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Improving Treatment and Follow-Up Care for Patients Who Screen Positive for Depression in Family Practice: A Quality Improvement Project

by

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Improving Treatment and Follow-Up Care for Patients Who Screen Positive for Depression in Family Practice: A Quality Improvement Project

Contents

Abstract

Background: Depression is a prevalent condition requiring systematic approaches for effective treatment and follow-up in primary care. This quality improvement project aimed to enhance care for patients screening positive for depression at an academic family practice with a diverse patient population and a comprehensive electronic health record (EHR) system.

Purpose: The primary objective was to assess whether a provider educational session and the implementation of an optional depression treatment and follow-up algorithm could improve timely and appropriate care for patients with positive PHQ-9 screenings.

Setting: The project was conducted at an academic family practice office.

Methods/Procedures: The intervention included a provider educational session and the implementation of a depression treatment and follow-up algorithm. Data collection involved a pre-post comparison of metrics such as the number of patients screened, treatment initiation, follow-up interventions, and provider-reported algorithm use. Statistical analyses included chi-square tests to evaluate changes in treatment and follow-up rates across different PHQ-9 score categories.

Measures: Outcome measures included the number of patients screened for depression using the PHQ-9, treatment and follow-up rates, and demographic composition of patients receiving care.

Results: No significant improvements in treatment and follow-up care were observed post-implementation, with 62.5% (n=56) pre-implementation and 60.5% (n=38) post-implementation not receiving treatment for moderate PHQ-9 scores (10-14). The Chi-Square Test for Independence indicated no significant difference in treatment and follow-up rates before and after the intervention (p=0.841). However, notable shifts in demographic composition were observed, particularly among female patients and in racial representation.

Implications: Implications for practice include the need for ongoing provider education on depression treatment and follow-up care and strategies to address demographic disparities in depression care. Future initiatives should refine care algorithms, enhance EHR integration, and foster a culture of quality improvement in primary care settings.

Keywords: depression, follow-up care, quality improvement, primary care, Patient Health Questionnaire-9 (PHQ-9), mental health.

Background

Depression is a pervasive and debilitating mental health condition that affected 21 million adults aged 18 or older in the United States in 2021 (Substance Abuse and Mental Health Services Administration [SAMHSA], 2022). Depression has been demonstrated to elevate patients' mortality rates by 1.57 times by exacerbating various physical illnesses, including cardiovascular diseases, diabetes, and autoimmune conditions (Chiu et al., 2018). Depression has also been shown to cause significant impairments in mental health, cognitive functioning, and overall quality of life (Lee et al., 2023). Early screening for depression is a crucial step toward early intervention and improved patient outcomes (Costantini et al., 2021).

The US Preventive Services Task Force (USPSTF) recommends annual universal screening for depression in the general adult population (USPSTF, 2023). This recommendation applies to individuals aged 19 years or older, including pregnant and postpartum women, who lack a prior history of diagnosed mental health disorders or manifest identifiable indicators and who do not currently exhibit symptomatic manifestations of depression or suicidal risk (USPSTF, 2023). Furthermore, the USPSTF recommendation emphasizes the importance of not only screening but also ensuring a follow-up plan is documented (USPSTF, 2023). This recommendation is intended to identify individuals who may be at risk of depression and for patients, who are newly diagnosed with depression, to receive prompt treatment/intervention (USPSTF, 2023).

Clinical Quality Measures (CQMs) include the USPSTF recommendations and are a part of the Merit-based Incentive Payment System (MIPS). MIPS is designed to align payments with high-quality and cost-effective healthcare, enhance care processes and health outcomes, promote healthcare data utilization, mitigate healthcare costs, and serve as a pivotal mechanism within the healthcare system (Centers for Medicare & Medicaid Services [CMS], n.d.). These CQMs measures include the USPSTF's recommendation for universal depression screening and function as performance benchmarks within MIPS. Healthcare providers are encouraged to adhere to such recommendations, ensuring the delivery of high-quality care and compliance with the program's objectives (CMS, n.d.).

To meet this MIPS CQMs, healthcare providers must identify eligible patients for screening, conduct depression screening using standardized tools, such as the Patient Health Questionnaire -9 (PHQ-9), and document the screening tool score in the patient’s medical record (Electronic Clinical Quality Measures Resource Center [ECQMRC], 2022). In instances where the screening results indicate potential depression, with a PHQ-9 score exceeding 10, healthcare providers are required to promptly record a comprehensive follow-up plan (ECQMRC, 2022; Spitzer et al., 1999). A prompt follow-up plan is described as a treatment plan that is established on the same day as the initial patient encounter or no later than within two days following the encounter (ECQMRC, 2022). The prompt follow-up plan is tailored to address the positive depression screen and must involve at least one of the following: referrals to specialists, pharmacological interventions, or other treatments for depression. (ECQMRC, 2022). Patients who have already been diagnosed with depression or bipolar disorder are excluded from these CQMs (ECQMRC, 2022). If a situation arises where a patient refuses to participate in depression screenings or has valid medical reasons (cognitive impairment), exceptions must be documented (ECQMRC, 2022).

While USPSTF recommendations and MIPS CQMs provide clear guidelines for depression screening, the literature has shown a gap in delivering proper follow-up treatment plans for patients who screen positive (Leung et al., 2022). This deficit in care poses a significant challenge in managing depression within primary care, which accounts for an estimated 60% of mental health care delivery (Park & Zarate, 2019). Moreover, an overwhelming 79% of antidepressant prescriptions originate from providers outside the mental health care specialty (Park & Zarate, 2019). Notably, among individuals who have attempted suicide, 38% had visited a healthcare provider within the previous week, and 64% had visited a healthcare provider four weeks before the attempt; most of these patients sought care in primary care practices (Park & Zarate, 2019). These statistics emphasize both the pivotal role of primary care providers and the importance of screening for depression within primary care settings to ensure timely and effective interventions for patients.

Problem Statement

An informal discussion with the healthcare providers at an academic family practice office identified a deficiency in the follow-up process for patients who screened positive for depression on the PHQ-9. The principal investigator (PI) implemented a quality improvement (QI) project that aimed to address this gap in care by providing an educational session for PCPs to enhance their knowledge on how to provide appropriate treatment and follow-up care for patients with positive depression screens.

Significance of the Problem/Project

The significance of this quality improvement project was to improve PCPs' awareness of proper treatment and follow-up care for patients with positive depression screens, ultimately bridging the gap in depression care. The impact of this problem extends beyond individual patients as the outcomes of the project can affect the healthcare system, the economy, and the overall well-being of the patients' communities (Lee et al., 2023).

The prevalence of depression in the United States is a matter of concern, with a national rate of 18.5% (Lee et al., 2023). The statistics at the local level are even more alarming, with Kentucky reporting a rate of 24.2% and a rate of 23.9% within Jefferson County, Kentucky (Lee et al., 2023). These figures underscored the urgent need to address this care gap.

Undiagnosed depression is a silent and widespread problem, as indicated by an observational cross-sectional study conducted by Handy et al. in 2022. Their research revealed that nearly half of the cohort (46.8%) had PHQ-9 scores of 10 or greater, indicating a positive screening for depression. Even more concerning was the finding that 31.5% of individuals in this group lacked a formal diagnosis of depression despite their elevated PHQ-9 scores (Handy et al., 2022).

Without intervention, depression may intensify, significantly reducing the quality of life for individuals affected (Handy et al., 2022). Furthermore, undiagnosed depression is associated with heightened psychological stress, substance use, and co-morbid medical conditions (Lee et al., 2023). Improving PCPs' awareness of appropriate treatment and follow-up care for patients with positive depression screens presented an opportunity to halt the progression of undiagnosed and untreated depression into more severe and debilitating stages (Handy et al., 2022).

Purpose and Specific Aims

The purpose of this quality improvement project was to address the gap in PCPs' treatment and follow-up care of patients who screened positive for depression on the PHQ-9. The specific aims of this project were to enhance PCPs' knowledge on how to provide appropriate treatment and follow-up care for patients who screened positive for depression on the PHQ-9.

Clinical Question/PICO

The central question for this clinical inquiry was, "How does the implementation of a structured depression screening educational intervention (I) for PCPs (P) increase the rate of follow-up care for patients who screen positive for depression on the PHQ-9 (O) in the primary care setting compared to no educational intervention (C)?" This inquiry was driven by the objective of enhancing PCP awareness of proper depression screening and follow-up protocols, ultimately leading to improved patient outcomes. This project aimed to enhance PCPs' knowledge of when to effectively address depression in their patients, resulting in increased rates of follow-up treatment for those in need of mental health care. By doing so, this project aspired to create a sustainable framework for depression management within the clinic, ensuring continued access to essential mental health services beyond the scope of this project.

Literature Review

Depression is a prevalent and often debilitating mental health condition that continues to pose a significant public health concern (SAMHSA, 2022). While substantial efforts have been made to identify individuals with depression, through screening initiatives, providing timely and appropriate follow-up care remains an underexplored aspect of healthcare delivery (Leung et al., 2022). This literature review delves into various dimensions of depression care, from initial screening to follow-up, and highlights the existing gaps in the system.

Depression Screening, Clinical Practice Guidelines, and Treatment Recommendations

The American Psychological Association (APA) established the Clinical Practice Guideline for the Treatment of Depression Across Three Age Cohorts in 2019. This guideline provides valuable recommendations for treating depression in diverse age groups, encompassing children and adolescents, adults, and older adults (APA, 2019). However, this guideline omits a specific time frame delineating the period between the diagnosis of depression and the initiation of follow-up treatment (APA, 2019). Additionally, the USPSTF recommendation and MIPS CQMs fail to outline a specific time frame (Electronic Clinical Quality Measures Resource Center, 2022; USPSTF, 2023).

The APA Guideline Development Panel for the Treatment of Depression provides recommendations for the initial treatment, complementary and alternative treatments, and management of depression in the general adult population (APA, 2020). The panel suggests the initial treatment include either psychotherapy or second-generation antidepressant medications to adult patients with depression (APA, 2020). Shared decision-making with patients is emphasized (APA, 2020). Complementary and alternative treatments like exercise and St. John's Wort are recommended for those patients who feel psychotherapy or pharmacotherapy have been ineffective or unacceptable (APA, 2020). This comprehensive approach to initially treating depression in the adult population, as outlined by the APA (2020), is derived from a systematic review of the scientific literature, specifically focused on evaluating the effectiveness of various treatments for depression. Expert input is also integrated into this approach, aiming to address the diverse needs of individuals dealing with depression (APA, 2020).

Measuring Follow-Up Care

Given the absence of comprehensive guidelines in this domain, an observational study by Farmer et al. (2016) recognized the need for measures to address the lack of existing standards. Farmer et al. (2016) assessed various aspects of follow-up care for individuals with depression. Insights were drawn from existing depression guidelines and those utilized in prior Collaborative Care Model (CCM) evaluations (Farmer et al., 2016). Four population-based quality metrics were constructed (Farmer et al., 2016).

The first measure, "Detection of a new episode of depression," was defined as a clinical encounter with an ICD-9 code for depression or a prescription for antidepressants occurring within a 12-month period after the initial visit (Farmer et al., 2016). Measures 2 and 3 focused on the "Follow-up of patients with new episodes of depression." (Farmer et al., 2016). Farmer et al. (2016) applied depression care literature, guidelines and prior quality measures from the Veterans Health Administration (VA) and the National Committee for Quality Assurance (NCQA) when assessing follow-up care. Appropriate follow-up entailed meeting one of the following criteria: having a minimum of three mental health (MH) visits, three psychotherapy sessions, or three primary care appointments with a depression ICD-9 diagnosis within the specified time frame; 84 and 180 days for new depression diagnoses (Farmer et al., 2016).

The fourth measure, “Minimally appropriate treatment for patients with a new episode of depression," set the criteria for minimum treatment (Farmer et al., 2016). This was defined as either having at least 60 days’ worth of antidepressant medication, attending at least four mental health specialist (MHS) visits, or participating in a minimum of three psychotherapy sessions within 12 months post-detection (Farmer et al., 2016). The cutoff for prescription medication was set at 60 days for prescription medications to indicate a minimum of one medication refill (Farmer et al., 2016). Additionally, prescriptions with non-depression indications in their dosing instructions or those with subtherapeutic doses were excluded from consideration within this metric (Farmer et al., 2016).

The study's efforts paved the way for a more robust understanding of the progression from initial depression screening to appropriate and timely follow-up. Their findings indicated that over the decade, the rates for detecting new episodes of depression remained stable at 7–8% (Farmer et al., 2016). Moreover, follow-up rates, at 84 and 180 days, showed significant improvement, increasing from 37% and 45% in 2000 to 56% and 63% by 2010, respectively (Farmer et al., 2016). While these follow-up rates improved, the minimum appropriate treatment rates remained relatively stable over the same period, hovering between 82% and 84% (Farmer et al., 2016). This research has significantly contributed to the literature on depression care quality and enhanced the understanding of the complex landscape of depression care (Farmer et al., 2016).

Gaps in Depression Follow-Up Care

Leung et al. (2022) investigated the implementation of universal depression screenings recommended by the US Preventive Services Task Force in 2016 and the subsequent follow-up and treatment adherence among primary care patients within the VA. This retrospective cohort study used electronic data to examine patients screened for depression at 82 primary care VA clinics between 2015 and 2019 (Leung et al., 2022). Their research aimed to assess the extent to which patients received guideline-concordant care, focusing on timely follow-up within 84 days of screening and completing minimal treatment within 12 months (Leung et al., 2022). The results revealed that while approximately 8% of patients screened positive for depression, more than half of patients who screened positive, went unrecognized by clinicians in the context of a formal diagnosis of depression and/or antidepressant prescription (Leung et al., 2022). Moreover, only 32% of patients achieved treatment guidelines for timely follow-up within 84 days of screening (Leung et al., 2022). This study highlights the need for further research to understand the disparity between patients screening positive for depression and those receiving timely follow-up, emphasizing potential gaps in recognizing and addressing mental health needs (Leung et al., 2022).

A retrospective chart review by Denson & and Kim (2018) explored the challenges in depression follow-up care. Among the patients who received an Annual Health Screening (AHS), totaling 6797 individuals, approximately 63% underwent PHQ-2 assessments (Denson & Kim, 2018). Of the 6797 individuals, 145 individuals screened positive on the PHQ-2, indicating potential depression and had a further evaluation by completing a PHQ-9 assessment. Of the individuals who screened positive on the PHQ-2, 69% subsequently tested positive on the PHQ-9 (Denson & Kim, 2018). More concerning, 76% of those who screened positively on the PHQ-9 and 78% of those who reported suicidal ideation had no documented interventions or follow-up care (Denson & Kim, 2018). Although most patients received depression screenings during their AHS, a concerning issue arises with the lack of documented interventions for those who screened positive for depression (Denson & Kim, 2018). This disparity underscores the need for a more effective system to ensure timely and appropriate care for individuals identified with depression during screenings (Denson & Kim, 2018). These findings collectively shed light on the persisting challenges and disparities in depression follow-up care.

Enhancing Depression Follow-Up Care Through Measurement-Based Care (MBC)

To address the persistent gap in depression follow-up care, there is growing evidence supporting the implementation of measurement-based care (MBC)(Lewis et al., 2019). MBC employs patient-reported outcomes (PROs) to assess the extent of depression symptoms and guide treatment decisions. MBC offers a promising guide to enhance the standard of care for depression (Lewis et al., 2019). The SAMHSA defines MBC as an evidence-based practice that parallels conventional medical approaches (SAMHSA, 2022). MBC involves systematically assessing patient symptoms, similar to obtaining essential measurements, to guide behavioral health treatments effectively (Lewis et al., 2019). This approach ensures that treatment decisions are rooted in precise, quantifiable data, ultimately improving care quality and patient outcomes (Lewis et al., 2019).

According to Lewis et al., 2019 the literature consistently reports that MBC outperforms traditional usual care in the context of behavioral health. Reviews indicate that MBC leads to significantly improved treatment outcomes, offering substantial benefits for patients categorized as nonresponders to standard care (Lewis et al., 2019). MBC has been linked to a reduced risk of patient deterioration during treatment (Lewis et al.,2019). Additionally, MBC has a favorable impact on the overall cost-effectiveness of care, rendering it a valuable approach for the management of behavioral health conditions (Lewis et al., 2019). In contrast to intricate psychosocial interventions in behavioral health, such as cognitive-behavioral therapy, MBC offers an efficient alternative through fidelity monitoring using the electronic health record (Lewis et al., 2019).

A critical aspect of implementing MBC in the context of depression care is the initial assessment and diagnosis process (Siniscalchi et al., 2020). In a quantitative study with a pre-post design by Siniscalchi et al. (2020), 481 patients underwent screening using the Patient Health Questionnaire-9 (PHQ-9). 62.8% of these patients score greater than 4, indicating the presence of depressive symptoms (Siniscalchi et al., 2020). Subsequently, 89.4% of these individuals were officially diagnosed with a depressive disorder (Siniscalchi et al., 2020).

Among those diagnosed, the study's approach involved diverse and personalized care pathways (Siniscalchi et al., 2020). Remarkably, 10% were referred to specialty care, underscoring the attention given to those with more complex needs (Siniscalchi et al., 2020). Only 2.6% refused treatment, suggesting a generally high level of engagement among diagnosed individuals (Siniscalchi et al., 2020). The majority, accounting for 87.4%, were administered

Measurement-Based Care (MBC) with personalized treatment plans tailored to their specific requirements (Siniscalchi et al., 2020).

In this MBC approach, the focus extended beyond the initial diagnosis (Siniscalchi et al., 2020). Patients diagnosed with a depressive disorder and administered MBC were scheduled for follow-up visits within a carefully designed framework (Siniscalchi et al., 2020). This framework encompassed various strategies, including 59.7% of patients receiving pharmacological treatment, 8.1% receiving non-pharmacological treatment, and 31.3% recommended for symptomatic monitoring with rescreening during subsequent appointments (Siniscalchi et al., 2020). This comprehensive approach ensured patients received tailored care to address their unique needs and circumstances throughout the 14-week treatment period (Siniscalchi et al., 2020). Importantly, it was observed that patients diagnosed with a depressive disorder, receiving individualized treatment, and having at least one follow-up visit within the 14-week period demonstrated significant improvements in their self-reported depression scores. The mean score dropped from 14.89 to 9.58, reflecting a statistically significant decrease in self-reported PHQ-9 score from baseline. Furthermore, 23.1% of these patients reached remission with a PHQ-9 score of less than 5, underscoring the effectiveness of this approach in managing depression in primary care (Siniscalchi et al., 2020).

Using MBC to Create a Depression Treatment and Follow-Up Algorithm

Lindsay & Decker (2022) offers a comprehensive and structured approach to managing patients with varying degrees of depression in their cohort study outlining depression treatment with a follow up algorithm. This treatment algorithm is an example of MBC implementation. Patients with a PHQ-9 score of 1–4, indicating mild depression, receive discussions about their symptoms and recommendations for mental health counseling over a 12-week period (Lindsay &

Decker, 2022). Those with scores of 5–9, still within the mild range, are provided with a written referral to a mental health counselor and may consider medication initiation within four weeks (Lindsay & Decker, 2022). Patients with scores of 10–14, categorized as having moderate depression, are promptly initiated on medication and referred for counseling, following a 4-week schedule (Lindsay & Decker, 2022). For individuals with scores in the 15–19 range, indicating major depression, medication, and counseling initiation are combined with a potential psychiatry referral within the same 4-week timeframe (Lindsay & Decker, 2022). Patients with scores greater than 20, signifying severe major depression, require a psychiatry consultation and immediate medication management (with possible consideration of an additional agent if already on therapy), and a written referral to counseling (Lindsay & Decker, 2022) This group also requires a close follow-up, with a phone check-in after 24 hours, another in office follow-up in 1 week, and an additional visit scheduled within 2–4 weeks (Lindsay & Decker, 2022). This algorithm provides a clear and structured path for the diagnosis, treatment, and follow-up of depression (Lindsay & Decker, 2022).

Strategic Approaches for Educating PCPs

Educational programs designed to enhance the knowledge and skills of healthcare professionals, such as PCPs, play a critical role in improving patient outcomes (National Clinical Guideline Centre, 2014). These programs often aim to equip healthcare professionals with the necessary tools and expertise to address specific healthcare issues, including depression screening (National Clinical Guideline Centre, 2014). Studies have shown that well-designed training programs can lead to significant improvements in the ability of healthcare providers to conduct depression screening, manage depressive symptoms, assess suicidal ideation, and effectively manage patients with suicidal ideation (Rice & Sher, 2013; Sher, 2012; Stanley et al., 2015). This enhanced competence not only boosts healthcare professionals' confidence but also translates into more accurate and timely interventions, ultimately benefiting patients by improving their mental health outcomes (Rice & Sher, 2013). Therefore, educational programs for healthcare professionals have the potential to make a meaningful impact on patient well-being by addressing mental health issues, such as depression, through improved screening and care.

Stanley et al. (2015) conducted a study on the effectiveness of residency education in adolescent depression screening and suicide prevention. The study focused on pediatric and internal-medicine/pediatric residents and aimed to assess the impact of an educational program during their Adolescent Medicine rotation (Stanley et al., 2015). The researchers used pre- and post-surveys to evaluate changes in residents' knowledge and comfort levels regarding depression screening and suicide prevention with adolescent patients (Stanley et al., 2015). The results indicated a significant improvement in residents' self-perceived knowledge and comfort in conducting depression screening, managing depressive symptoms, assessing suicidal ideation, and managing suicidal ideation after the educational program (Stanley et al., 2015). Statistical analysis, including Fisher's exact test and McNemar paired non-parametric test, supported these improvements (Stanley et al., 2015). This study underscores the positive impact of education on healthcare providers' ability to address mental health issues.

In conclusion, this literature review reveals significant gaps in providing effective follow-up care for individuals who screen positive for depression, emphasizing the need for more structured and timely interventions in depression management (Leung et al., 2022). Clinical practice guidelines, including those by the APA, offer comprehensive recommendations for initial treatment but often lack specific time frames for follow-up after initial diagnosis, resulting in ambiguity in the care process (APA, 2019). MBC emerges as a promising approach to improving the quality of depression care by systematically assessing patient symptoms, leading to better treatment outcomes and cost-effectiveness (Lewis et al., 2019; Siniscalchi et al., 2020). The algorithm proposed by Lindsay & Decker (2022) exemplifies MBC implementation and provides a structured pathway for diagnosing and following up on depression patients, ultimately improving patient care and outcomes (Lindsay & Decker, 2022). Addressing these gaps is essential to ensure individuals receive timely and appropriate follow-up care in response to the significant public health concern posed by depression (Leung et al., 2022). Future research and healthcare policies should prioritize enhancing the follow-up care aspect of depression management.

Conceptual Framework

In the context of enhancing depression follow-up care and treatment, the ACE Star Model of Knowledge Transformation, introduced by Stevens in 2004, served as the overarching conceptual framework. This model was structured around five fundamental stages, each systematically guiding the translation of evidence-based practices into effective clinical operations (Stevens, 2004).

The first stage, known as "discovery research," involved identifying the current gaps and challenges in depression follow-up care and shedding light on the existing limitations in the system through an informal discussion with the healthcare providers (Stevens, 2004). This step encompassed recognizing disparities in timely follow-up and identifying the underutilization of existing guidelines and recommendations within clinical practice. To identify these disparities, a retrospective query was executed within the EHR three months before the project's implementation, targeting patients with a PHQ-9 score of 10 or greater who lacked a documented diagnosis of depression or timely follow-up within 84 days from a positive screening (Leung et al., 2022).

In the second stage, "evidence summary," the focus was on summarizing the wealth of existing evidence related to depression care, with a specific emphasis on the outcomes and effectiveness of follow-up strategies (Stevens, 2004). This phase involved a comprehensive review of the available literature, guidelines, and past research to consolidate the knowledge pool. The evidence from existing literature provided a comprehensive overview of the effectiveness of implementing MBC as a valuable tool in enhancing follow-up care and treatment for depression (Siniscalchi et al., 2020). Furthermore, it highlighted the role of MBC as a foundational step in the development of a comprehensive treatment algorithm (Lindsay & Decker, 2022).

The third stage, "translation to guidelines," built upon the evidence summary by converting research findings into actionable recommendations for enhancing depression follow-up care (Stevens, 2004). This phase involved developing strategies and interventions to effectively address the identified gaps in the care process. The evidence summary underscored that MBC could serve as a foundational step in creating comprehensive depression follow-up treatment guidelines (Lewis et al., 2019).

"Practice integration," comprising the fourth stage, focused on the actual implementation of the developed recommendations within the clinical setting (Stevens, 2004). This included the incorporation of structured follow-up protocols, the utilization of MBC, and improvements in coordination among healthcare providers to ensure a seamless and effective follow-up process. Provider education through a presentation on implementing a depression care follow-up and treatment algorithm was key in this stage.

Finally, the fifth and final stage, "process outcome evaluation," centered on assessing the impact of the interventions and changes made during the project (Stevens, 2004). Post-implementation evaluations were conducted to measure the effectiveness of the enhanced depression follow-up care. These evaluations not only guided quality improvement efforts but also concentrated on creating a sustainable and efficient pathway for the follow-up process, ensuring that individuals dealing with depression received the necessary care promptly.

By systematically applying the ACE Star Model as the guiding framework, addressing the existing gaps in depression follow-up care, and continuously striving to improve patient outcomes, this approach provided a structured and effective method for managing depression within this academic family practice office.

Design

This DNP project involved the implementation of a quality improvement (QI) project to address gaps in PCPs' treatment and follow-up care of patients who screened positive (a score of 10 or greater) on the PHQ-9. The QI project included PCP education to enhance their proficiency in accurately interpreting PHQ-9 scores and implementing effective follow-up treatments for patients who screened positive for depression. The project comprised two main components: PCP training to improve their knowledge of proper screening and the integration of measurement-based care (MBC) into practice. Post-implementation evaluations measured the project's impact on the implementation of effective follow-up treatments and provider utilization of the depression treatment and follow-up algorithm.

Setting

This QI project was implemented at a family practice office affiliated with an academic medical center and medical school, located in metro Louisville. This office had a complete patient panel of approximately 10,961 patients. Patients seen in this family practice ranged from ages 0 to 98 years old, with a further breakdown by assigned sex at birth: 60.7% were female, and 39.3% were male. The clinic provided care for a diverse patient population, including Caucasian (54.3%), Black or African American (36.2%), Asian (2%), Hispanic (1.5%), and other (6.5%) backgrounds. Additionally, the top five ZIP codes, representing the primary residential areas of the patients served, were 40214, 40215, 40216, 40208, and 40218, with a median household income of $43,113 across these ZIP codes. This data provided valuable context for understanding the socioeconomic diversity of the patient population served by the family practice office. This family practice office was part of a healthcare organization that followed MIPS CQMs, where annual depression screening was implemented using the PHQ-9.

Participants

The participants consisted of seven part-time physicians, three full-time nurse practitioners, and two part-time nurse practitioners responsible for administering the PHQ-9 assessment to patients and managing their care accordingly. These healthcare professionals played a crucial role in assessing and addressing the mental health of the patients within the study.

Sample

The patient sample for this project included individuals aged 19 years or older who had been screened for depression using the PHQ-9 at the academic family practice office. Patients with a PHQ-9 score of 10 or greater, indicating a positive depression screening, were the primary focus of the project. This sample encompassed individuals, including pregnant and postpartum women, who lacked a prior history of diagnosed mental health disorders or manifest identifiable indicators of depression and who did not currently exhibit symptomatic manifestations of depression or suicidal risk, following the criteria outlined in the USPSTF recommendation (USPSTF, 2023).

Context

This project aimed to address the deficiencies in PCPs' treatment and follow-up of patients who screened positive for depression on the PHQ-9. This initiative was a response to an informal discussion with the clinic's providers, who reported a lack of depression treatment and follow-up care at an academic family practice office affiliated with an academic medical center. This project acknowledged that addressing this gap was essential not only for the well-being of individual patients but also for the broader healthcare system, the local community, and public health (Lee et al., 2023). This QI project sought to bridge this critical gap in depression care, enhance the quality of care provided by the academic family practice office that would in turn improve patient outcomes. The key stakeholders in this project were the healthcare providers at the family practice office, including physicians and nurse practitioners, who played a vital role in the screening and managing of patients with depression.

Procedure/Intervention Implementation

The implementation of this QI project involved a one-time education session conducted on February 8, 2024, at the clinic's monthly office meeting. Five providers were present for the education session. To ensure effective participation, PCPs were notified of the session one month in advance through an email detailing the education session time, date, and location. A reminder email was also sent a week before the scheduled date. A pre-test assessing their knowledge of depression treatment and follow-up care was attached to the email to the providers 1 week prior to the education session (see Appendix D). Informed consent was not required since this project focused on improving clinical practices within the organization.

The education session, lasting approximately 15 minutes, was in the form of a PowerPoint presentation created by the PI. This presentation (outline in appendix F) comprehensively reviewed the current guidelines for assessing and treating depression, emphasizing the importance of accurate interpretation of PHQ-9 scores. The presentation also highlighted the significance of early identification, discussed patient risk factors for depression, described PHQ-9 scores, and provided guidance on how providers may integrate MBC into practice. A potential treatment algorithm was presented (Appendix C). PCPs received instructions on the proper treatment for patients with a PHQ-9 score of 10 or greater based on the treatment algorithm. A corresponding post-test was emailed immediately after the completion of the education session (see Appendix E).

Seven providers did not attend the meeting, the PI sent the PowerPoint presentation to these providers by email. The intervention involved the twelve PCPs at the academic family practice office. A list of the participating PCPs' email and direct cell phone information was provided by the office manager. The providers were also given the PI's direct cell phone information.

This QI project did not require external funding or grants and was provided to the intervention site without cost. For a detailed project timeline, please refer to Appendix A.

Ethical Considerations/Permissions

Authorization was obtained from the Chair of the Department of Family Medicine at the University of Louisville prior to the submission of this proposal, as outlined in Appendix B. This proposal was submitted to the University of Louisville Institutional Review Board (IRB) and approved after the PI's oral defense in November 2023.

Approval was granted by the Chair of the Department of Family Medicine to articulate the project's objectives, implement the proposed changes in practice, and access aggregated data from the clinic's Electronic Health Record (EHR) system to evaluate the project's impact. The PI diligently adhered to the agency's Health Insurance Portability and Accountability (HIPPA) procedures, ensuring the collection of de-identified data, which was securely stored in an Excel spreadsheet on a computer protected by a passcode. IRB approval was received in January 2024, with the intervention implemented in February 2024, as detailed in Appendix A.

The PI performed data analysis by utilizing the office's EHR**.** In the event that the PI identified a positive depression screening, specifically a PHQ-9 score falling within the range of 20-27 (severe depression) or documented suicidal ideation, and there was a lack of documented follow-up, the PI would have initiated a direct communication with the respective PCP. The PI would have contacted the provider using the direct cell phone number that was provided to the PI during this study. Additionally, if, under exceptional circumstances, such as the unavailability of the PCP due to travel or other reasons, the PI was unable to establish contact with the PCP, the PI would have informed the office manager via a direct phone call and the office manager would assume responsibility for managing the situation. This procedure was in place to ensure the timely and appropriate handling of critical cases during the study, however, no events occurred needing this procedure.

Measures

To assess the providers' knowledge following the educational session, an individualized pre-test/post-test instrument was utilized. A pre-test was sent via email one week before the site meeting presentation, and a corresponding post-test was emailed immediately after the completion of the education session. This approach aimed to gauge the impact of the educational content on each participant's understanding, allowing for personalized feedback and measurement of knowledge acquisition.

A retrospective chart review was conducted to generate a report of aggregate data from November 1, 2023 – February 15, 2024, three months prior to the project implementation date. This data was assessed to determine if the prevalence differs by insurance status, sex assigned at birth, age, or race/ethnicity. The total number of patients who screened positive with a PHQ-9 score of ≥ 10 was evaluated. A request to the office's EHR data analyst was made and de-identified data was provided to the PI in an Excel spreadsheet. The following reports were requested:

1. Total number of patients who were screened for depression using the PHQ-9 during visits to the academic family practice office between November 1, 2023, and February 15, 2024
2. Total number of patients who screened positive with a PHQ-9 score ≥ 10 during visits to the academic family practice office between November 1, 2023, and February 15, 2024 who did not receive some form of treatment and a follow-up plan, categorized by:
    a. Total number of patients who scored 10-14 on the PHQ-9 (indicating moderate depression)
    b. Total number of patients who scored 15-19 on the PHQ-9 (indicating moderately severe depression)
    c. Total number of patients who scored 20-27 on the PHQ-9 (indicating severe depression)

These totals were further categorized by:

        i. Race categories (Caucasian, Black or African American, Asian, Hispanic, Other)
        ii. Sex assigned at birth (male/female)
        iii. Age categories (19-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89)
        iv. Insurance status (Medicaid, Medicare, Commercial/Private, Self-pay)

3. Total number of patients who screened positive with a PHQ-9 score greater than 10 during visits to the academic family practice office between November 1, 2023, and February 15, 2024 who did receive some form of treatment and a follow-up plan, categorized by:
    a. Total number of patients who scored 10-14 on the PHQ-9 (indicating moderate depression)
    b. Total number of patients who scored 15-19 on the PHQ-9 (indicating moderately severe depression)
    c. Total number of patients who scored 20-27 on the PHQ-9 (indicating severe depression)

These totals were further categorized by:

        i. Race categories (Caucasian, Black or African American, Asian, Hispanic, Other)
        ii. Sex Assigned at birth (male/female)
        iii. Age categories (19-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89)
        iv. Insurance status (Medicaid, Medicare, Commercial/Private, Self-pay)

A second retrospective chart review (February 16, 2024 – May 2, 2024) was performed and collected the same measures in the pre-intervention phase to assess the impact of the intervention on these measures and to determine the effectiveness of the PCP education session. The results of this project were shared with the Chair of the Department of Family Medicine and the clinic's providers. Additionally, the project's findings were presented at the University of Louisville School of Nursing poster presentation day.

To evaluate if the recommendation of the treatment and follow-up algorithm was utilized by the PCPs, the PI emailed them on May 3, 2024, a survey evaluating how frequently they referred to the algorithm when making their treatment and follow-up care plan. In this survey, the PI also evaluated why the PCPs may or may not have used the treatment algorithm by asking them an open-ended question (Appendix D).

Data Analysis

The primary outcome of this project was to increase the rate of PCPs' depression treatment and follow-up for patients who screened positive for depression (PHQ-9 score ≥ 10). A comparison between the pre-intervention and post-intervention phases was conducted to assess the project's success. Using IBM® SPSS® (version 29), a Chi-Square Test for Independence was conducted to analyze the differences in treatment and follow-up rates before and after the intervention for patients with varying PHQ-9 scores. The data were categorized into three groups based on PHQ-9 scores: 10-14, 15-19, and ≥ 20. The demographics of patients with documented positive depression screening (PHQ-9 ≥ 10) were analyzed using descriptive analysis, categorized by race, sex assigned at birth, age, and insurance (see Figure 3).

Although a paired t-test was initially planned to assess the providers' knowledge, there were not enough provider responses to complete the statistical analysis. Consequently, a comparison between the pre-test and post-test scores could not be performed to determine whether knowledge levels were significantly different before and after the educational session. As a result, insights into the effectiveness of the educational session could not be thoroughly evaluated.

The results were communicated to the Chair of the Department of Family Medicine and the clinic's providers. The final manuscript was disseminated through poster presentations.

Results

Two retrospective queries were made to the project site's EHR (Epic™) by the Senior Business Intelligence Developer to generate a report of aggregate data addressing each of the project's evidence-based practice (EBP) questions. De-identified data was provided to the investigators in the form of an Excel spreadsheet.

The pre-implementation chart audit revealed 622 patients were screened for depression using the PHQ-9 between November 1, 2023 and February 15, 2024. While the post-implementation chart audit revealed 341 patients were screened for depression using the PHQ-9 between February 16, 2024 and May 2, 2024.

For patients with PHQ-9 scores of 10-14, the pre-implementation chart audit revealed 56 patients had scored 10-14. Of these patients, 35 patients (n = 56, 62.5%) did not receive treatment and follow-up, while the post-implementation audit showed revealed 38 patients had scored 10-14. Of these patients, 23 patients (n=38, 60.5%) did not receive treatment and follow-up, (see Figure 1). The Chi-Square Test for Independence was conducted to compare these groups. The chi-square statistic was 0.04, which is below the critical value of 3.841 at 1 degree of freedom and a 0.05 significance level, indicating no significant difference in the rates of patients who did not receive treatment and follow-up before and after the intervention (p=0.841).

The descriptive analysis of patients who did not receive treatment and follow-up revealed notable changes across various demographic groups post-implementation. The descriptive analysis results were categorized in Figure 2. For patients with PHQ-9 scores of 10-14, the proportion of females not receiving treatment increased from 39% (n=22) pre-implementation to 47% (n=18) post-implementation, while the proportion of males decreased from 23% (n=13) to 13% (n=5). Among racial groups, the proportion of Black patients not receiving treatment slightly increased from 27% (n=15) to 29% (n=11), and White patients decreased from 33% (n=19) to 26% (n=10). Younger adults (19-29 years) not receiving treatment rose significantly from 4% (n=2) to 18% (n=7), with a notable shift in insurance type, where patients with public insurance increased from 34% (n=19) to 39% (n=15) and those with private insurance decreased from 29% (n=16) to 21% (n=8).

For patients with PHQ-9 scores of 15-19, the pre-implementation chart audit showed that 39 patients had scored 15-19. Of these patients, 14 patients (n=39, 35.9%) did not receive treatment and follow-up, compared to 15 patients (n=27, 55.6%) in the post- implementation period (see Figure 1). The Chi-Square Test for Independence resulted in a chi-square statistic of 1.015, below the critical value, suggesting no significant change in the rates of patients who did not receive treatment and follow-up (p=0.314).

Descriptive analysis revealed that for patients with PHQ-9 scores of 15-19, the proportion of females not receiving treatment doubled from 23% (n=9) to 44% (n=12), while males saw a slight decrease from 13% (n=5) to 11% (n=3). Black patients' proportion increased from 5% (n=2) to 19% (n=5), while White patients saw a slight increase from 31% (n=12) to 37% (n=10).

The proportion of young adults (19-29 years) not receiving treatment decreased from 8% (n=3) to 3% (n=1), with a rise in the 30-39 and 40-49 age groups from 20% (n=8) to 38% (n=10). The proportion of patients with public insurance not receiving treatment increased from 18% (n=7) to 33% (n=9), while those with private insurance saw a slight increase from 18% (n=7) to 22% (n=6). The descriptive analysis results were categorized in Figure 2.

Lastly, for patients with PHQ-9 scores of 20 or higher, 26 patients had a score of ≥20 in the pre-implementation period, and of those patients, 11 patients (n=26, 42.3%) did not receive treatment and follow-up, whereas the post-implementation period showed 17 patients had a score of ≥20 and of those patients, 6 patients (n=17, 35.3%) were without treatment and follow-up (see Figure 1). The Chi-Square Test for Independence indicated a chi-square statistic of 0.274, again not reaching the threshold for significance (p=0.601).

Descriptive analysis for patients with PHQ-9 scores of 20 or higher, revealed that the proportions of both females and males not receiving treatment remained relatively stable, with females at 19% (n=5) pre-implementation and 18% (n=3) post-implementation, and males at 23% (n=6) pre-implementation and 18% (n=3) post-implementation. The proportion of Black patients remained the same, increasing slightly from 12% (n=3) to 18% (n=3), while White patients decreased from 31% (n=8) to 18% (n=3). The proportion of young adults (19-29 years) not receiving treatment increased from 4% (n=1) to 12% (n=2). The insurance type proportions remained stable, with public insurance patients at 19% (n=5) pre-implementation and 18% (n=3) post-implementation, and private insurance patients at 23% (n=6) pre-implementation and 18% (n=3) post-implementation. The descriptive analysis results were categorized in Figure 2.

Pre and Post education session surveys were sent via email to the 12 providers in the office. 3 pre-implementation survey responses were received by the PI (n=12, 25%) and 4 post-implementation survey responses were received by the PI (n=12, 33.3%) . Consequently, a comparison between the pre-test and post-test scores could not be performed to determine whether knowledge levels were significantly different before and after the educational session.

Statistical analysis on the rate of use of the depression treatment and follow-up algorithm was unable to be calculated due to insufficient responses from the providers. Post-implementation surveys that included a rate of use question were sent via email to the 12 providers in the office. 4 post-implementation survey responses were received by the PI (n=12, 33.3%). Of the responses, only 2 providers (n=12, 16.7%) answered the open-ended question assessing their usage. One provider remarked, "Unfortunately, utilizing the screening is an oversight during the office visit." This suggests operational challenges in integrating the algorithm into routine practice. Another provider stated, "Some patients have well-known depression and established treatment plans. The PHQ-9 is sometimes used for my purposes to monitor progress compared to prior visits, not necessarily to directly apply a treatment algorithm." This response reveals a perception that differed from the project's focus on initiating treatment for newly screened depression cases.

These insights underscored a potential misunderstanding or misalignment with the project's objectives. Providers were not clearly informed that the QI project targeted patients without prior diagnosed mental health disorders. The optional nature of the algorithm also impacted its utilization. Improving provider education and clarifying project objectives are crucial to enhance engagement and effectiveness in similar quality improvement efforts.

Advantages and Disadvantage of the Project Change

All data were de-identified and presented at the aggregate level. Although no patients had direct benefit from this evidence-based practice project, the practice change and findings of this project increased clinicians’ awareness of the importance of proper treatment and follow-up for patients who screen positive for depression on the PHQ-9 (PHQ-9 score ≥ 10).

Discussion

Summary

This evidence-based QI project aimed to enhance the treatment and follow-up care provided by PCPs at an academic family practice office for patients who screened positive for depression using the PHQ-9 (PHQ-9 score ≥10). Initiated in response to deficiencies identified during informal discussions with clinic providers, the project addressed a significant gap in depression treatment and follow-up care. The project structured around a PCP educational session focused on improving PCPs' knowledge and skills in accurately interpreting PHQ-9 scores and implementing effective treatment and follow-up care. This training covered current guidelines for depression assessment and treatment, emphasizing the importance of early identification and appropriate follow-up care. An optional depression treatment and follow-up algorithm was presented during the session to guide providers in their care. A booster email was sent to PCPs six weeks after the initial educational session to encourage clinicians to provide treatment and follow-up care to all patients who screen positive for depression on the PHQ-9. The depression treatment and follow-up algorithm was included in the PowerPoint and follow-up email (see Appendix C). Evaluation of PCP treatment and follow-up care for patients who screened positive for depression on the PHQ-9 determined the effectiveness of this evidence-based QI project.

Interpretation

The practice change for this project involved the implementation of a PCP educational session to increase PCP knowledge of proper depression treatment and follow-up care. Utilizing retrospective chart audits and statistical analyses, the project sought to evaluate the impact of an intervention designed to improve care outcomes. Findings from the project revealed several key insights but also highlighted persistent challenges in achieving significant improvements.

Firstly, the project observed a decrease in the total number of patients screened for depression post-implementation, with 622 patients screened pre-implementation compared to 341 post-implementation. Despite this reduction, statistical analyses using Chi-Square Tests for Independence showed no significant improvement in treatment and follow-up rates for patients across different PHQ-9 score categories (10-14, 15-19, and ≥ 20) after the intervention. Specifically, for patients scoring 10-14 on the PHQ-9, the proportion not receiving treatment and follow-up remained largely unchanged post-implementation (n=38, 60.5% vs. n=56, 62.5% pre-implementation). This lack of improvement suggests that while screening rates may have fluctuated, actual clinical management of positive depression screens did not show substantive enhancement.

Demographic analyses further illuminated disparities in care provision. For instance, despite efforts to standardize care, there were notable shifts in treatment rates among demographic groups post-intervention. Among patients scoring 10-14 on the PHQ-9, an increase in the proportion of younger adults not receiving treatment (from 4% to 18%) was observed, reflecting potential challenges in engaging this demographic group in follow-up care. Additionally, changes in insurance type distributions highlighted varying access to and utilization of treatment resources based on insurance coverage.

Comparative studies underscore the relevance of these findings within the broader context of recent research. For example, a study by Pirkis et al. (2020) demonstrated that despite increased awareness and screening efforts, treatment rates for depression remain suboptimal, particularly in primary care settings. This aligns with the project's findings, emphasizing the persistent gap between screening and effective treatment and follow-up care implementation.

The inconclusive impact of the educational session on provider knowledge further complicates efforts to improve care outcomes. Insufficient survey responses limited the ability to assess whether enhanced provider knowledge translated into improved treatment practices. This limitation underscores the need for more robust engagement strategies and ongoing education initiatives tailored to the specific needs of healthcare providers in managing depression effectively.

Limitations

The findings from this evidence-based QI project highlight several critical implications for clinical practice, research, and future quality improvement initiatives in depression care within primary care settings. Despite its contributions, the project faced significant limitations that warrant careful consideration.

Firstly, the retrospective design of the project introduces inherent constraints, primarily related to the reliance on existing clinical documentation. Variability in documentation practices across providers and potential inaccuracies in chart entries could have influenced the consistency and reliability of the data analyzed, potentially affecting the interpretation of treatment and follow-up outcomes. There were identified limitations presented by programming or structuring of queries and the data provided by the Epic Business Intelligence Developer presented potential inaccuracies.

Moreover, conducting the project within a single health system limits the generalizability of its findings to broader primary care contexts. Differences in practice patterns, patient demographics, and organizational factors across diverse healthcare settings may influence the effectiveness of similar interventions elsewhere. Therefore, future studies should aim for multi-center collaborations to enhance the external validity of their findings.

Internal validity was also challenged by the initial small sample size of participating PCPs (n=12). This limited the generalizability of the findings and increased the likelihood of Type II errors, potentially obscuring significant effects of the intervention. Additionally, the small sample size may have introduced bias, as the views and practices of a few providers could disproportionately influence the overall results.

Provider engagement with the educational session on depression management was another area of challenge. Scheduling conflicts and initial unfamiliarity between the project lead and some PCPs may have hindered optimal participation and adoption of new practices or knowledge gained from the intervention. Future initiatives should explore strategies to enhance provider engagement and ensure sustained implementation of evidence-based guidelines.

While this QI project identified areas for improvement in depression care within primary care settings, significant challenges persist in translating screening efforts into improved treatment and follow-up outcomes. Future initiatives should focus on enhancing provider education, addressing demographic disparities through targeted interventions, and fostering a culture of continuous quality improvement to bridge the gap between screening and effective management of depression in clinical practice.

Conclusion

Implications for PCPs

This QI project has provided valuable insights into the challenges and opportunities in enhancing depression care within primary care setting. By implementing an educational session aimed at improving PCP knowledge of depression treatment and follow-up care, the project sought to bridge the gap between depression screening and effective management. While the findings highlighted important shifts in demographic patterns and disparities in treatment provision, several implications emerge for healthcare providers and future initiatives.

For PCPs, the project underscores the critical need for ongoing education and training in depression management. Enhancing provider knowledge and awareness of evidence-based treatment guidelines is essential to improving the identification and care of patients with depression. Moreover, efforts to standardize documentation practices within EHRs can support more accurate and consistent assessment of treatment outcomes, ensuring comprehensive care delivery.

The project also highlights the necessity of addressing demographic disparities in depression care. Targeted interventions aimed at improving access and engagement among diverse patient populations—particularly addressing barriers related to age, gender, race, and socioeconomic status—are crucial for achieving equitable health outcomes. Future initiatives should prioritize cultural competence training and tailored outreach strategies to enhance mental health care accessibility and effectiveness across different demographic groups.

Integrating quality improvement strategies into routine clinical practice can facilitate sustained improvements in depression care. This includes implementing systematic screening protocols, leveraging technology to enhance care coordination, and fostering collaborative approaches that involve multidisciplinary care teams. By embedding these practices into everyday workflows and continuing to refine intervention strategies based on ongoing evaluation and feedback, healthcare organizations can enhance their capacity to deliver patient-centered depression care effectively.

In conclusion, this QI Project provides a foundation for advancing depression care within primary care settings. By addressing the identified challenges and leveraging the insights gained, healthcare providers can strive towards improving outcomes for patients affected by depression, ultimately fostering healthier communities through enhanced mental health care delivery.

References

American Psychological Association. (2019). *Clinical practice guideline for the treatment of depression across three age cohorts.* Retrieved from https://www.apa.org/depression-guideline

Centers for Medicare & Medicaid Services. (n.d.). *Traditional MIPS Overview.* Retrieved from https://qpp.cms.gov/mips/traditional-mips

Chiu, M., Vigod, S., Rahman, F., Wilton, A. S., Lebenbaum, M., & Kurdyak, P. (2018). Mortality risk associated with psychological distress and major depression: A population-based cohort study. *Journal of Affective Disorders, 234*, 117–123. https://doi-org.echo.louisville.edu/10.1016/j.jad.2018.02.075

Costantini, L., Pasquarella, C., Odone, A., Colucci, M. E., Costanza, A., Serafini, G., Aguglia, A., Belvederi Murri, M., Brakoulias, V., Amore, M., Ghaemi, S. N., & Amerio, A. (2021). Screening for depression in primary care with Patient Health Questionnaire-9 (PHQ-9): A systematic review. *Journal of Affective Disorders, 279*, 473–483. https://doi-org.echo.louisville.edu/10.1016/j.jad.2020.09.131

Denson, B. H., & Kim, R. E. (2018). Evaluation of provider response to positive depression screenings and physician attitudes on integrating psychiatric pharmacist services in primary care settings. *The mental health clinician*, *8*(1), 28–32. https://doi.org/10.9740/mhc.2018.01.028

Electronic Clinical Quality Measures Resource Center. (2022). *Preventive Care and Screening: Screening for Depression and Follow-Up Plan*. Retrieved from https://ecqi.healthit.gov/ecqm/ec/2021/cms002v10

Farmer, M. M., Rubenstein, L. V., Sherbourne, C. D., Huynh, A., Chu, K., Lam, C. A., Fickel, J. J., Lee, M. L., Metzger, M. E., Verchinina, L., Post, E. P., & Chaney, E. F. (2016). Depression quality of care: Measuring quality over time using VA electronic medical record data. *Journal of General Internal Medicine*, *31 Suppl 1*(Suppl 1), 36–45. https://doi.org/10.1007/s11606-015-3563-4

Handy, A., Mangal, R., Stead, T. S., Coffee, R. L., Jr, & Ganti, L. (2022). Prevalence and impact of diagnosed and undiagnosed depression in the United States. *Cureus*, *14*(8), e28011. https://doi.org/10.775measure9/cureus.28011

Lee, B., Wang, Y., Carlson, S. A., Greenlund, K. J., Lu, H., Liu, Y., Croft, J. B., Eke, P. I., Town, M., & Thomas, C. W. (2023). National, state-level, and county-level prevalence estimates of adults aged ≥18 years self-reporting a lifetime diagnosis of depression — United States, 2020. *Centers for Disease Control and Prevention Morbidity and Mortality Weekly Report, 72*(24), 644–650. http://dx.doi.org/10.15585/mmwr.mm7224a1

Leung, L. B., Chu, K., Rose, D., Stockdale, S., Post, E. P., Wells, K. B., & Rubenstein, L. V. (2022). Electronic population-based depression detection and management through universal screening in the Veterans Health Administration. *Journal of the American Medical Association, 5*(3), e221875. https://doiorg.echo.louisville.edu/10.1001/jamanetworkopen.2022.1875

Lewis, C. C., Boyd, M., Puspitasari, A., Navarro, E., Howard, J., Kassab, H., Hoffman, M., Scott, K., Lyon, A., Douglas, S., Simon, G., & Kroenke, K. (2019). Implementing measurement-based care in behavioral health: A Review. *JAMA psychiatry*, *76*(3), 324–335. https://doi.org/10.1001/jamapsychiatry.2018.3329

Lindsay, M., & Decker, V. B. (2022). Improving depression screening in primary care. *Journal of Doctoral Nursing Practice*. https://doi-org.echo.louisville.edu/10.1891/JDNP.2021-0005

National Clinical Guideline Centre (UK). (2014). *The prevention and management of pressure ulcers in primary and secondary care.* London: National Institute for Health and Care Excellence (NICE).Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK333168/

Park, L. T., & Zarate, C. A., Jr (2019). Depression in the primary care setting. *The New England Journal of Medicine*, *380*(6), 559–568. https://doi.org/10.1056/NEJMcp1712493

Pirkis, J., Spittal, M. J., Keogh, L., Mousaferiadis, T., Currier, D., Masocco, M., & Harris, M. (2020). Interventions to reduce suicides at suicide hotspots: A systematic review and meta-analysis of randomised controlled trials. *The Lancet Psychiatry, 7*(1), 41-50. https://doi.org/10.1016/S2215-0366(19)30405-9

Rice, T. R., & Sher, L. (2013). Educating health care trainees and professionals about suicide prevention in depressed adolescents. *International Journal of Adolescent Medicine and Health, 25*(3), 221-229. https://doi.org/10.1515/ijamh-2013-0056

Sharp, L. K., Montgomery, S. L., & Williams, R. W. (2023). Improving screening for major depressive disorder. *Journal of the American Association of Nurse Practitioners*, *35*(1), 71–78. https://doi.org/10.1097/JXX.0000000000000817

Sher, L. (2012). Educating health care professionals about suicide prevention. *The Australian and New Zealand Journal of Psychiatry, 46*(5), 481–482. https://doi-org.echo.louisville.edu/10.1177/0004867411434722

Siniscalchi, K. A., Broome, M. E., Fish, J., Ventimiglia, J., Thompson, J., Roy, P., Pipes, R., & Trivedi, M. (2020). Depression screening and measurement-based care in primary care. *Journal of primary care & community health*, *11*, 2150132720931261. https://doi.org/10.1177/2150132720931261

Spitzer, R.L., Kroenke, K., Williams, J.B.W., & the Patient Health Questionnaire Primary Care Study Group. (1999). Validation and utility of a self-report version of PRIME-MD: The PHQ Primary Care Study. *Journal of the American Medical Association, 282*(18), 1737–1744. https://doi.org/10.1001/jama.282.18.1737

Stanley, A. C., Chelvakumar, G., Cody, P. J., Sadhir, M., Nugent, M. L., Hoffmann, R., & Simpson, P. M. (2015). Effectiveness of residency education in adolescent depression screening and suicide prevention. *Journal of Adolescent Health, 56,* S41. https://doi-org.echo.louisville.edu/10.1016/j.jadohealth.2014.10.083

Stevens, K. R. (2004). ACE star model of knowledge transformation. *Academic Center for Evidence-Based Practice, University of Texas Health Science Center at San Antonio*. Retrieved from https://www.uthscsa.edu/academics/nursing/star-model

Substance Abuse and Mental Health Services Administration. (2022). *Key substance use and mental health indicators in the United States: Results from the 2021 National Survey on Drug Use and Health.* Retrieved from https://www.samhsa.gov/data/report/2021-nsduh-annual-national-report

US Preventive Services Task Force. (2023). *Final recommendation statement: Depression in adults: Screening*. Retrieved from https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/depression-in-adults-screening

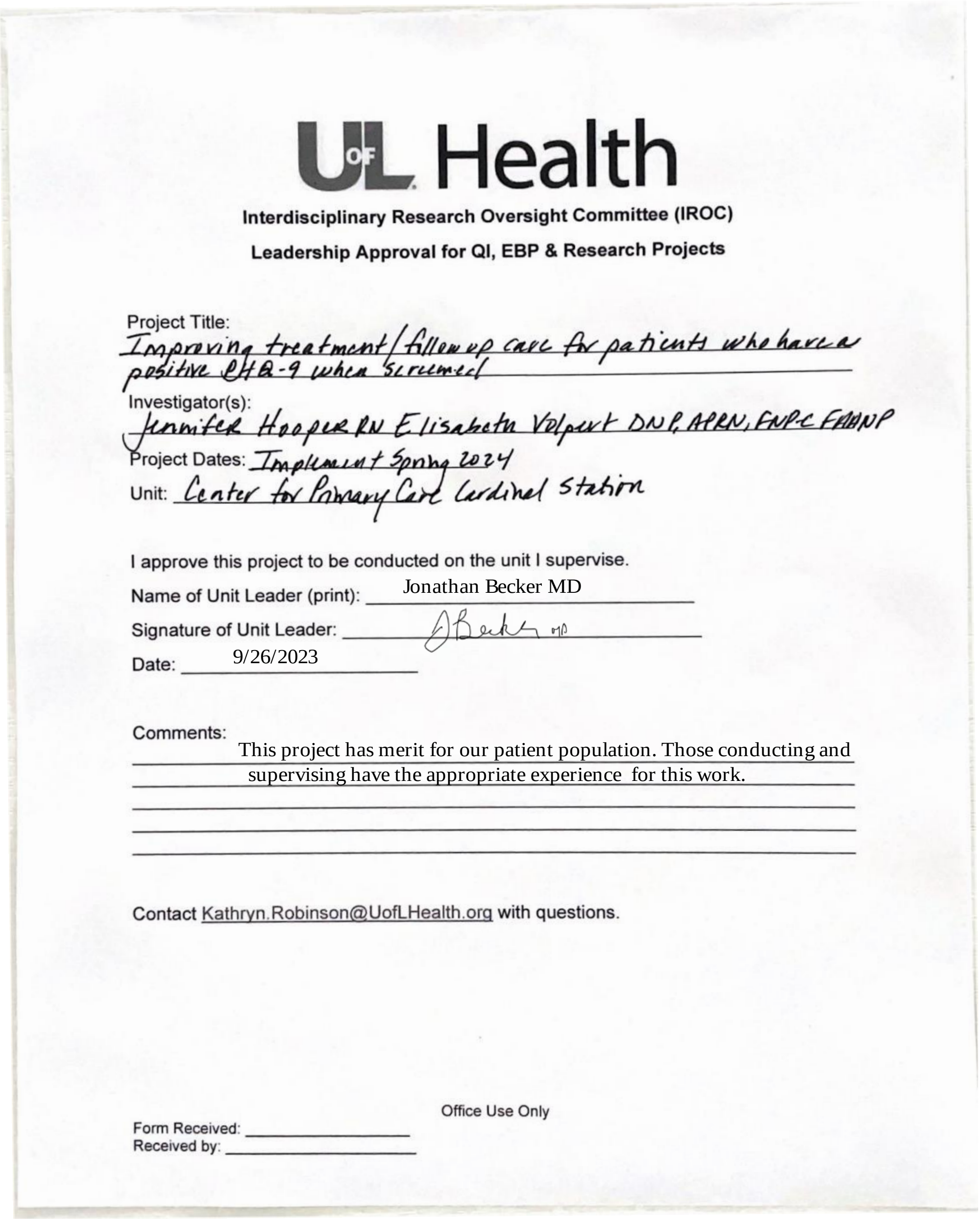
Appendix A

Project Implementation Gantt Chart

Task	Aug 2023	Sept 2023	Oct 2023	Nov 2023	Dec 2023	Jan 2024	Feb 2024	Mar 2024	Apr 2024	May 2024	June 2024	July 2024	Aug 2024
Identified Problem	■												
PICO Question Developed	■												
Project Approved by Chair of the Department of Family Medicine		■											
Formulation of Proposal			■										
Oral Defense				■									
IRB Submission				■									
IRB Approval						■							
Intervention Implementation – Formal Education Session						■							
Implementation							■	■	■				
Data Analysis										■	■		
Defend Project & Disseminate Findings												■	■

Appendix B

DNP Project Approval



UofL Health

Interdisciplinary Research Oversight Committee (IROC)

Leadership Approval for QI, EBP & Research Projects

Project Title: Improving treatment/follow up care for patients who have a positive PHQ-9 when screened

Investigator(s): Jennifer Hooper RN Elisabeth Volpert DNP, APRN, FNP-C FAANP

Project Dates: Implement Spring 2024

Unit: Center for Primary Care Cardinal Station

I approve this project to be conducted on the unit I supervise.

Name of Unit Leader (print): Jonathan Becker MD

Signature of Unit Leader: J Becker MD

Date: 9/26/2023

Comments: This project has merit for our patient population. Those conducting and supervising have the appropriate experience for this work.

Contact Kathryn.Robinson@UofLHealth.org with questions.

Office Use Only

Form Received: __________

Received by: __________

Appendix C

Depression Treatment & Follow-Up Algorithm

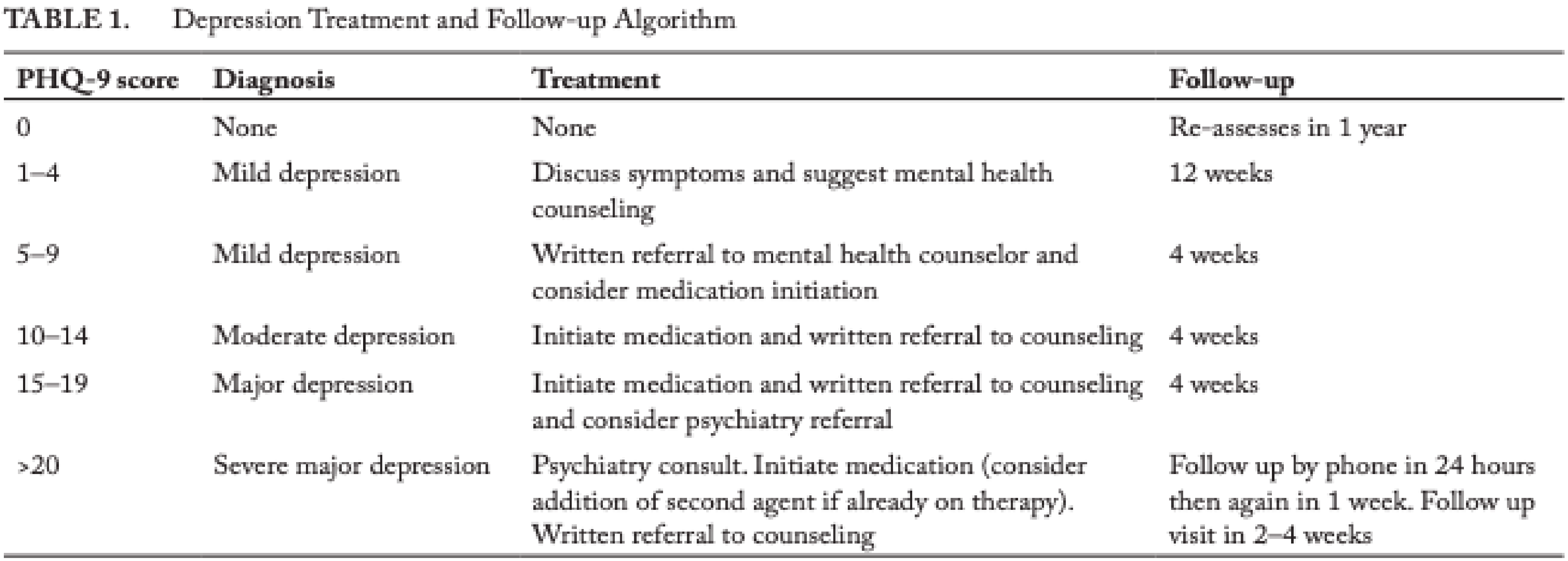


TABLE 1. Depression Treatment and Follow-up Algorithm

PHQ-9 score	Diagnosis	Treatment	Follow-up
0	None	None	Re-assesses in 1 year
1–4	Mild depression	Discuss symptoms and suggest mental health counseling	12 weeks
5–9	Mild depression	Written referral to mental health counselor and consider medication initiation	4 weeks
10–14	Moderate depression	Initiate medication and written referral to counseling	4 weeks
15–19	Major depression	Initiate medication and written referral to counseling and consider psychiatry referral	4 weeks
>20	Severe major depression	Psychiatry consult. Initiate medication (consider addition of second agent if already on therapy). Written referral to counseling	Follow up by phone in 24 hours then again in 1 week. Follow up visit in 2–4 weeks

Appendix D

Pre-Test Questionnaire

Pre-Test Questionnaire

Thank you for participating in this pre-test questionnaire focused on your knowledge and comfort level regarding the screening and management of depression in the primary care setting. Please carefully read each statement and choose the response that best reflects your level of agreement.

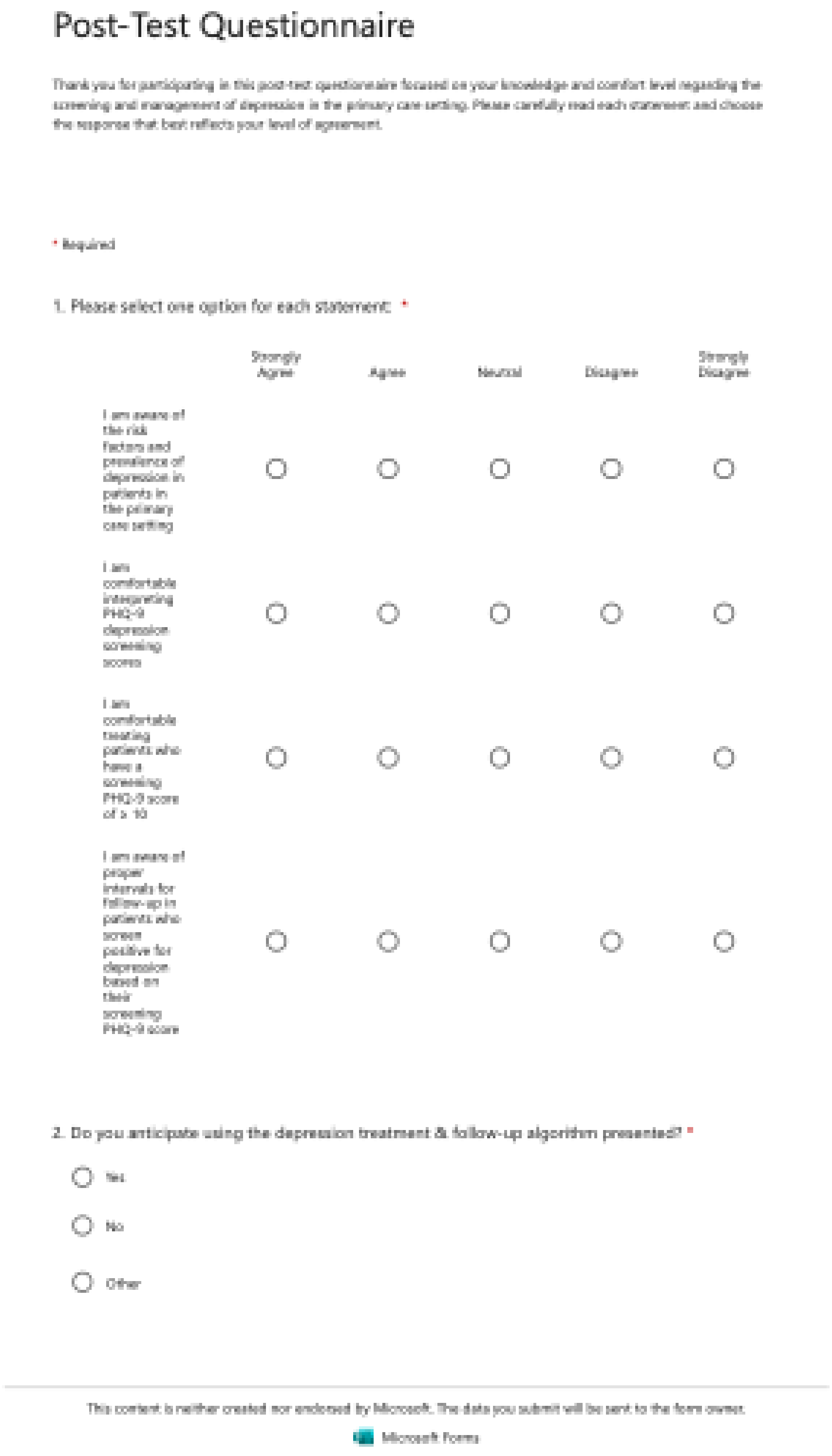
* Required

1. Please select one option for each statement: *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am aware of the risk factors and prevalence of depression in patients in the primary care setting	○	○	○	○	○
I am comfortable interpreting PHQ-9 Depression Screening Scores	○	○	○	○	○
I am comfortable treating patients who have a screening PHQ-9 score of ≥ 10	○	○	○	○	○
I am aware of proper intervals for follow-up in patients who screen positive for depression based on their screening PHQ-9 score	○	○	○	○	○

Appendix E

Post-Test Questionnaire



Post-Test Questionnaire

Thank you for participating in this post-test questionnaire focused on your knowledge and comfort level regarding the screening and management of depression in the primary care setting. Please carefully read each statement and choose the response that best reflects your level of agreement.

* Required

1. Please select one option for each statement: *

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
I am aware of the risk factors and prevalence of depression in patients in the primary care setting	○	○	○	○	○
I am comfortable interpreting PHQ-9 depression screening scores	○	○	○	○	○
I am comfortable treating patients who have a screening PHQ-9 score of ≥ 10	○	○	○	○	○
I am aware of proper intervals for follow-up in patients who screen positive for depression based on their screening PHQ-9 score	○	○	○	○	○

2. Do you anticipate using the depression treatment & follow-up algorithm presented? *

○ Yes

○ No

○ Other

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Microsoft Forms

Appendix F

Depression Treatment Education Session Outline

Slide One:

Illustrate the prevalence of depression (national, state, and county)

Illustrate risk factors for depression

Illustrate prevalence of depression screening and treatment in the primary care setting

Slide Two:

Discuss the lack of current knowledge regarding proper depression treatment and follow up care

Slide Three:

Explain interpretation of PHQ-9 scores

Illustrate proper depression diagnosis based on PHQ-9 scores

Slide Four:

Illustrate on how PCPs can incorporate MBC

Slide Five:

Present the “Depression Treatment and Follow-up Algorithm”

Explain Treatment Algorithm

Slide Six:

Outline possible treatment follow-up based on PHQ-9 Score.

Slide Seven:

Summarize the importance of addressing all screening PHQ-9 scores.

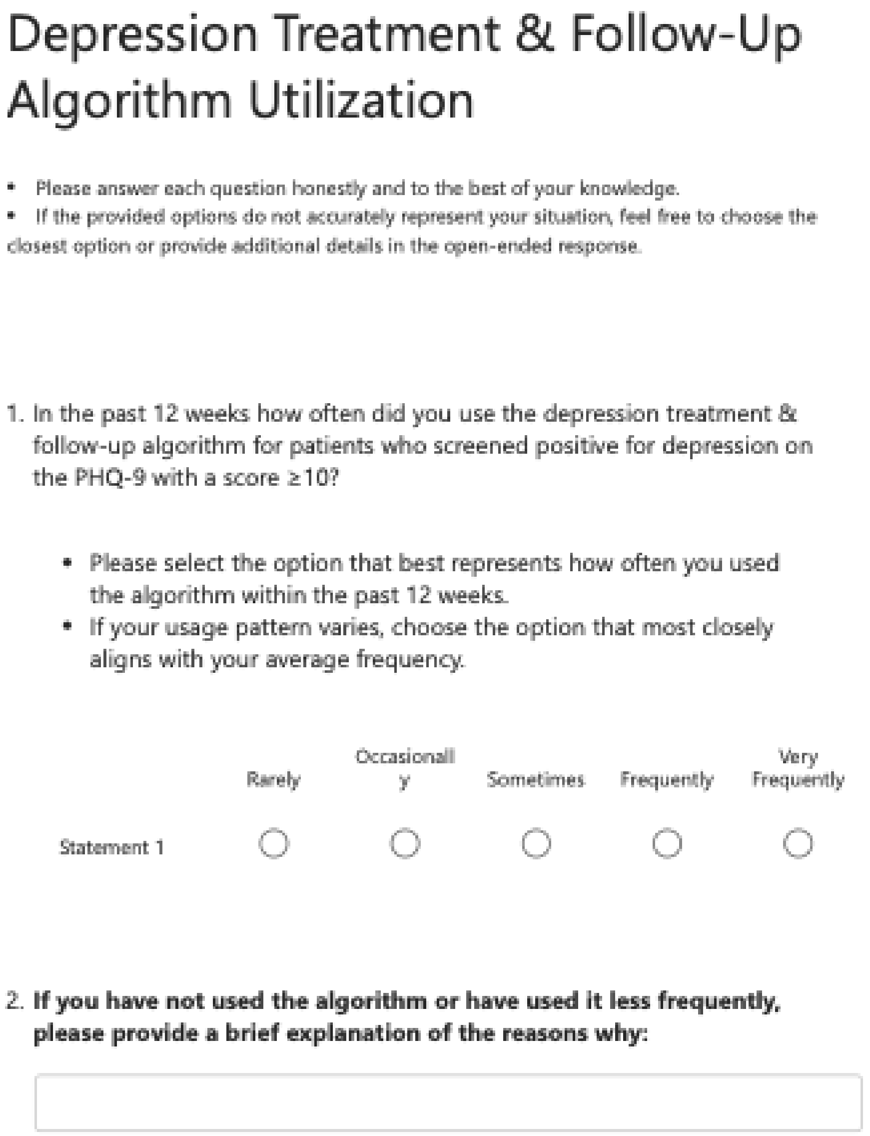
Illustrate the risk of adverse events if PHQ-9 scores are not addressed.

Slide Eight:

Participants Questions

Appendix G

Post-Implementation Provider Survey



Depression Treatment & Follow-Up Algorithm Utilization

- Please answer each question honestly and to the best of your knowledge.
- If the provided options do not accurately represent your situation, feel free to choose the closest option or provide additional details in the open-ended response.

1. In the past 12 weeks how often did you use the depression treatment & follow-up algorithm for patients who screened positive for depression on the PHQ-9 with a score ≥10?

    - Please select the option that best represents how often you used the algorithm within the past 12 weeks.
    - If your usage pattern varies, choose the option that most closely aligns with your average frequency.

	Rarely	Occasionally	Sometimes	Frequently	Very Frequently
Statement 1	○	○	○	○	○

2. **If you have not used the algorithm or have used it less frequently, please provide a brief explanation of the reasons why:**

Figure 1

Proportion of Patients Who Did Not Receive Depression Treatment & Follow-Up Pre- and Post-Implementation

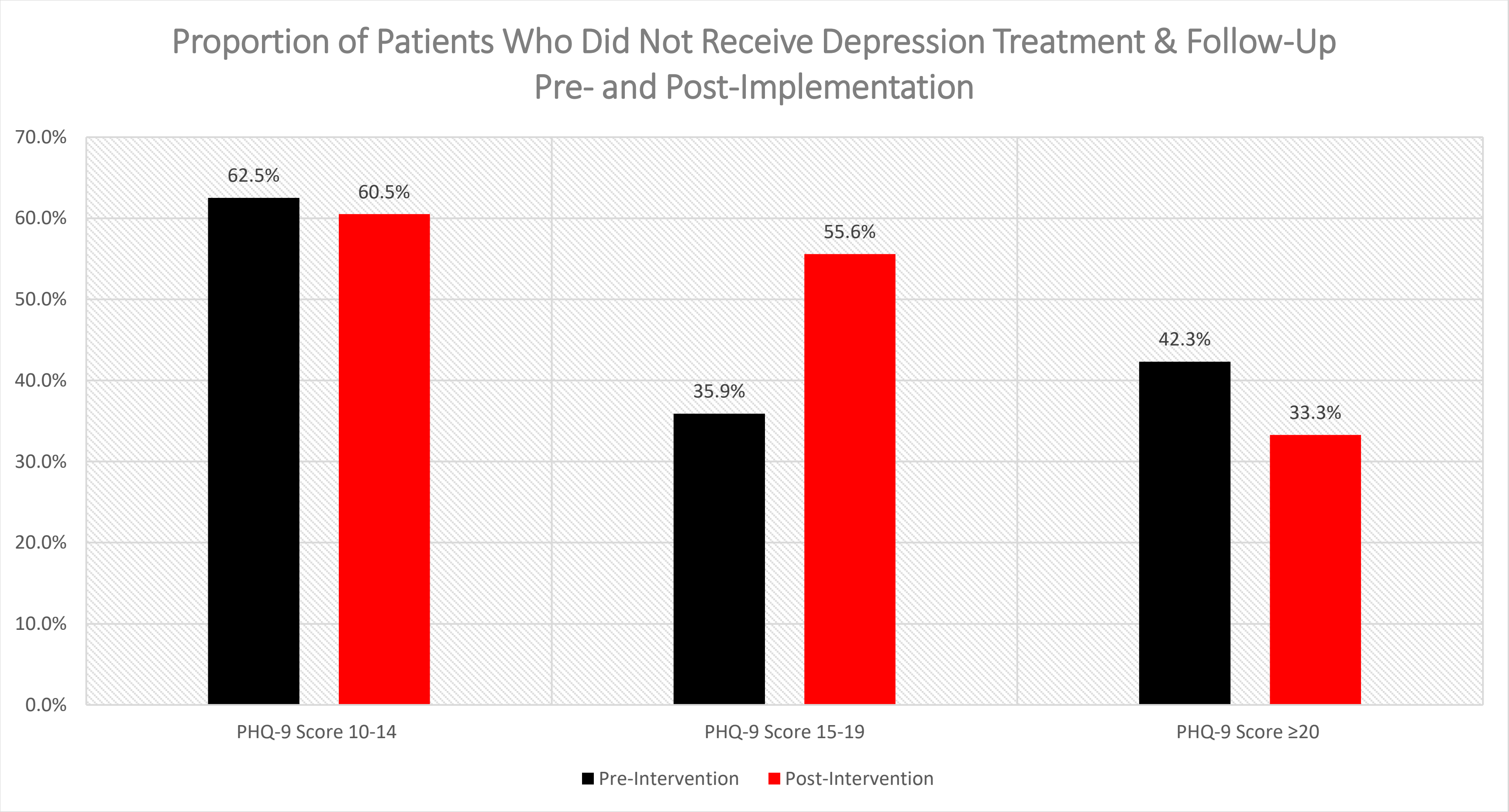


Figure 2

Demographic Analysis: Patients with a Documented PHQ-9 Score ≥ 10 in the EHR.

			Pre-Implementation (n=121)			Post-Implementation (n=82)		
			PHQ-9 Score 10-14 (n=56)	PHQ-9 Score 15-19 (n=39)	PHQ-9 Score ≥20 (n=26)	PHQ-9 Score 10-14 (n=38)	PHQ-9 Score 15-19 (n=27)	PHQ-9 Score ≥20 (n=17)
			n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Sex		**Group**						
	Female	Treatment & Follow-Up	14 (25)	19 (49)	7 (27)	13 (34)	8 (30)	8 (46)
		No Treatment & Follow-Up	22 (39)	9 (23)	5 (19)	18 (47)	12 (44)	3 (18)
	Male	Treatment & Follow-Up	7 (13)	6 (15)	8 (31)	2 (5)	4 (15)	3 (18)
		No Treatment & Follow-Up	13 (23)	5 (13)	6 (23)	5 (13)	3 (11)	3 (18)
Race		**Group**						
	Black	Treatment & Follow-Up	6 (11)	7 (18)	5 (19)	4 (11)	2 (7)	3 (18)
		No Treatment & Follow-Up	15 (27)	2 (5)	3 (12)	11 (29)	5 (19)	3 (18)

	Filipino American	Treatment & Follow-Up	1 (2)	-	-	-	-	-
		No Treatment & Follow-Up	-	-	-	-	-	-
	Other	Treatment & Follow-Up	1 (2)	-	-	-	-	-
		No Treatment & Follow-Up	1 (2)	-	-	-	-	-
	Other Asian	Treatment & Follow-Up	-	-	-	1 (3)	1 (4)	-
		No Treatment & Follow-Up	-	-	-	1 (3)	-	-
	Unknown	Treatment & Follow-Up	-	2 (5)	-	1 (3)	1 (4)	1 (6)
		No Treatment & Follow-Up	-	-	-	1 (3)	-	-
	White	Treatment & Follow-Up	13 (23)	16 (41)	10 (38)	9 (24)	8 (30)	7 (41)
		No Treatment & Follow-Up	19 (33)	12 (31)	8 (31)	10 (26)	10 (37)	3 (18)
Age Range		**Group**						

19-29	Treatment & Follow-Up	7 (13)	10 (26)	7 (27)	2 (5)	3 (11)	1 (6)
	No Treatment & Follow-Up	2 (4)	3 (8)	1 (4)	7 (18)	1 (3)	2 (12)
30-39	Treatment & Follow-Up	5 (9)	5 (13)	-	-	2 (8)	3 (18)
	No Treatment & Follow-Up	9 (16)	4 (10)	4 (15)	7 (18)	5 (19)	1 (6)
40-49	Treatment & Follow-Up	4 (7)	4 (10)	2 (8)	6 (16)	3 (11)	3 (18)
	No Treatment & Follow-Up	10 (18)	4 (10)	1 (4)	-	5 (19)	-
50-59	Treatment & Follow-Up	2 (4)	3 (8)	4 (15)	4 (11)	2 (8)	1 (6)
	No Treatment & Follow-Up	6 (11)	1 (3)	4 (15)	6 (16)	3 (11)	2 (12)
60-69	Treatment & Follow-Up	1 (2)	3 (8)	2 (8)	1 (3)	1 (3)	2 (12)
	No Treatment & Follow-Up	8 (14)	2 (5)	-	2 (5)	1 (3)	1 (6)
70-79	Treatment & Follow-Up	2 (4)	-	-	2 (5)	1 (3)	1 (6)

		No Treatment & Follow-Up	-	-	1 (4)	1 (3)	-	-
Insurance		**Group**						
	Public	Treatment & Follow-Up	10 (18)	16 (41)	8 (31)	8 (21)	4 (15)	4 (24)
		No Treatment & Follow-Up	19 (34)	7 (18)	5 (19)	15 (39)	9 (33)	3 (18)
	Private	Treatment & Follow-Up	11 (20)	9 (23)	7 (27)	7 (18)	8 (30)	7 (41)
		No Treatment & Follow-Up	16 (29)	7 (18)	6 (23)	8 (21)	6 (22)	3 (18)