQ-9, the compliance rate is anticipated to increase.

Discussion

Implementation of a depression screening process using the PHQ-9 prompted 9 patients in this primary care setting to receive mental health support. Six patients were new depression diagnoses and 3 were known cases, but not effectively treated. This practice change provided an opportunity for these patients to discuss their symptoms and receive treatment. The setting of this project was previously treating depression, but not routinely screening the general adult population per the USPTF guidelines.

This QI project was designed specifically for this rural primary care office and is not generalizable to other practices. It can be used as an example of successfully implementing depression screening in the outpatient setting. The results of the project confirm the prevalence of depression found in the literature, however this population had a much greater percentage of patients that scored positive. This project revealed 30% of patients screened to have depression compared to the 6.7-8% that the literature reports (National Institute of Mental Health, 2017; Maurer, 2018). This discrepancy is an example of why this QI project is not generalizable to other areas.

Project limitations have been identified. The data relied on patients filling out the form then the medical assistant or nurse practitioners had to enter the data in the electronic health record. This provides opportunity for error and is an imprecision in the project design. This

limitation was corrected by building the PHQ-9 instrument into the provider note within the electronic health record.

A small, yet notable unintended consequence of this project involved billing. The DNP student attempted to help the providers charge for depression screening in an effort to improve screening compliance. This was unsuccessful, however this discussion prompted the billing department to discover that they were not billing appropriately for a separate population. The practice performs Medicare wellness visits and the appointments include depression screening. The practice was not aware that this was a billable procedure until the DNP student brought this to their attention. This unintended consequence was not specific to this project, but will help raise awareness of depression screening within the practice.

Conclusions

Depression is a prevalent disorder and if not treated is associated with worse outcomes in patients that have various comorbidities. This QI project reaffirmed that the PHQ-9 is a feasible way to assess for depression symptoms. The DNP student successfully implemented a process change that met the USPTF recommendations to screen for depression when systems are in place to support a diagnosis. This project was useful and the results represent the importance of project sustainability.

The structure change of building the PHQ-9 into the provider note within the electronic health record gives this project the opportunity for sustainability. The PHQ-9 instrument is now in a visible tab that the providers see every time they open a physical exam template. A challenge to sustainability is that a process was not built in to the practice to support reminders and data audits beyond the 10 week implementation period. A future QI project is necessary to build in these important project features. Another future project that would help with

sustainability includes expanding to other providers in the practice. A plan to expand to the other providers in the practice was discussed, but not officially built into the project. All providers will now have the PHQ-9 built into their provider note so do have the option to use it.

Screening for depression reduced the untreated depression rates in this primary care practice and connected patients to proper treatment. Similar depression screening processes should exist in other outpatient settings that treat the general adult population based on the USPTF recommendations. Once depression is managed, patients can better self-manage their chronic diseases and improve their overall well-being.

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Appendix A
Evidence Review Table

Author, year	Study objective/intervention or exposures compared	Design	Sample (N)	Outcomes studied	Results	*Level and Quality Rating
O'Connor et al., 2016	To review literature in order to update USPTF depression screening recommendations. To review benefits and harms of depression screening in general adult population, older adults, and pregnant/postpartum women (new from last update).	AHRQ Funded Systematic Review	71 Studies Included (total n= 4,783,780): <u>Breakdown of studies included:</u> - <u>Screening in general:</u> 5 trials; n=2,924 - <u>Older Adults:</u> 4 trials; n=890 - <u>Pregnant/Post-partum:</u> 6 trials; n=11,869 - <u>Harms of screening:</u> 1 trial; n=462 - <u>Benefits of treatment:</u> 18 trials; n=1,638 - <u>Harms of treatment with 2nd generation antidepressants:</u> 1 systematic review (15 studies pregnant women with depression, 109 studies in general pregnant population, one trial (n=87), and 12 observational studies (n=4,759,435) - <u>Diagnostic accuracy of selected screening</u>	Literature search, Using an analytic framework that compared depression in patients that were screened versus not screened. -Two independent reviewers.	The evidence supports benefits of screening general adult population and pregnant/postpartum women, especially when there is additional treatment support available. There is limited research regarding screening older adults for depression. General adult population results: All studies showed greater depression symptom response in intervention groups, but only statistically significant in 2 large studies that included additional support beyond screening (47% remission in intervention group compared to 28% in control group (RR, 1.71 (95% CI, 1.13 to 2.57).	Level: I Quality: A

			<u>instruments:</u> 26 studies; n=6,175			
Arroll et al., 2010	To validate the PHQ-2 and PHQ-9 to screen for major depression in the Primary Care Setting	Randomized Controlled Trial	N= 2,642 (completed both PHQ-9 and the CIDI)	Patients completed the PHQ-9 after completing the Composite International Diagnostic Interview (CIDI) depression reference standard.	-PHQ-2: Sensitivity 86%, Specificity 78% for a score 2 or higher, Sensitivity 61% and specificity 92% for score 3 or higher -PHQ-9: Sensitivity 74% and specificity 91% with a score 10 or higher -Detected more cases of major depression in cases with a score greater than 10 then originally described by Spitzer et al in 1999.	Level 1 Quality: A
Levis, Benedetti & Thombs, 2019	To examine the accuracy of PHQ-9 for screening to detect major depression	Meta-Analysis using individual participant data -Included studies that compared PHQ-9 scores with major depression diagnoses from validated diagnostic interviews	58 studies, Total n= 17,357 (major depression cases: n=2312); breakdown: -Cut-off score >10 in studies that used a semi structured interview (29 studies, n=6725)	-For PHQ-9 scores 5-15, pooled sensitivity and specificity were estimated using bivariate random effects meta-analysis	-For cut-off score >10 that used semi structured interview: Sensitivity of PHQ-9 was 0.88 (95% CI 0.83 to 0.92), Specificity was 0.85 (95% CI 0.82 to 0.88)	Level 1 Quality: A
Kroenke, Spitzer, & Williams, 2001 (Original PHQ-9 Research)	To study the validity of the PHQ-9 (new measure of depression severity).	Randomized Controlled Trial	N=6,000, setting breakdown: - <u>Primary care:</u> n=3,000 (1,422 from Internal Medicine, 1,578 from Family Practice) - <u>Obstetrics-gynecology:</u> n=3,000	PHQ-9 Instrument was completed by the patients and then construct validity was examined using the Short-Form General Health Survey, self-reported sick days and clinic visits, and symptom related difficulty. -Criterion validity was examined	-As the PHQ-9 severity increased, there was a significant decrease in the functional status of the short-form general health subscales. -As PHQ-9 severity increased, symptom-related difficulty, sick days, and clinic visits increased. -A PHQ-9 score ≥ 10 was found to have a sensitivity of 88% and a specificity of 88% for major depression, using the Mental Health Professional interview as the criterion standard. A score of 5, 10, 15, and 20 represented mild,	Level II Quality: A

				against an independent Mental Health Professional interview of a sample of 580 patients.	moderate, moderately severe, and severe depression, correspondingly.	
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**Appendix B
Patient Health Questionnaire-9 (PHQ-9)**

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)

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

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

FOR OFFICE CODING 0 + + +
=Total Score:

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

Not difficult at all ⑤	Somewhat difficult ⑤	Very difficult ⑤	Extremely difficult ⑤
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Developed by Drs. Robert L. Spitzer, Janet B.W. Williams, Kurt Kroenke and colleagues, with an educational grant from Pfizer Inc. No permission required to reproduce, translate, display or distribute. Retrieved from: <https://www.phqscreeners.com/select-screener>

APPENDIX C

Quality Improvement Procedures for PHQ-9

1. The Medical Assistant (MA) will provide all annual exam patients that are ages 18-64 with the PHQ-9 form to complete to reflect how they have felt in the last 2 weeks. The MA may assist the patient if necessary (literacy issues, clarification, etc.).
2. The provider will review the instrument results with the patient and calculate the total PHQ-9 score. Scores alone do not diagnose depression. A clinical interview including assessment of patient’s level of distress and functional impairment is required to diagnose depression.

PHQ Total Score	Depression Severity
0-4	Minimal or none
5-9	Mild
10-14	Moderate
15-19	Moderately severe
20-27	Severe

3. Critical Actions: Perform a suicide risk assessment in patients that respond positively to item 9 “Thoughts that you would be better off dead or of hurting yourself in some way.” Rule out bipolar disorder, normal bereavement, and medical disorders causing depression.
4. Management Summary Recommendations Based on PHQ-9 Score:

PHQ Total Score	Depression Severity	Management
0-4	Minimal or none	Monitor, may not require treatment.

5-9	Mild	Use clinical judgement (symptom duration, functional impairment) to determine necessity of treatment.
10-14	Moderate	Use clinical judgement (symptom duration, functional impairment) to determine necessity of treatment.
15-19	Moderately severe	Warrants active treatment with psychotherapy, medications, or combination.
20-27	Severe	Warrants active treatment with psychotherapy, medications, or combination.

5. All PHQ-9 scores are to be documented by provider or MA under Psychiatric Assessment tab in electronic medical record. Providers or MAs will destroy the PHQ-9 form once the score has been recorded.
6. If PHQ-9 score is ≥ 5 , a plan of care for depression will be documented during the patient visit (medication, follow-up, referrals, etc).
7. If PHQ-9 score is ≥ 15 , a printed resource of local psychotherapy (per management summary guidelines above) will be provided to the patient.

APPENDIX D

DATA COLLECTION AUDIT TOOL

DATE	PROVIDER (A or B)	PHQ-9 SCREENING SCORE	PHQ-9 SCREENING SCORE Documented Under Psych Assessment YES/NO	IF PHQ-9 ≥ 5: CAREPLAN (Meds, follow-up, referral, etc.)	IF PHQ-9 ≥ 5: CAREPLAN Documented Plan in Provider Note YES/NO	IF PHQ-9 ≥ 15: LOCAL PSYCHOTHERAPY RESOURCE PROVIDED YES/NO

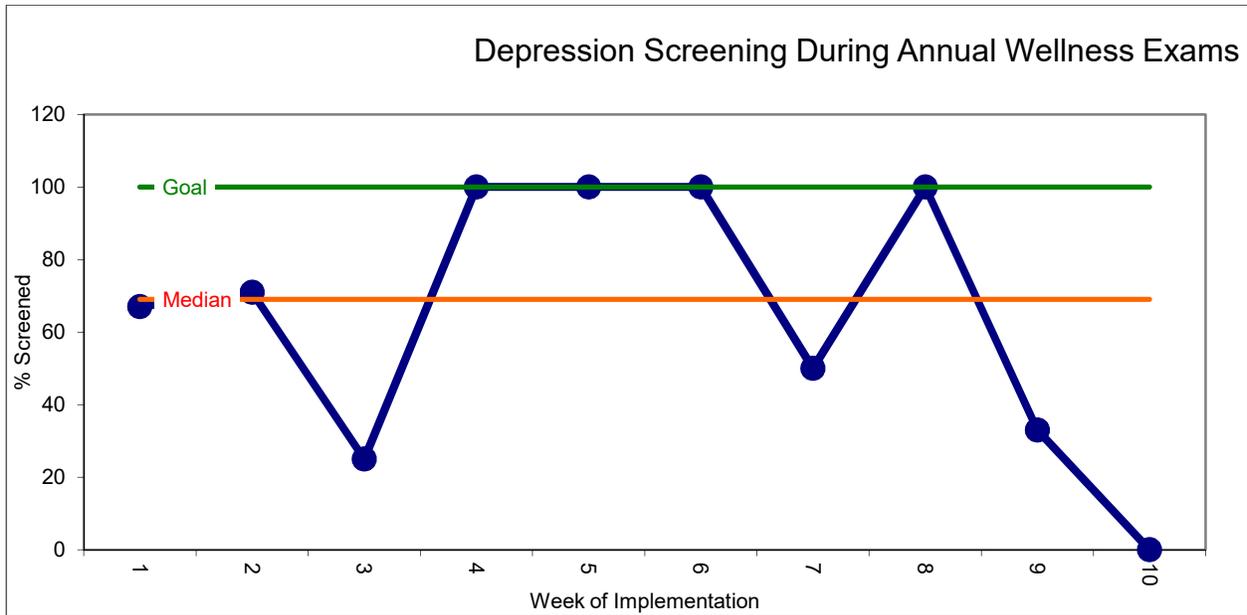


Figure 1. Depression Screening During Annual Wellness Exams