

**Identifying and Managing Major Depression in the Emergency Department**

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Second Reader

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**Author's Note**

There is a potential for conflict of interest as the DNP student serving as project champion is employed in the ED where this project takes place.

### Abstract

**Problem:** Major depressive disorder (MDD) is a common and serious medical illness caused by physiological, emotional, and social elements that can be treated and managed. For many adults, the Emergency Department (ED) serves as the safety net for care, reinforcing the importance of addressing MDD when they are present. The ED in Baltimore manages approximately 45,000 patients per year, served as the site for this quality improvement project. Previously, there was no screening protocol for depression or formal education provided to nursing staff to understand root causes of depression affecting patients presenting to the ED. **Purpose:** The purpose of this quality improvement project is to implement the Patient Health Questionnaire (PHQ-9) screening tool within the Emergency Department to better identify patients at risk for MDD and suicide, and thereby align them with mental health, psychiatry, and social work resources. The review of literature was consistent in their recommendation of utilizing the PHQ-9 as a sensitive indicator for MDD demonstrating consistent benefits of implementation in the ED setting. **Methods:** The PHQ-9 was performed on patients presenting to the ED with an Emergency Severity Index (ESI) of 2 or greater, via a screening flowsheet by nursing staff. This initiative was implemented over a 15-week period in the Fall of 2023. Chart audits were performed weekly evaluating staff adherence. Multiple data sets were collected including nursing education, as well as chart audits observing the utilization of PHQ-9. **Results:** Education was provided to nurses with pre and post surveys demonstrating increased familiarity with depression and the PHQ-9, and willingness to use the tool, recognizing the benefit of the education piece to increased utilization. A total of 474 screenings were performed, and 54 patients screened positive. **Conclusion:** Despite the significant operational barriers, there was increasing utilization, and most patients who screened

positive received depression resources in discharge paperwork and psychiatric consultation.

**Keywords:** *Depression, Emergency Department, mental health, screening*

### **Identifying and Managing Major Depression in the Emergency Department**

Depression is a common and serious medical illness caused by physiological, emotional, and social elements that can be treated and managed. Major Depressive Disorder (MDD) is ranked as the third leading cause of the burden of disease worldwide and is projected to rank first by 2030 (Bains, 2022). Patients with MDD also present to the Emergency Department (ED) with somatic complaints, bodily injury from suicidal attempts or substance abuse, fatigue, lab abnormalities, memory difficulties, loss of appetite, and altered mental status, necessitating the utilization of a universal depression screening tool (Bains, 2022). Baltimore City has a long history of federal and local government-sanctioned discriminatory legislation, and practices, that have profoundly affected health inequity (Thompson, E. & Kaufman, J., 2019). Significant factors affecting patients in Baltimore City include, trauma, adverse childhood experiences (ACEs), history of mental illness, substance abuse, and biological factors (brain chemistry, hormones, and genetics). Experiencing six or more ACEs may reduce one's life expectancy by 20 years and increases risk of suicide attempts by 2 to 5-fold. In Baltimore, 42% of adults have experienced three or more ACEs, compared to the 24% in Maryland (Thompson, E. & Kaufman, J., 2019). The fishbone diagram in Appendix A illustrates the interplay between the individual with their environment, as well as root causes and challenges to addressing MDD.

The prevalence of depression is significantly greater among patients in the ED than in the overall population (Abar et al., 2017). For many adults, the ED serves as the safety net for care, reinforcing the importance of addressing MDD at each visit. An academic institution in an urban downtown hospital will serve as the site for this quality improvement project. There is no existing screening protocol for assessing depression, or formal education provided to nursing

staff to understand and acknowledge root causes of depression affecting patients presenting to the ED.

### **Specific Aims and Available Knowledge**

Major depression is a significant comorbidity affecting the management of patients presenting to the ED with acute complications. Identification of an evidenced-based tool to effectively evaluate for major depression was evaluated through a literature review. The review using keywords “depression,” “emergency department,” “mental health,” and “screening,” and the final evidence appraisal included seven articles graded using the John’s Hopkins Nursing Evidence-Based Practice Evidence Level and Quality Guide. Appendix B provides an evidence synthesis of selected articles, consisting of sources scoring from level 1 to level 3. All articles reviewed used the Patient Health Questionnaire (PHQ-9), outlined in Appendix C, in an ED setting, and demonstrated consistent benefits to implementation. The meta-analysis by Levis et al. (2019), the most powerful study, exhibited the PHQ-9 sensitivity was greater than previous conventional meta-analyses, and individuals who scored high ( $\geq 10$ ) on the PHQ-9 were 7 to 13.6 times more likely to be diagnosed with depression. The study by Hyphantis et al. (2015) observed patients presenting with chronic disease, and found that a cut-off points of eight, was accurate enough to evaluate for MDD. The review of literature was consistent in their recommendation of utilizing the PHQ-9 as a sensitive indicator for MDD demonstrating consistent benefits of implementation in the ED.

The purpose of this quality improvement project was to implement the PHQ-9 screening tool within the ED to better identify patients at risk for major depression and suicide, and thereby align them with mental health resources. The intention was to capture every eligible patient presenting to the ED, and screen them for major depression. The aim was to provide 100% of

patients with a positive screen, a mental health evaluation and outpatient resources upon discharge.

### **Rationale**

The Promoting Action on Research Implementation in Health Services (PARIHS) framework was utilized for the implementation of the depression screening tool, see Appendix D. The model uses three concepts: evidence, context, and facilitation (Ward et al., 2017). The evidence concept, defined as the knowledge supporting effectiveness of the intervention, includes the clinical knowledge base of ED staff, literature synthesis, patient, and nursing experience. The context, defined as the environment of implementation, includes buy-in from ED leadership, and an environment that is used to habitual improvement initiatives. Context also includes measurement of performance and feedback, as well as resources available in the ED. The final concept is facilitation, defined as the process to increase the success of the intervention, includes the roles of the participants, stakeholders, and champions, the characteristics, skills and attributes of staff and participants (Bergström et al., 2020). The use of a validated screening tool, with an efficient workflow, and engaged staff, has the potential for profound care integration and improvement in the ED (Sunderji et al., 2017).

### **Methods**

#### **Context**

This project was executed in an academic institution with magnet designation, therefore initiatives to improve overall health, patient satisfaction, decrease readmissions, and nurse-led intervention coincide with the goals of the hospital. There was significant backing and support from the ED management and clinical leadership to improve the current workflow. ED staff instruction is regularly implemented through a standardized formal staff education process for

new hires, annual competencies, as well as a specific nurse class for education on new initiatives and practices, facilitated through the ED Quality and Safety Coordinator and ED Nurse Educator. Additional resources include social workers that are available 24 hours for consultation as well as to address the social needs of patients. This institution also has a psychiatric emergency service (PES), for mental health evaluation in the ED. Nursing currently only performs suicide and substance abuse screening, alerting social work for any positive screens. The current nursing workflow does not include screening for depression, as described in Appendix E. The updated workflow with the implementation of the PHQ-9 screening is described in Appendix F.

A context assessment index (CAI) performed in the ED identified profound barriers threatening project implementation, including poor organizational management, poor communication, and lack of autonomy and staff feedback. The CAI also identified unit strengths including strong utilization of evidence-based practice (EBP), prioritization in patient education and shared decision-making, and transformational leadership in the ED, which is needed for successful project implementation.

The ED also had significant staffing concerns including 30% vacancy, high turnover, and frequent training of new staff. Implementation of this project was also dependent on psychiatry and social work staff, adding additional variables to its execution. ED leadership showed enthusiasm for this project, however there were unforeseeable operational demands, that affected the ED workflow.

### **Intervention**

To meet the project's aims, the PHQ-9 was selected as the tool to screen for MDD based on its effectiveness as well as its versatility and validity. Project implementation occurred over 15 weeks in the Fall of 2023 and was led by a PHQ-9 champion who performed depression

education to nursing staff, assessed appropriate utilization of PHQ-9 in EPIC workflow, and chart audits to evaluate for screening. Inclusion criteria for screening included patients with an Emergency Severity Index (ESI) of 2-5, were able to answer questions appropriately, and presented to the ED for care. Exclusion criteria included patients with ESI of 1, were not medically or behaviorally stable to answer questions, patients who left before treatment completed (LBTC), and patients who were sent to Urgent Care, PES, or Labor and Delivery to continue their care.

Patients who met inclusion criteria were screened by nurses in the ED and results were documented in the electronic health record (EHR). The PHQ-9 is available as flowsheet in the EHR, comprising of 9 questions, corresponding to a numerical score based on patient responses. The guidelines of the PHQ-9 delineate those patients with a score of “10” or higher meet the criteria for diagnosis of major depression and are considered a “positive screen.” Once a patient screens positive, the provider is made aware, and places depression resources in AVS, and initiates a mental health consult if indicated based on patient’s presentation or score for severe depression. Several tactics were utilized by the project champion to increase screenings in the ED. Strategies using the Bingham’s ABCDE framework outlined in Appendix G (Bingham & Main, 2010), provided a multi-modal approach to engage staff including clinical supervision, treats and financial incentives. There was also continuous on-site education, including understanding root-cause analysis of depression the ED population, as well as modeling and demonstrating the incorporation of the PHQ-9 into nursing workflow, executed by the project champion. High utilizers of the screenings tool were recognized in weekly emails, promoting friendly competition. These strategies highlighted in the PARIHS model incorporated the concepts of context, and facilitation, that served as the framework for this project.

**Measures**

The process goals were measured using Research Electronic Data Capture (REDCap) surveys and audit tools. The data collection occurred in two distinct steps. The initial data was collected through pre, and post education surveys given to nursing staff, addressing depression in the context of Baltimore, and the historical effects on health disparities, highlighting the importance of screening for depression, as outlined in Appendix H and Appendix I. The anonymous surveys assessed years of experience in the ED setting, familiarity with depression and the PHQ-9, and if nurses felt depression was adequately addressed. The post-education survey evaluated the understanding of depression and the PHQ-9, and likelihood of using a depression screening tool. One-on-one teaching also occurred in the ED where nursing demonstrated appropriate utilization and documentation of the PHQ-9 and verbalized understanding of workflow if patient has a positive screen.

The secondary data collection occurred via screenings performed by nurses and were documented in an existing EHR flowsheet, ensuring confidentiality. The chart audits were performed weekly by the project champion, where the total screens per week were compared to the total number of eligible patients. If PHQ-9 was screening performed, and if screening was positive, what services were rendered, as described in Appendix I. The information placed in REDCap is a protected server to maintain confidentiality and security of patient data and plotted on the run chart outlined in Figure 5.

**Ethical Considerations**

The project has been submitted and approved by the Institutional Review Board (IRB) ensuring appropriate ethics and confidentiality is maintained and approved for a Non-Human Research determination. Only stable patients meet criteria for inclusion and therefore little

ethical risk from exclusion. Data was gathered via anonymous surveys from staff, and data collected from patients using Health Insurance Portability and Accountability Act (HIPAA) privacy practices and will be collected and tracked using a HIPAA compliant REDCap server, with de-identified data to protect confidentiality. Only the project lead had access to any raw data. Submission and acceptance by the IRB determined the quality improvement project demonstrates minimal risk to subjects, with reasonable benefits, privacy and confidentiality are protected, informed consent processes are following federal and institutional regulations. There is a potential for conflict of interest as the DNP student serving as project champion is employed in the ED where this project takes place.

### **Results**

Multiple quantitative data sets were collected throughout project implementation. Pre and post education surveys, as well as 15 weeks of project intervention data was collected to ultimately address mental health in the ED setting. In terms of structural goals, the first data points included an evaluation of nursing education, presented via a didactic approach, as well as hands-on training. Data collection included education, as well as chart audits for utilization of PHQ-9. Nurses demonstrated increased familiarity with depression and the PHQ-9, and willingness to use the tool after education, as delineated in Figure 1 & 2. Approximately 80% of nursing staff completed education via education seminars, instruction during staff meetings, and one-on-one teaching, however due to significant turnover, the 100% structure goal was not met.

A total of 8,229 patients met the criteria for screening, and 474 screenings were performed, as demonstrated in the clustered bar graph noted in Figure 3. A total of 54 patients screened positive, making up 11.4% of total screenings performed, as demonstrated Figure 3. Of those, 33 patients received depression resources in their discharge paperwork, comprising 61.1%

of positive screens. Furthermore, 23 patients received mental health consultation, comprising 43% of total screens. The data demonstrating the number of screenings performed per week is displayed in Figure 4, and illustrates increased utilization throughout the weeks, with a peak of 74 screenings performed in week 10. Utilization of the PHQ-9 was closely related to incentives provided to staff, reminders during shift huddles, safety meetings, and increased familiarity and comfort with the screening tool. Weeks 11 through 15 were met with staff fatigue, and the challenge of multiple other process initiatives concurrently introduced in the ED, resulting in low utilization compared to previous weeks. However, it was higher than utilization noted in weeks 0 to 3. The run chart in Figure 5 shows the percentage of screenings performed out of eligible patients. The project process goal delineates that 100% of patients will receive PHQ-9 screening, however, on average only 5.8% received screenings. Weeks 5 and week 8 demonstrated the highest utilization with 8.5% and 13.8% respectively of eligible patients being screened. The outcome goal aspired that 100% of those who screened positive for major depression would receive depression resources in their discharge paperwork. Figure 6 indicates that 61.1% of patients received discharge paperwork, and 43% of patients (23 patients total) received an on-site mental health evaluation.

There were also significant barriers which affected the utilization and project goals. Resistance was met from both medical and nursing staff, mostly likely due to increasing task demands, and documentation requirements placed on overburdened staff. Some nurses were largely resistant to additional work outside of standard workflow, and two nurses expressed adamantly they will not comply. ED providers (doctors and nurse practitioners) did not receive the education in weekly emails as originally planned, and as a result, did not consistently place depression resources in patients who screened positive. Nursing shortage and staff turnover was

substantial, resulting in frequent rotation of new graduates who were not able to prioritize this screening. An inconsistent supplemental float pool was also used; however, they were not familiar with this initiative. Technological barriers prevented the PHQ-9 from being incorporated into the mandatory screening, requiring instead, for nurses to use an additional EMR flowsheet, which considerably hindered ease of use. Significant leadership turnover, and project stakeholder transitions in the month prior to project implementation, also led to a lack of leadership support, preventing accountability resulting in slow execution of this project. To off-set long waiting room times in the ED during daytime hours, a significant number of patients were triaged and transferred to labor and delivery, psychiatric emergency services (PES), and urgent care, before the PHQ-9 could be performed, which eliminated approximately 20 patients per day, who may have otherwise been eligible for screening.

### **Discussion**

The integration of the PHQ-9 into workflow was overall successful. The staff who used the screening tool were better able to recognize the value of addressing mental health and felt satisfaction with providing at-risk patients with appropriate resources. Weeks with larger numbers of screenings were due to a pool of nursing champions who consistently screened each eligible patient. The main goal of this quality improvement project was to better identify major depression in the ED. Throughout the implementation of this project, 474 patients were screened for depression, who would have otherwise not been asked questions regarding depression, as the standard of care only screens for suicide. Of the patients screened, 61% received depression resources, and 43% received a psychiatric evaluation. This supports the idea that mental health has been addressed and intervention was largely provided when indicated. As the weeks progressed there was increasing familiarity with the screening tool, which was supported by

incentivization with snacks, gift cards, and coffee, as well as frequent education to both nurses and providers. The barrier of time-cost related to performing screenings was found to be negligible for high utilizers who were able to incorporate it into their regular workflow.

It was noted that through chart audits, not all patients who screened positive for major depression had a documented history of depression or mood disorders. Another interesting finding was that anecdotally, encouraging nurses to screen for depression amongst their patients, also elicited conversations and reflections regarding their own mental health. Which in a post-Covid era that was heavily felt by healthcare workers, was an important issue to address. The screening tool was also helped by the numerical stratification of intervention based on the patients' score, allowing providers recommendations for treatment. The close correlation with the PHQ-9 utilization and education/incentivization demonstrates that staff were responsive and largely willing to cooperate.

The largest limiting factor in the utilization of this screening tool was that it was not incorporated in the mandatory screenings, also referred to as secondary screenings. Nurses do not chart using flowsheets, and instead use different tabs to document their assessment. As a result, many did not remember to open flowsheets to access the PHQ-9. The chaotic ED environment, including balancing multiple acute patients, and managing patient flow constraints including over-crowding, decreased the prioritization placed on the PHQ-9 and mental health. There were also issues with communication between staff. Nurses did not always notify providers of positive screens, and providers often forgot to address the positive screens when notified. These observations demonstrate that further education for ED providers is necessary, as they are responsible for ordering psychiatric consultation and formulating discharge paperwork and teaching. Given the fluid nature of the ED with multiple residents and attendings rotating

continuously, and inconsistent communication, it was difficult to assess how many providers understood the project goals, which may have also affected observed versus expected outcomes. Days where the project champion was on the unit, led to a significant increase in screenings performed, and resources provided. This may also have affected bias in the project design as the total numbers do not accurately demonstrate overall adoption of the project by nursing staff.

### **Conclusion**

Depression is an identifiable and manageable disease with significantly greater prevalence in the ED. Patients present to the ED with both mental health and somatic complaints, however, there is no standard for depression screening in this emergency department. Historical education regarding health disparities in Baltimore, and depression, provided a context for addressing mental health in the ED. Nursing and medical teams were able to recognize the significant gaps, and consequences of unmanaged depression, and received work satisfaction in being able to address their patient's needs. There was increasing support and utilization of the PHQ-9 over the 15 weeks of implementation, and many nurses continue to use the screening tool today. Sustainability and is largely dependent on new nursing leadership that has not mandated its utilization, EMR changes to facilitate use, both factors of which are not present in this ED setting.

Implementation of the PHQ-9 was able to effectively address mental health in majority of patients with a positive screen. This is significant as patients were provided resources, and psychiatric consult for high-risk patients, to manage their depression acutely as well as provided a referral for outpatient treatment. As the standard of care only requires screening for suicide, significantly more patients were asked questions related to their mental health. Utilization of the screening tool strongly correlated with incentives and education, which demonstrate that further

education for ED staff is necessary. Despite the significant operational barriers, the utilization of the PHQ-9 in this ED setting is feasible in the foreseeable future. Many patients present to ED with both somatic and mental health complaints, and there are multiple resources to address patients' mental health needs in the ED including social work, psychiatry, and substance abuse counseling. This could also foster collaboration between multi-disciplinary services to better address the often-hidden mental health crisis. The results of this quality improvement project can also be replicated in other settings to address mental health, including sister hospitals, labor, and delivery and pediatric EDs. The overall success of this project, as well as the profound secondary benefits noted to the patients and staff, reiterate the efficacy and utility of promoting universal depression screenings in the ED environment.

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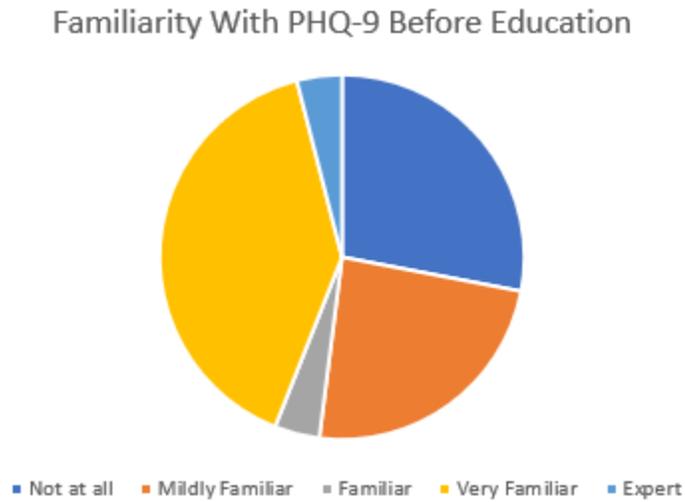
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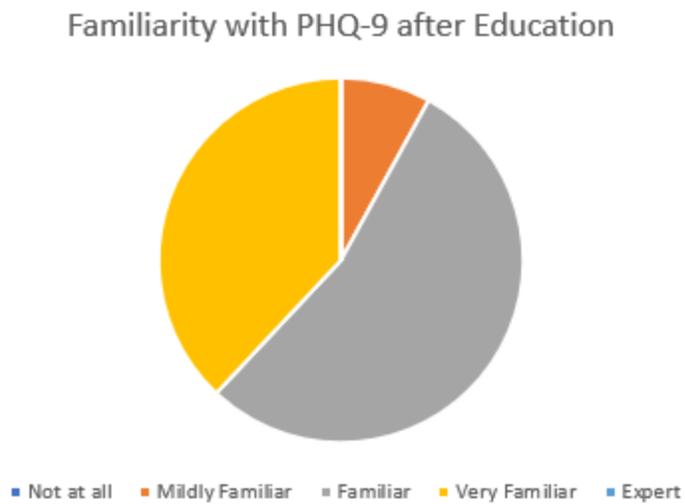
**Figure 1**

*Pie Chart of Familiarity of the PHQ-9 Prior to Staff Education*



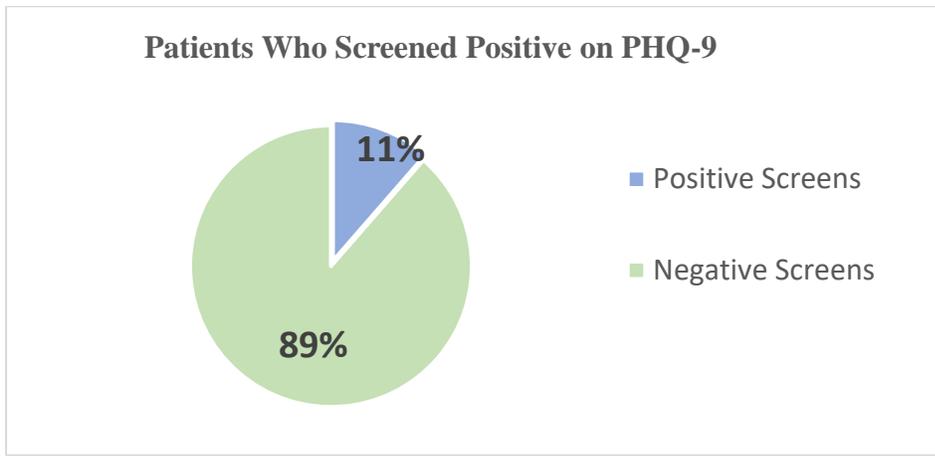
**Figure 2**

*Pie Chart of Familiarity of the PHQ-9 After Staff Education*



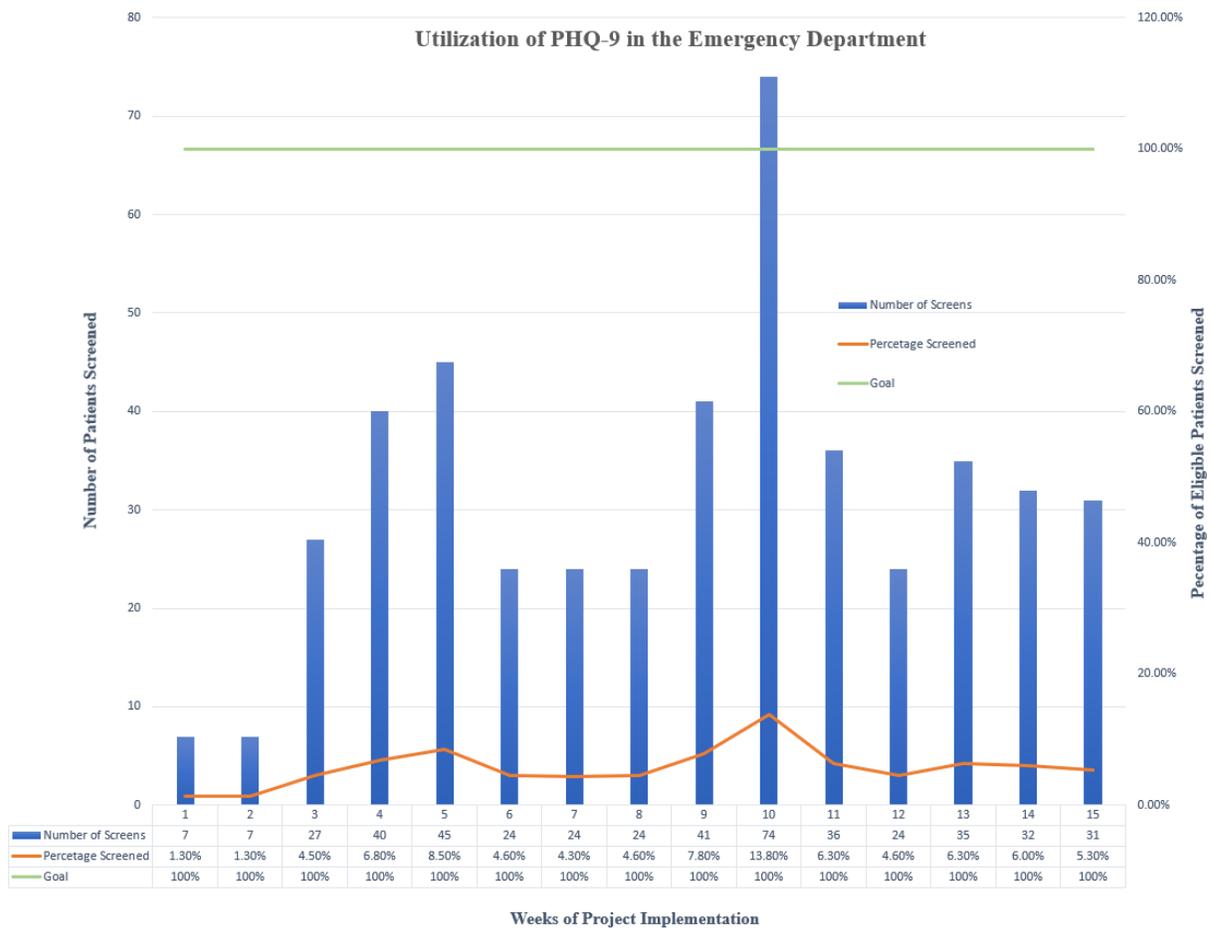
**Figure 3**

*Pie Chart of Positive Screenings of PHQ-9 out of Eligible Patients in the ED*



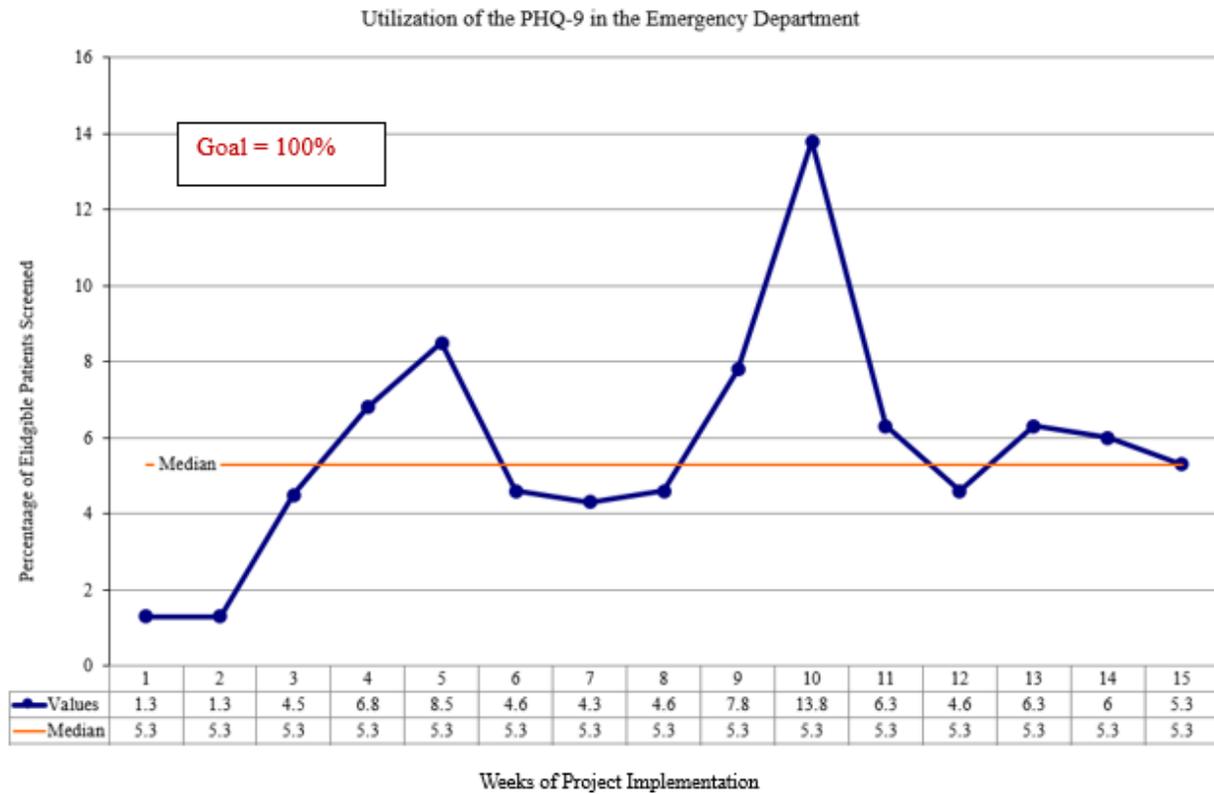
**Figure 4**

*Utilization of the PHQ-9 in the ED Over Fifteen Weeks of Project Implementation*



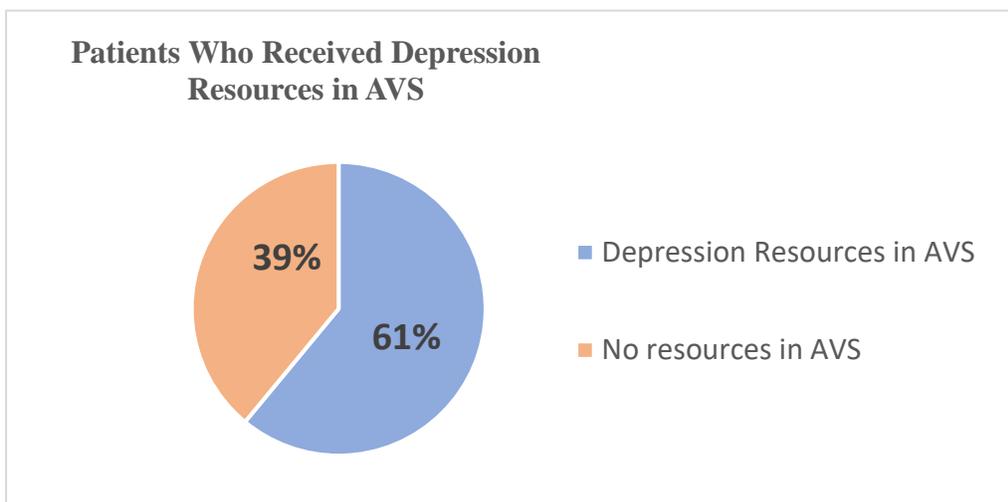
**Figure 5**

*Run Chart of the Percentage of PHQ-9 Utilization*



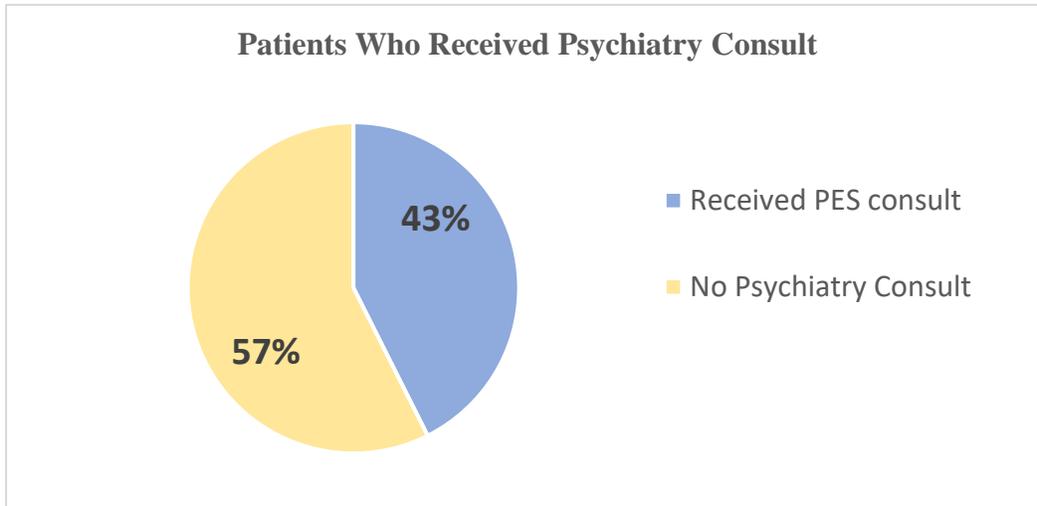
**Figure 6**

*Pie Chart of Patients Receiving Depression Resources in AVS After Positive Screen on PHQ-9*



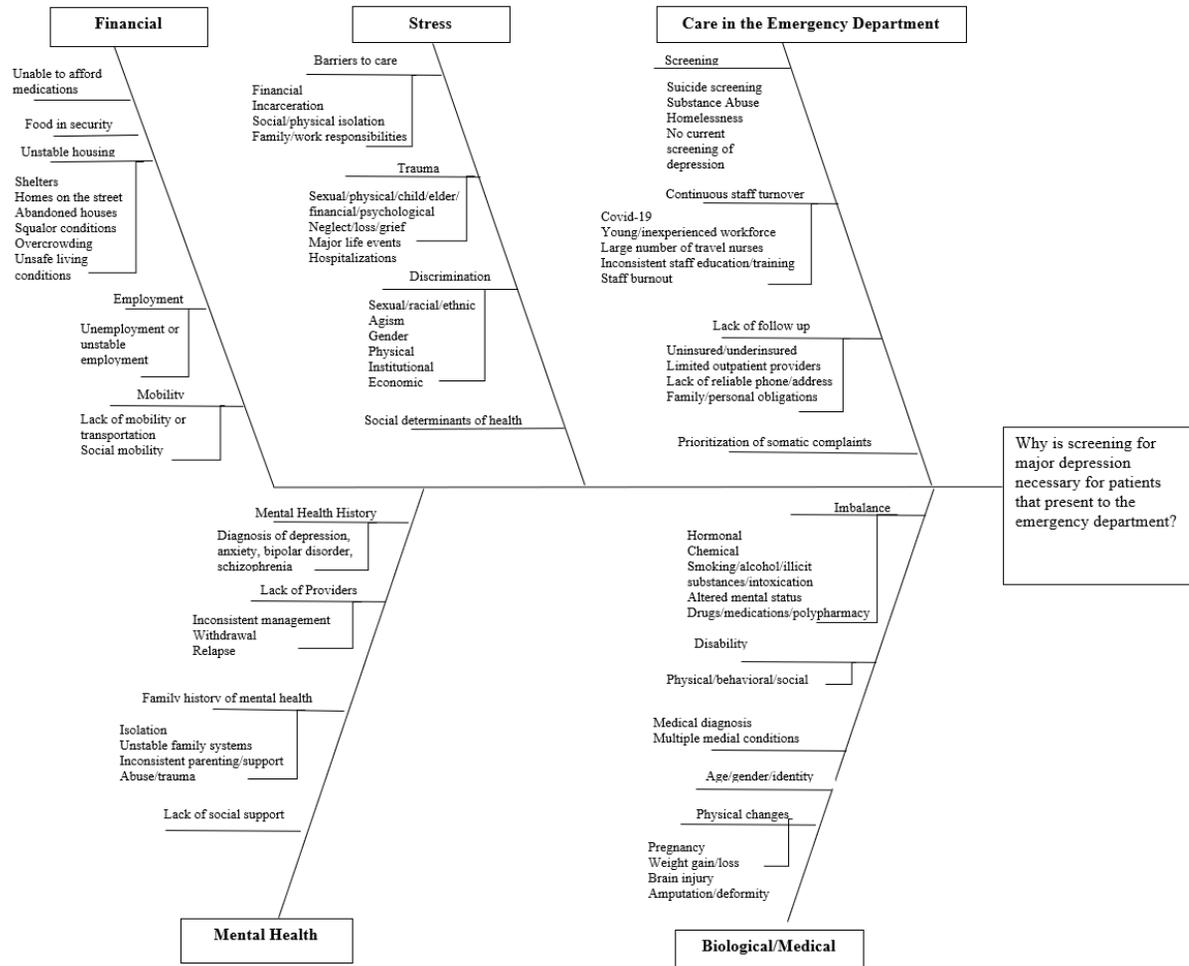
**Figure 7**

*Pie Chart of Patients Receiving Mental Health Consultation After Positive Screen on PHQ-9*



Appendix A

Fishbone Diagram



**Appendix B**

**Evidence Review**

**Table 1:** *Research articles*

<p>Abar, B., Hong, S., Aaserude, E., Holub, A., &amp; DeRienzo, V. (2017). Access to care and depression among emergency department patients. <i>The Journal of Emergency Medicine</i>, 53(1), 30–37.  <a href="https://doi.org/10.1016/j.jemermed.2016.11.029">https://doi.org/10.1016/j.jemermed.2016.11.029</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>III B</p>
Purpose/ Hypothesis	Type of Evidence Research Design	Sample	Intervention Procedures	Primary Outcomes	Results/Conclusions
<p>This study sought to establish prevalence estimates of potential barriers to care among ED patients and relate these barriers with symptoms of depression.</p>	<p>Cross-sectional study</p>	<p>Two medical students conducted brief surveys on all ED patients 18 years or older on demographics, perceived access to care, and depression.</p> <p>A total of 636 participants were enrolled.</p> <p>Convenience sample of adult patients (age 18 years or older) presenting to the ED at the</p>	<p>Universal screening survey study</p> <p>The specific items were (a) taking care of others (like caring for a spouse or grandchildren), (b) lack of insurance, (c) difficulty finding transportation, (d) doctor, clinic, or hospital bills, (d) work responsibilities, (e) fear that the doctor will discover a serious illness, (f) your feeling that the doctor is not responsive to your concerns, (g) embarrassment about a potential illness, and (h)</p>	<p>There were strong associations were observed between symptoms of depression and difficulty finding transportation, the feeling that the doctor is not responsive to patients’ concerns, embarrassment regarding potential illness, and confusion trying to schedule an appointment.</p> <p>There was a greater incidence of depression</p>	<p>The percentage of participants with mild or greater depression was 42%. The majority of patients reported experiencing some barriers to care, with the most prominent being difficulty finding transportation, work responsibilities, and the feeling that the doctor is not responsive to their concerns. Higher depression scores were bivariately associated with higher overall barriers to care mean scores (<math>r = 0.44</math>; <math>p &lt; 0.001</math>), suggesting that greater symptoms of depression are associated with greater difficulties accessing care.</p>

		University of Rochester (UR) from June through August 2015.	confusion trying to schedule an appointment.	associated with a greater perception of barriers. These barriers may be used as potential targets for intervention to increase access to health care resources.	
<p>Ford, J. E., Thomas, F., Byng, R., &amp; McCabe, R. (2020). Use of the Patient Health Questionnaire (PHQ-9) in practice: Interactions between patients and physicians. <i>Qualitative Health Research</i>, 30(13), 2146–2159.  <a href="https://doi.org/10.1177/1049732320924625">https://doi.org/10.1177/1049732320924625</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>III B</p>
<b>Purpose/ Hypothesis</b>	<b>Type of Evidence Research Design</b>	<b>Sample</b>	<b>Intervention Procedures</b>	<b>Primary Outcomes</b>	<b>Results/Conclusions</b>
The objective of this study was to explore (a) the diagnostic use of the PHQ-9 in primary care and (b) how this contrasts with diagnosis without the PHQ-9 and cases where there is no diagnosis.	Observational study	<p>The data set retrieved from 52 consultations are divided into three groups:</p> <p>consultations in which no diagnosis is present (n= 50)</p> <p>a consultation in which a diagnosis is present prior to</p>	<p>Firstly, consultations were investigated where there is no diagnosis or diagnosis is present without the PHQ-9. Second, PHQ-9 is used to establish a diagnosis</p>	<p>When clinician-administered, the PHQ-9 can be influenced by how response items are presented. This can lead to either downgrading or upgrading the severity of depression</p>	<p>Doctor’s presentation of response options was modified and/or slanted in favor of upgrading the severity of the patient’s symptoms and generating a higher score.</p> <p>PHQ-9 was deployed in response to the patient’s expressed resistance to treatment therefore, patient’s answers interpreted were influenced both by the person administering the questionnaire and by the patient’s initial verbal and nonverbal responses</p>

		<p>treatment discussion (n= 1)</p> <p>and the case where the doctor uses the PHQ-9 to diagnose the patient with depression (n= 1)</p>			
<p>Handy, A., Mangal, R., Stead, T., Coffee, R., &amp; Ganti, L. (2022). Prevalence and impact of diagnosed and undiagnosed depression in the United States. <i>Cureus</i>. <a href="https://doi.org/10.7759/cureus.28011">https://doi.org/10.7759/cureus.28011</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>III B</p>
Purpose/ Hypothesis	Type of Evidence Research Design	Sample	Intervention Procedures	Primary Outcomes	Results/Conclusions
<p>The objectives of this study were: 1) estimate the impact and severity of both diagnosed and undiagnosed depression in the general US population 2) explore the demographics of depression based on its common symptoms 3) interpret Patient Health Questionnaire-9 (PHQ-9) scores</p>	<p>A cross-sectional study</p>	<p>A random sample of 200 individuals was selected from a general US adult population to complete the Patient Health Questionnaire-9 (PHQ-9) anonymously via an online survey platform.</p>	<p>A survey was performed on the convenience sample evaluating for depression symptoms based on nine questions</p>	<p>The results indicate that undiagnosed depression exists in the US population and suggest that access to mental health services needs to expand across the nation.</p> <p>The burdens and costs of having depression are the most severe of any disease (increased medical care use, lower quality of</p>	<p>Chi-square testing was performed to assess correlation between a high PHQ-9 score and having a formal diagnosis of depression. A p-value of &lt;0.05 was considered statistically significant.</p> <p>Only 39.4% of respondents indicated that they had a formal diagnosis of depression. In contrast, 53% of participants have considered seeking help from a mental health professional. More importantly, 31.45% of respondents without a formal diagnosis had a PHQ-9 score of over 10 (moderate to severe depression)</p> <p>The results indicate that undiagnosed depression exists in the US population and suggest that</p>

to improve accuracy in identifying individuals with depression.				life, and decreased workplace productivity	access to mental health services needs to expand across the nation.
<p>Holub, A., Lee, J., DeRienzo, V., Nobay, F., &amp; Abar, B. (2019). Depression symptomology groups among middle and older adult emergency department patients. <i>Journal of Affective Disorders</i>, 245, 484–487.  <a href="https://doi.org/10.1016/j.jad.2018.11.069">https://doi.org/10.1016/j.jad.2018.11.069</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>II B</p>
<b>Purpose/ Hypothesis</b>	<b>Type of Evidence Research Design</b>	<b>Sample</b>	<b>Intervention Procedures</b>	<b>Primary Outcomes</b>	<b>Results/Conclusions</b>
<p>This study sought to identify classes of middle to late life ED patients with distinct patterns of depressive symptomology as determined by the Personal Health Questionnaire- (PHQ-9). Differences across classes with regards to</p>	<p>Prospective study</p>	<p>This study utilized a convenience sample of middle and late life adults aged 45–85 presenting to the ED at Strong Memorial Hospital in Rochester, New York between June to August 2016.</p> <p>A total of 252 participants were</p>	<p>A survey containing demographic information, access to care and self-reported symptoms of depression was then administered. Any indications of severe depression or current thoughts of self-harm were reported to the physician providing care for the patient.</p>	<p>LCA suggests there are three unique groupings of symptoms as reported by the PHQ-9. These clusters may be valuable in determining treatment options and designing interventions.</p> <p>Consent, demographics, self-report items</p>	<p>Patients in the Low Concerns class were more likely to have private insurance compared to those in the Many Concerns class (57% vs 34%, <math>p = 0.003</math>).</p> <p>They also reported better general health (<math>M = 2.39</math> vs <math>M = 1.58</math>, <math>p &lt; 0.001</math>).</p> <p>They visited their PCP less frequently (<math>M = 1.64</math> visits vs <math>M = 3.31</math> visits, <math>p = 0.004</math>).</p>

<p>patient demographics were then analyzed to provide additional class descriptions.</p>		<p>enrolled to complete a universal screening.</p> <p>252 subjects aged 45–85 years old were enrolled.</p>		<p>and PHQ-9 items were administered to subjects. Latent class analysis (LCA), was used to determine groupings of patients based on PHQ-9 items. Demographics were also considered.</p>	
<p>Hyphantis, T., Kotsis, K., Kroenke, K., Paika, V., Constantopoulos, S., Drosos, A. A., Carvalho, A. F., &amp; Guthrie, E. (2015, May). Lower PHQ-9 cut-point accurately diagnosed depression in people with long-term conditions attending the accident and emergency department. <i>Journal of Affective Disorders, 176</i>, 155–163.  <a href="https://doi.org/10.1016/j.jad.2015.01.062">https://doi.org/10.1016/j.jad.2015.01.062</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>III B</p>
<p><b>Purpose/ Hypothesis</b></p>	<p><b>Type of Evidence Research Design</b></p>	<p><b>Sample</b></p>	<p><b>Intervention Procedures</b></p>	<p><b>Primary Outcomes</b></p>	<p><b>Results/Conclusions</b></p>
<p>This study aimed to assess the prevalence of MDD and determine the psychometric properties of the PHQ-9 in diagnosing MDD in patients with long-term medical</p>	<p>Prospective observational</p>	<p>349 (80.4%) agreed to participate (194 with DM only, 56 with COPD only, 49 with CIRD only, and 50 with two or more conditions).</p>	<p>The PHQ-9 was administered to patients with diabetes, COPD and chronic inflammatory rheumatic diseases, mainly rheumatoid arthritis and spondyloarthropathies, visiting an AED. The MINI interview was used as the criterion standard for MDD.</p>	<p>PHQ-9 presents optimal discriminatory power in detecting MDD in attendants of AED at a cut-point of 8, which is lower than the conventional cut-point of 10</p>	<p>The prevalence of MDD was 27.2%. At an optimal cut-point of 8, PHQ-9 had a sensitivity of 90.5% and specificity of 89.4%. The area under the curve (0.96) was excellent. Convergent validity was established by the strong associations between PHQ-9 scores and functional status, SCL-90-R depression, illness perceptions and AED visits during the previous year.</p>

<p>conditions attending an AED</p>				<p>Greater PHQ-9 scores were associated with adverse illness perceptions</p>	<p>MDD is frequent in patients with long-term medical conditions attending the AED and the PHQ-9, at a cut point of 8, is an accurate, reliable and valid measure for MDD screening in this patient population.</p>
<p>Levis, B., Benedetti, A., &amp; Thombs, B. D. (2019). Accuracy of Patient Health Questionnaire-9 (PHQ-9) for screening to detect major depression: Individual participant data meta-analysis. <i>BMJ</i>, 11476.  <a href="https://doi.org/10.1136/bmj.11476">https://doi.org/10.1136/bmj.11476</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b>  1 A</p>
<p><b>Purpose/ Hypothesis</b></p>	<p><b>Type of Evidence Research Design</b></p>	<p><b>Sample</b></p>	<p><b>Intervention Procedures</b></p>	<p><b>Primary Outcomes</b></p>	<p><b>Results/Conclusions</b></p>
<p>To determine the accuracy of the Patient Health Questionnaire-9 (PHQ-9) for screening to detect major depression.</p>	<p>Individual participant data meta-analysis</p>	<p>Data were obtained for 58 eligible studies (total n=17 357; major depression cases n=2312)</p>	<p>Primary study data and study level data extracted from primary reports were synthesized</p>	<p>PHQ-9 sensitivity compared with semi-structured diagnostic interviews was greater than in previous conventional meta-analyses that combined reference standards. A cut-off score of 10 or above maximized</p>	<p>Combined sensitivity and specificity was maximized at a cut-off score of 10 or above among studies using a semi-structured interview (29 studies, 6725 participants; sensitivity 0.88, 95% confidence interval 0.83 to 0.92; specificity 0.85, 0.82 to 0.88).  Across cut-off scores 5-15, sensitivity with semi-structured interviews was 5-22% higher than for fully structured interviews.</p>

				combined sensitivity and specificity overall and for subgroups.	
<p>Negeri, Z. F., Levis, B., Sun, Y., He, C., Krishnan, A., Wu, Y., Bhandari, P. M., Neupane, D., Brehaut, E., Benedetti, A., &amp; Thombs, B. D. (2021). Accuracy of the Patient Health Questionnaire-9 for screening to detect major depression: Updated systematic review and individual participant data meta-analysis. <i>BMJ</i>, n2183.  <a href="https://doi.org/10.1136/bmj.n2183">https://doi.org/10.1136/bmj.n2183</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>1 A</p>
Purpose/ Hypothesis	Type of Evidence Research Design	Sample	Intervention Procedures	Primary Outcomes	Results/Conclusions
<p>To update a previous individual participant data meta-analysis and determine the accuracy of the Patient Health Questionnaire-9 (PHQ-9), the most commonly used depression screening tool in general practice, for detecting major depression overall and by study or participant subgroups</p>	<p>Systematic review and individual participant data meta-analysis</p>	<p>44503 total participants (27146 additional from the update) were obtained from 100 of 127 eligible studies (42 additional studies; 79% eligible studies; 86% eligible participants).</p>	<p>Evaluation of PHQ-9 screening tool through analysis of existing research</p>	<p>PHQ-9 specificity was slightly better when estimated among only participants confirmed as not already diagnosed or receiving treatment and who would be screened in practice</p> <p>Across all possible cut-off values, for semi-structured interviews, higher for older participants, which contradicts assumptions that screening tools</p>	<p>This study did not find any specific factors associated with a suicide attempt but found that less than half of patients presenting with suicidality actually made an attempt. Updated searches through May 2018 showed that overall sensitivity and specificity estimates were robust and consistent with previous estimates, even though the sample included an additional 42 studies (27 146 additional participants) PHQ-9 specificity was slightly better when estimated among only participants confirmed as not already diagnosed or receiving treatment and who would be screened in practice Across all possible cut-off values, for semi-structured interviews, specificity was 0-12% (median 5%) higher for older participants, which</p>

				might be less accurate in elderly people A knowledge translation tool based on the findings from this study can be used to generate screening outcomes for different cut-off values based on local assumptions about prevalence	contradicts assumptions that screening tools might be less accurate in elderly.
<p>Weatherly, A.H., &amp; Smith, T.S. (2019). Effectiveness of two psychiatric screening tools for adolescent suicide risk. <i>Pediatric Nursing</i>, 45(4), 180-183.  <a href="https://www.proquest.com/openview/6ecfc4665240cbfcaa749385b8d11abe/1?pq-origsite=gscholar&amp;cbl=47659">https://www.proquest.com/openview/6ecfc4665240cbfcaa749385b8d11abe/1?pq-origsite=gscholar&amp;cbl=47659</a></p>					<p><b>Johns Hopkins Hierarchy of Evidence</b></p> <p>II B</p>
Emergency departments (EDs) are a gateway for mental health access for adolescents suffering from depression. ED healthcare clinicians do not routinely screen for suicide risk, although screening tools have predictive value in	A pilot study using the C-SSRS and PHQ-9 modified for teens was administered to adolescents	Participants of this study were a convenience sample of 30 adolescents presenting to the ED with a chief complaint of suicidal ideation, suicidal thoughts, depression, or psychiatric evaluation over 4 months. Inclusion criteria included English	Participants were verbally administered the C-SSRS and PHQ-9 modified for teens, in accordance with the tool guidelines.	<p>These data are consistent with national studies that identify females as having three times higher rates of depression than adolescent males, and females as having three times higher rates of depression than adolescent males</p> <p>Compared with other emergency visits, mental health</p>	<p>A pilot study using the C-SSRS and PHQ-9 modified for teens was administered to adolescents aged 14 to 18 years presenting with a psychiatric chief complaint. A comparison appraisal of the results from the PHQ-9 and C-SSRS to the psychiatric consultant disposition was completed.</p> <p>60% of adolescents who screened positive for suicide and moderate-severe depression were admitted, and 66.6% of those who screened positive for suicide and severe depression were also admitted.</p>

<p>identifying patients warranting psychiatric admission. The purpose of this study was to investigate the use of the Columbia-Suicide Severity Rating Scale (C-SSRS) and the assessment of depression severity using the Patient Health Questionnaire-9 (PHQ-9) modified for teens by healthcare clinicians in identifying adolescents at higher risk for suicidality</p>		<p>speaking, adolescents aged 14 to 18 years, and presumed to have depressive symptoms and/or suicide ideation upon evaluation.</p>		<p>visits have a longer length of stay, receive urgent triage categories, and are more likely to result in admissions.</p>	<p>Participants who had negative suicide screens but screened positive for some form of depression were far less likely to be admitted, with 66.6% of this group being discharged home.</p> <p>There was no 2-week return visit for 92% of the discharged patients. A little over 30% of participants discharged home with a positive suicide screen were also positive for moderate-severe depression</p>
<p>(Dang et al., 2021)</p>					

**Table 2: Evidence synthesis****Evidence Synthesis**

<b>The implementation of the PHQ-9 in the Emergency Department to evaluate for Depression</b>			
<b>PICOT:</b> Screening for depression in the emergency room, identifies patients at risk for major depressive disorder, that increases risk for suicide. Using the PHQ-9 depression questionnaire will identify patients with depressive symptoms triggering prompt evaluation and referral.			
<b>JHNEBP Model Level</b>	<b>Total Number of Sources</b>	<b>Author and Quality Rating of each study</b>	<b>Synthesis of Findings</b>
<b>Level I</b> Experimental study · Randomized Controlled Trial (RCT) · Systematic review of RCTs with or without meta-analysis	2	Negeri et al. -A  Lewis et al. - A	Negeri et al. (2021) found that researchers and clinicians could use the PHQ-9 to determine outcomes based on different cut-off values in different clinical settings  Lewis et al. (2019) PHQ-9 sensitivity compared with semi-structured diagnostic interviews was greater than in previous conventional meta-analyses that combined reference standards. A cut-off score of 10 or above maximized combined sensitivity and specificity overall and for subgroups.
<b>Level II</b> Quasi-experimental studies · Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis	1	Holub et al. - B	Holub et al. (2019) Findings suggest that there are three distinct groupings of individuals who present with unique symptom patterns. The largest class (Low Concerns) endorsed a relatively low amount of items. The second largest class (Many Concerns)
<b>Level III</b> Non-experimental study · Systematic review of a combination of RCTs, quasi-experimental, and non-experimental studies, or non-experimental studies only, with or without meta-analysis · Qualitative study or systematic review of	4	4 experimental studies  Abar et al. - B  Handy et al. – B Hyphantis et al. - B	The four studies by Abar et al., Handy et al., Hyphantis et al., and Sheriden & Lin found and supported the use of PHQ-9 as a valid tool for evaluating depression, however more research is needed in this topic.

<p>qualitative studies with or without meta-synthesis</p>			<p>Abar et al. (2017) demonstrated there was a greater incidence of depression associated with a greater perception of barriers, and may be used as potential targets for intervention to increase access to health care resources.</p> <p>Handy et al. (2022) suggests that undiagnosed depression exists in the U.S. and access to mental health services needs to expand across the nation to provide appropriate care.</p> <p>Hyphantis et al. (2015) finds MDD is frequent in patients with long-term medical conditions attending the AED and the PHQ-9, at a cut-point of 8, is an accurate, reliable and valid measure for MDD screening in this patient population.</p> <p>Sheridan and Lin (2022) found Adolescent mental health is a growing issue for pediatric emergency departments nationally. This study did not find any specific factors associated with a suicide attempt but found that less than half of patients presenting with suicidality actual made an attempt, future research is needed.</p>
<p><b>Level IV</b> Opinion of respected authorities and/or reports of nationally recognized expert committees/consensus panels based on scientific evidence</p>	<p>1</p>	<p>Ford et al. - B</p>	<p>Ford et al. (2020) found when clinician-administered, the PHQ-9 can be influenced by how response items are presented. This can lead to either downgrading or upgrading the severity of depression</p>

<p><b>Level V</b>                  Evidence obtained from literature reviews, quality improvement, program evaluation, financial evaluation, or case reports · Opinion of nationally recognized expert(s) based on experiential evidence</p>			
<p>Overall, the quality rating w/ rational and recommendation: B Evidence is good and consistent to support practice change. The level the literature reviewed consist of Level I-II, and quality rating of A, and B.</p>			

Appendix C

Patient Health Questionnaire (PHQ-9)

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

ID #: \_\_\_\_\_ 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, please refer to accompanying scoring card). TOTAL:

10. If you checked off <i>any</i> 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	_____

## PHQ-9 Patient Depression Questionnaire

**For initial diagnosis:**

1. Patient completes PHQ-9 Quick Depression Assessment.
2. If there are at least 4 ✓s in the shaded section (including Questions #1 and #2), consider a depressive disorder. Add score to determine severity.

**Consider Major Depressive Disorder**

- if there are at least 5 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

**Consider Other Depressive Disorder**

- if there are 2-4 ✓s in the shaded section (one of which corresponds to Question #1 or #2)

**Note:** Since the questionnaire relies on patient self-report, all responses should be verified by the clinician, and a definitive diagnosis is made on clinical grounds taking into account how well the patient understood the questionnaire, as well as other relevant information from the patient.

Diagnoses of Major Depressive Disorder or Other Depressive Disorder also require impairment of social, occupational, or other important areas of functioning (Question #10) and ruling out normal bereavement, a history of a Manic Episode (Bipolar Disorder), and a physical disorder, medication, or other drug as the biological cause of the depressive symptoms.

**To monitor severity over time for newly diagnosed patients or patients in current treatment for depression:**

1. Patients may complete questionnaires at baseline and at regular intervals (eg, every 2 weeks) at home and bring them in at their next appointment for scoring or they may complete the questionnaire during each scheduled appointment.
2. Add up ✓s by column. For every ✓: Several days = 1 More than half the days = 2 Nearly every day = 3
3. Add together column scores to get a TOTAL score.
4. Refer to the accompanying **PHQ-9 Scoring Box** to interpret the TOTAL score.
5. Results may be included in patient files to assist you in setting up a treatment goal, determining degree of response, as well as guiding treatment intervention.

**Scoring: add up all checked boxes on PHQ-9**

For every ✓ Not at all = 0; Several days = 1;  
More than half the days = 2; Nearly every day = 3

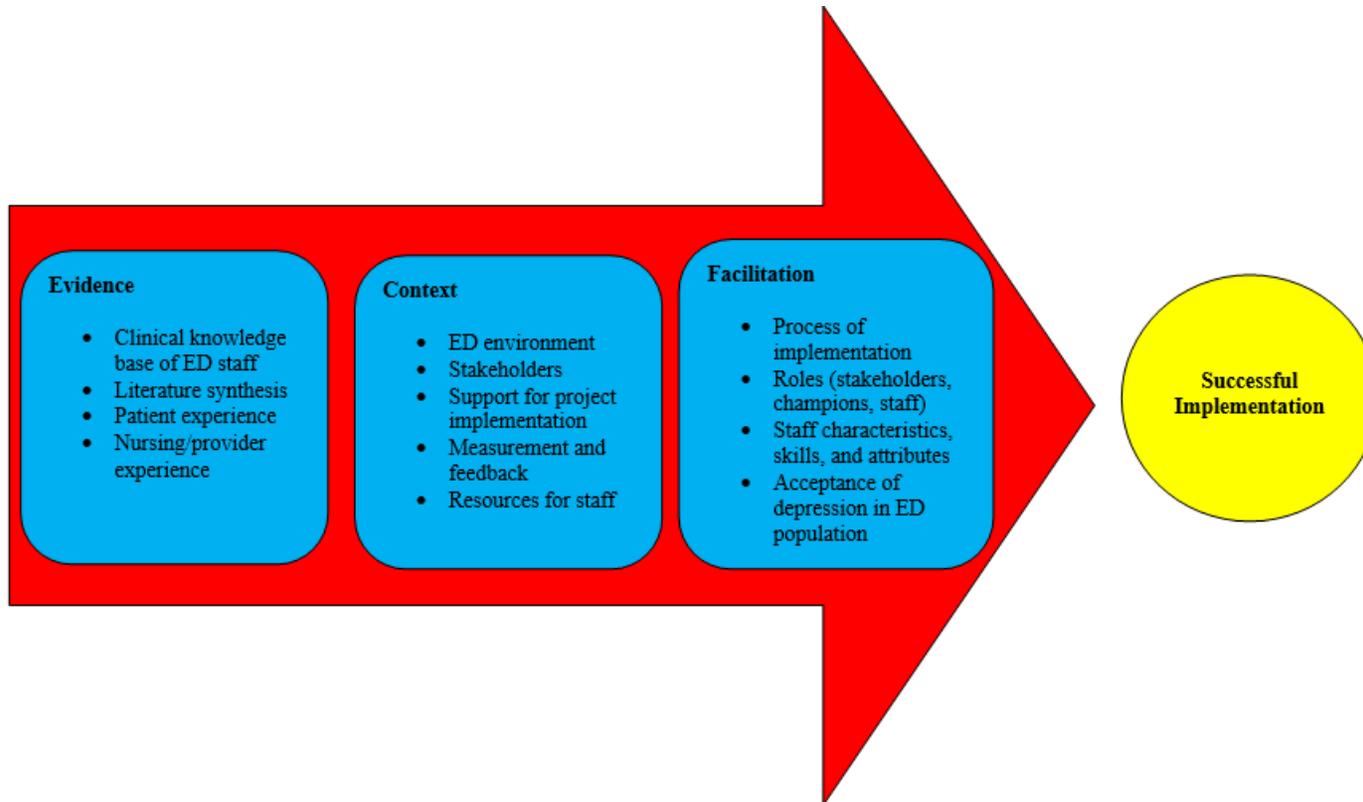
**Interpretation of Total Score**

Total Score	Depression Severity
1-4	Minimal depression
5-9	Mild depression
10-14	Moderate depression
15-19	Moderately severe depression
20-27	Severe depression

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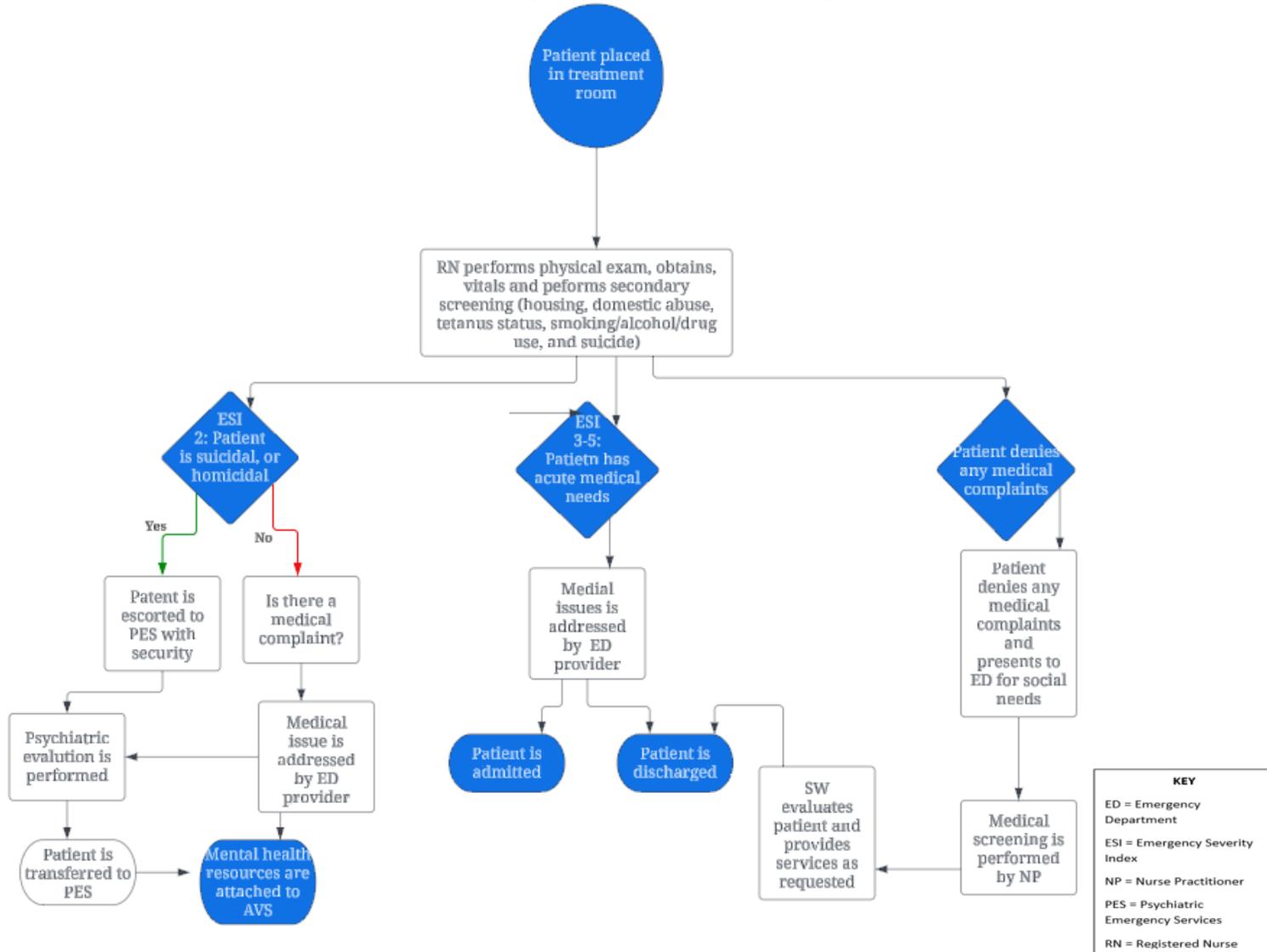
Appendix D

The PARIHS Framework Adapted to PHQ-9 Implementation in the ED



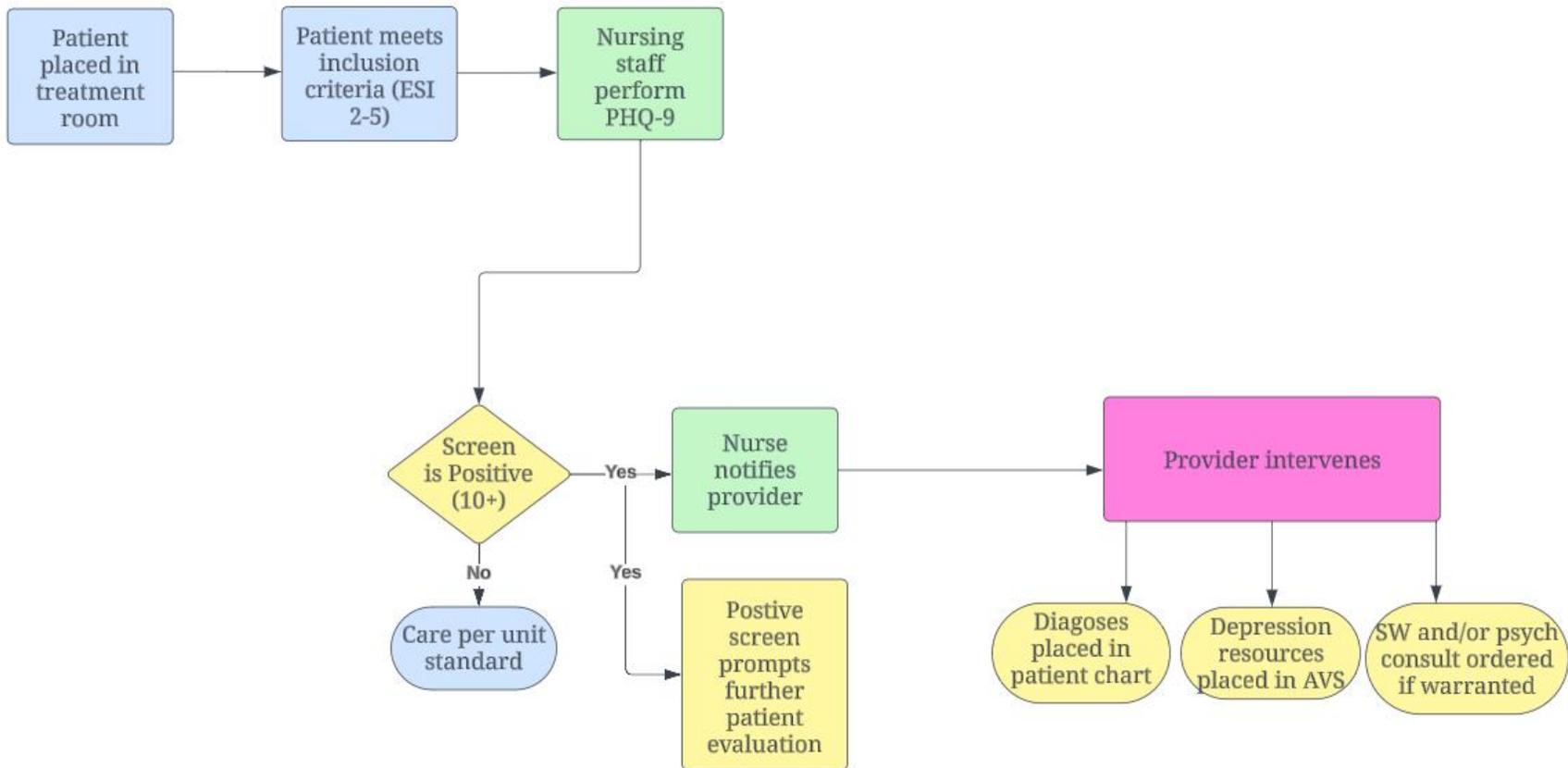
Appendix E

Pre-Implementation Process Map



Appendix F

Updated Current Process Map



## Appendix G

Bingham's ABCDE Strategies and Tactics Table

	<b>ERIC Strategy</b>	<b>Context-Specific Approach and Rationale</b>	<b>Effectiveness Evaluation</b>
<b>Accountability</b>	Obtain formal commitments	Nurses and nursing leadership will commit to the process of implementing major depression screen in the ED, to ensure the success of the QI project and ensure screening is performed.	Chart audits will be performed to evaluate screening utilization
	Provide clinical supervision	PHQ-9 champions will supervise the education process, implementation of the depression screening and provide on-going training as needed to nurses and social workers.	Champions will continuously monitor utilization of the PHQ, and re-train as necessary.
	Provide performance reviews	Interdisciplinary teams will meet regularly to evaluate the logistics of the depression screening tool and implementation to identify barriers in real-time.	Meetings will be tracked
<b>Buy-In</b>	Alter incentive structures	Champions of PHQ-9 will provide nurses and social workers incentives to motivate the adoption and implementation of the screening tool, including recognizing high utilizers and pizza party at established milestones.	Set thresholds will be developed prior to implementation and tracked over 15 weeks.
	Increase demand	ED leadership will recognize the short-term and long-term financial social benefits of depression screening implementation.	Track the number of readmissions to evaluate for organizational monetary gain
<b>Collaboration, Communication, and Changes in</b>	Identify and prepare champions	Working with nursing, social work, ED providers (residents, attendings, and nurse practitioners), IT, psychiatry, to create an efficient way to screen and collect data. Demonstrating the interdisciplinary nature of this intervention to ensure everyone is on board and can communicate concerns.	Provide continuous monitoring of implementation and evaluation during data collection.

<b>Structures</b>	Use mass media	Send monthly emails to staff including key stakeholders on group emails with program updates	Will track communication and regular communication.
	Conduct local consensus discussions	Set up partnership with local mental health resources	Maintain a list of local partnerships
	Conduct local consensus discussions	Maintain interdisciplinary support (nursing, providers, IT, social work, psychiatry, and SBIRT) to emphasize potential impacts of the program. Incorporate mission of unit-based committees, and local mental health organizations and work towards shared goal	
<b>Data</b>	Assess readiness and identify barriers and facilitators	EPIC – connect with IT to develop an easily accessible screening flowsheet that connects to track board utilized by nursing, providers, social work, psychiatry and SBIRT.	Evaluate if flowsheet is available through EPIC at the start of project implementation
	Use data experts	EPIC – connect with IT to best collect data prior to project implementation, capture implementation data, and compare during evaluation phase	
<b>Education</b>	Set up classes, present at conferences and grand rounds, provide webinars	Provide unit-based education to nursing staff regarding major depression affecting patients in Baltimore and surrounding areas presenting to the ED, and benefits of depression screening tool	Evaluate baseline education and understanding with pre and post education surveys
	Conduct educational meetings	Provide unit-based education to social work and SBIRT team to evaluate patient screening positive for depression and provide referrals for local resource	Evaluate baseline education and understanding with pre- and post- education surveys

Appendix H

Pre-Implementation Survey

<p style="text-align: right; font-size: small; margin: 0;">DNP Practice Dataset ESCAPE Page 1</p> <h3 style="margin: 0;">Depression Screening in the Emergency Department</h3> <hr/> <p>Record ID _____</p> <hr/> <p>How long have you been a nurse?</p> <p> <input type="checkbox"/> 0-1 year  <input type="checkbox"/> 2-5 years  <input type="checkbox"/> 6-10 years  <input type="checkbox"/> 11-15 years  <input type="checkbox"/> 15+ years         </p> <hr/> <p>How long have you worked or lived in Baltimore?</p> <p> <input type="checkbox"/> 0-2 years  <input type="checkbox"/> 3-5 years  <input type="checkbox"/> 6-10 years  <input type="checkbox"/> 11-20 years  <input type="checkbox"/> 20+ years         </p> <hr/> <p>Is this your first job in an ED as a nurse?</p> <p> <input type="radio"/> Yes  <input type="radio"/> No         </p> <hr/> <p>Have you ever used a depression screening tool?</p> <p> <input type="radio"/> Yes  <input type="radio"/> No         </p> <hr/> <p>How familiar are you with the Patient Health Questionnaire (PHQ-9)?</p> <p> <input type="checkbox"/> Not at all  <input type="checkbox"/> Mildly familiar  <input type="checkbox"/> Familiar  <input type="checkbox"/> Very familiar  <input type="checkbox"/> Expert         </p> <hr/> <p>How knowledgeable are you with understanding depression?</p> <p> <input type="checkbox"/> Not at all  <input type="checkbox"/> Mildly familiar  <input type="checkbox"/> Knowledgeable  <input type="checkbox"/> Very knowledgeable  <input type="checkbox"/> Expert         </p> <hr/> <p>How likely are you to use a screening tool to identify for major depression in your patients?</p> <p> <input type="checkbox"/> Very unlikely  <input type="checkbox"/> Unlikely  <input type="checkbox"/> Neutral  <input type="checkbox"/> Likely  <input type="checkbox"/> Very likely         </p> <hr/> <p>Would having more information about depression, and social determinants of health affecting Baltimore residents, allow you to feel more comfortable with caring for patients with depression?</p> <p> <input type="radio"/> Yes  <input type="radio"/> No         </p> <hr/> <p>Do you feel the suicide screening tool is adequate to screen for risk of suicide?</p> <p> <input type="radio"/> Yes  <input type="radio"/> No         </p> <hr/> <p>Do you feel that the ED is addressing patients' depression adequately?</p> <p> <input type="radio"/> Yes  <input type="radio"/> No         </p> <hr/> <p>Do you feel that the ED should do more to manage major depression?</p> <p> <input type="radio"/> Yes  <input type="radio"/> No         </p>	<p style="text-align: right; font-size: small; margin: 0;">03/13/2023 3:46pm projectredcap.org  REDCap®</p> <hr/> <p style="text-align: right; font-size: x-small; margin: 0;">Page 2</p> <hr/> <p>Would having a protocol to screen for depression assist you in the identification of patients at risk for complications of depression?</p> <p> <input type="checkbox"/> Very unlikely  <input type="checkbox"/> Unlikely  <input type="checkbox"/> Neutral  <input type="checkbox"/> Likely  <input type="checkbox"/> Very likely         </p>
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## Appendix I

### Post-Implementation Survey

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Page 1

#### Depression Screening in the Emergency Department

Record ID

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Did you receive education regarding depression and depression screening tool in the ED?

- Yes  
 No

How familiar are you with the Patient Health Questionnaire (PHQ-9)?

- Not at all  
 Mildly familiar  
 Familiar  
 Very familiar  
 Expert

How knowledgeable are you with understanding depression?

- Not at all  
 Mildly familiar  
 Knowledgeable  
 Very knowledgeable  
 Expert

Are you able to identify resources or services to provide patients who screen positive for depression?

- Yes  
 No

How likely are you to continue using the PHQ-9 screening tool to identify for major depression for your patients?

- Very unlikely  
 Unlikely  
 Neutral  
 Likely  
 Very likely

Has the Patient Health Questionnaire (PHQ-9) depression tool assisted you in the identification of patients at risk for complications of depression?

- Yes  
 No

Are you better able to identify patients who are at risk for depression and suicide?

- Yes  
 No

Do you feel the ED has made efforts to address depression adequately?

- Yes  
 No

Do you feel that the ED should do more to manage major depression?

- Yes  
 No

## Appendix J

## Depression Screening Audit

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Page 1

**AED Depression Audit**

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Record ID

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Patient ID

\_\_\_\_\_

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PHQ-9 Screening Performed?

Yes  No

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If yes, action performed:

- no action     referred to psychiatry  
 referred to social work  
 referral to both psychiatry and social work  
 mental health resources in AVS

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If screened positive, is "At Risk for Major Depression  
Based on PHQ-9" placed in clinical impression?

Yes  No