Individual QI projects from single institutions

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Improving Primary Care Adolescent Depression Screening and Initial Management: A Quality Improvement Study

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Abstract

Introduction: Although recommended, adolescent depression screening with appropriate initial management is challenging. This project aimed to improve adolescent depression screening rates during preventive care visits in 12 primary care clinics from 65.4% to 80%, increase the proportion of documented initial management for those with a positive screen from 69.5% to 85%, then sustain improvements for 12 months. **Methods:** This quality improvement project involved 12 urban primary care clinics serving >120,000 mostly Medicaid-enrolled patients and targeted adolescents 12–17 years. Interventions included standardized depression screening using tablets with electronic health record (EHR) capture and automated scoring, embedding screening results and initial management actions into the EHR, provider education, and individual clinician and clinic performance feedback. **Results:** After standardizing the approach to screening, the process mean depression screening rate was 91.9%. However, after adopting tablets into the clinic flow, there was an unexpected initial decrease in proportion with appropriately documented initial management plans, from 89.7% to 67.6%. In response to this special cause variation, there was additional provider feedback and education, and a redesign of the EHR flow related to the presentation of results and prompts for action after a positive screen. As a result, the proportion with appropriately documented initial management was 87.3% by project completion. **Conclusions:** Tablet-based screening with EHR scoring capture effectively increased depression screening rates but required significant additional work to improve initial management after a positive screen. A full system approach, including EHR modification, clinician education, and performance feedback, is needed to make meaningful, sustained improvements in comprehensive adolescent depression screening. *(Pediatr Qual Saf 2022;7:e549; doi: 10.1097/pq9.0000000000000549; Published online March 30, 2022.)*

INTRODUCTION

Adolescent depression is common, with a lifetime prevalence of 12.8% for major depressive disorder and an estimated prevalence as high as 28.5% for significant depressive symptoms among high school students.[1] Adolescent depression is a significant risk factor for suicide and is associated with academic failure, substance abuse, and early pregnancy.[2–5] Unfortunately, the rate of depression screening is low, with only half of adolescents with depression diagnosed before adulthood, many of whom do not receive subsequent recommended care even with diagnosis.[6–8] Because it is often unrecognized, the US Preventative Services Task Force and the American Academy of Pediatrics recommend screening for adolescent depression, as screening tests are accurate and interventions, including psychotherapy and medications, can lead to improved outcomes.[3–6]

The barriers to adolescent depression screening are well recognized.[3] Many pediatric primary care clinicians have time constraints and a lack of training and confidence in managing depression.[6–8] Compounding this, adolescents face significant barriers to accessing mental health services when referred from primary care, including lack of insurance coverage, availability, and patient and family motivation.[7] A recent study in a large pediatric network found that 24% of adolescents with depression screening in the moderate-to-severe range and 60%

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in the mild range did not receive follow-up.[9] To effectively improve patient outcomes, screening efforts must include plans for evaluation and initial management after a positive screen.

The overarching goals of this quality improvement (QI) project were to increase comprehensive adolescent depression screening and appropriate initial management after positive screens. We employed strategies proven to be effective in previously published QI projects, including embedding care processes into the electronic health record (EHR) and offering training to clinicians on the detection and treatment of adolescent depression.[8,10–12]

The specific aims of this QI project were to improve depression screening with the Patient Health Questionnaire-9 modified for Adolescents (PHQ-9A) from a baseline of 65.4% to 80%, to increase the proportion of documented initial management plans after a positive screen from a baseline of 69.5% to 85%, and then to sustain these improvements for 12 months.

METHODS

Context

The Nationwide Children's Hospital Primary Care Network (PCN) consists of 12 urban clinics serving >120,000 patients, with approximately 83% enrolled in Medicaid. The network includes >80 pediatricians and 15 pediatric nurse practitioners. In addition, each clinic has access to a social worker in the clinic or on-call, and seven clinics have an embedded psychologist available for consults during patient encounters. In 2019, there were >40,000 PCN visits by adolescents 12 years and older.

In 2015, the PCN started a QI initiative to screen adolescents for depression during preventive visits. Although the rate of depression screening increased, there was no standard for how to score and interpret the PHQ-9A or provide initial management after a positive screen. There was also no standard for documenting screening results and initial management. This project was designed to address these gaps, focusing on standardizing PHQ-9A administration and scoring, the initial management after a positive screen, and documentation of the whole screening process.

Comprehensive Adolescent Depression Screening

At the start of this QI project, we developed a clinical algorithm to screen adolescents 12 through 17 years for depression during preventive care visits. The PHQ-9A, a 13-item self-report validated for adolescents assessing depression symptoms and severity, is interpreted according to the Guidelines for Adolescent Depression in Primary Care (GLAD-PC) to identify depressed mood and categorize severity when positive.[6,7,13] The GLAD-PC provides different screening thresholds based on whether the goal is to identify a major depressive disorder or any symptoms of depression.[7] For this QI project, we used the threshold for a positive PHQ-9A for any depression. Following the screening, the GLAD-PC recommends that clinicians interview those with a positive screen to determine initial management, which could include primary care follow-up in 2–4 weeks, referral to a clinical social worker or embedded psychologist, referral to another behavioral health specialist, a brief in-office behavioral intervention (eg, regarding sleep, stress, self-care, and behavioral activation), or antidepressant medication initiation.[6,7]

Planning for the QI Intervention

A QI team consisting of a psychologist, clinic nurse, data analyst, QI specialist, and primary care pediatricians used process mapping to identify key drivers and propose improvement strategies for comprehensive depression screening (Fig. 1). We developed QI goals by consensus based on the existing depression screening rate at the start of the study. We aimed to achieve a target improvement of 15%. With success over time, we hope to increase improvement further. The QI team continued to meet at least monthly for the project's duration.

Interventions

Figure 2 summarizes the QI project interventions and their implementation dates. The first intervention was to standardize scoring for depression screening. Next, we standardized the total PHQ-9A score documentation within the clinician note. Previously, clinicians administered paper PHQ-9A depression screens, manually entered results into various locations, and used different methods within the EHR, making it challenging to track results. Feedback from primary care clinicians prompted a second modification to show answers to PHQ-9A screening questions about suicide and dysthymia and a total score within the clinician note.

In July 2019, we modified the EHR to display a list of initial management actions after a positive depression screen, as a standardized template embedded within the clinician note, directly below PHQ-9A screening results. We expanded the list in August 2019 to include additional referral options. Finally, in October 2019, we revised the list to add "no further action needed" to document a false positive screen. With each modification to the list, clinicians received education through monthly lectures and email updates about the importance of depression screening and providing initial management after a positive screen, including expectations regarding documentation. Confidential individual and aggregate clinic-level feedback regarding screening rates and documentation of appropriate initial management began in July 2019 and continued quarterly. We used funnel plots to identify low-performing clinicians with higher volume (>15) adolescent visits and provided additional targeted education to these individuals. Between October 2019 and January 2020, all clinics switched from a paper-based collection

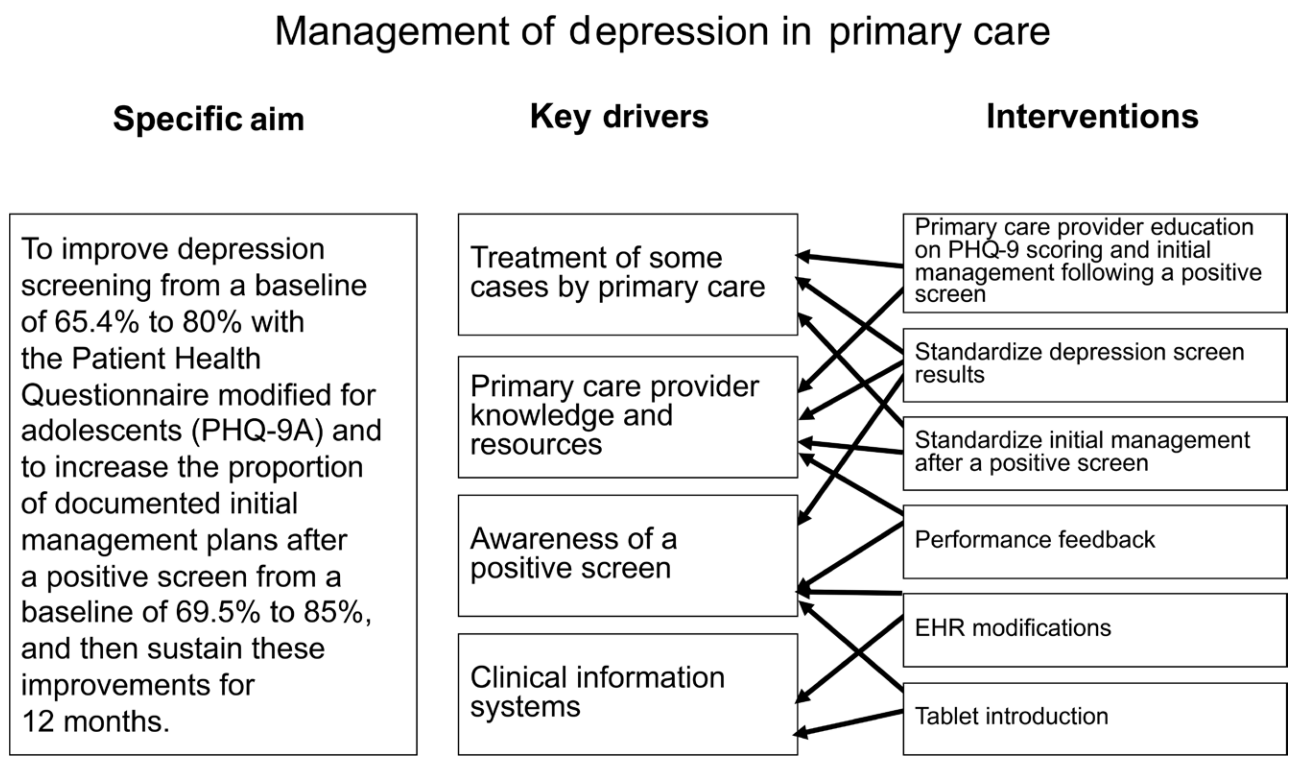

Fig. 1. Key driver diagram detailing the project aim, key drivers, and interventions.

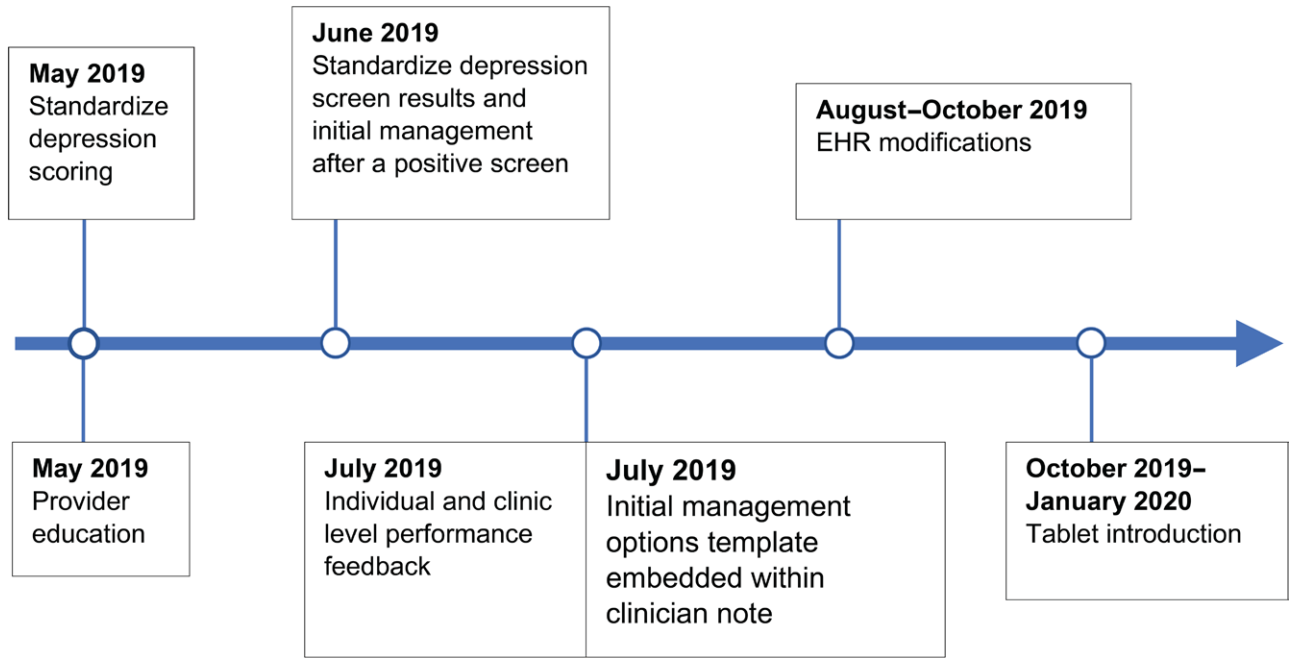

Fig. 2. Timeline of interventions.

of the PHQ-9A to using tablets with direct entry into the EHR, which continued for the remainder of the QI project.

Design and Approaches for Assessing the Impact of the Intervention

We tracked the following two measures: (1) the percentage of adolescents 12–17 years of age screened for depression at a preventive visit and (2) the proportion with a positive screen who had documented initial management.

The QI team used statistical process control to monitor progress and created Shewhart charts for outcome and process measures.[12] We interpreted charts for signals of special cause variation utilizing Nelson's rules and the American Society for Quality rules.[14] The QI team annotated control charts with key interventions to illustrate

temporal relationships between intentional process changes and improvements in the system.

Ethical Considerations

This QI project was considered nonhuman subjects research and did not require review by the Nationwide Children's Hospital institutional review board.

RESULTS

Depression Screening Rates

The baseline percentage of adolescent patients with a depression screen documented in the EHR was 65.4%, calculated from August 2018 through June 2019. During the study period June 2019 through May 2021, PCN clinics completed 29,872 preventive care visits for adolescent patients 12–17 years of age, among which 27,166 (91%) had a documented depression screen. Of the 27,166 screens administered, 11,385 (42%) were positive. The percentage of patients screened increased to a new process stage mean of 88.1% from June 2019 through November 2019 and increased further to a new process stage mean of 91.9% June 2020 through November 2020 (Fig. 3). The overall proportion of patients by age, race/ethnicity, and sex who completed a depression screen and had a positive screen is provided in the appendix (see Table 1, **Supplemental Digital Content 1**, ***http://links.lww.com/PQ9/A368***).

Initial Management after a Positive Screen

From August 2018 through June 2019, initial management was documented for 69.5% of patients after a positive depression screen. This baseline percentage of patients excluded December 2018 and January 2019, as there appeared to be special cause variation due to a decrease in the utilization of the initial management template and an increase in free-text clinician documentation. Unfortunately, the QI team could not capture this free-text documentation in the data pull. However, a manual chart review demonstrated initial management after a positive depression screen was documented outside the standardized template. This observation led us, in February 2019, to revise answer choices to allow a documentation choice of "score elevated for another reason."

After providing clinician education and targeted feedback to individuals and clinics, the percentage of patients with an initial management action documented after a positive depression screen increased from a baseline of approximately 69.5% to a new process stage mean of 89.7% from July 2019 through November 2019 (Fig. 4). However, after the change from paper to tablet, providers had difficulty seeing screening results in the EHR. Although the percentage of patients screened remained the same, there was a decrease in the percentage of initial management documented after a positive depression screen, suggesting providers may have missed positive screens. By May 2021, the rate of initial management documentation after a positive screen had increased to 87.3%. This increase followed additional clinician education regarding the new workflow, adding a best practice alert within the EHR after a positive screen and individual performance feedback.

From July 2019 to December 2019, there were 3,262 positive PHQ-9A screens, most of which had free-text documentation regarding the interpretation of the screen and initial management. There was no difference in the proportion who had an appropriate action documented by age ($P = 0.10$) or race/ethnicity ($P = 0.13$). From January 2020 to September 2020, there were 2,257 positive screens, of which 47.5% received a behavioral health referral, 35.8% received a brief behavioral health intervention from the primary care clinician, 10.1% had primary care follow-up appointments in 2–4 weeks recommended, and 1% had initiation of antidepressant medication.

Impact of COVID-19

In March 2020, there was a significant reduction in available adolescent preventive visits due to restrictions associated with the start of the COVID-19 pandemic. The number of adolescent preventive visit appointments decreased from 1,166 in February 2020 to 681 in March 2020 to eight in April 2020. In addition, many changes in clinic workflow, including protocols to limit the spread of COVID-19 combined with uncertainty and stress, disrupted QI activities. Nevertheless, patient volume slowly increased over the next few months, and by June 2020, all appointment limitations were removed. As clinic schedules returned to normal, the rate of depression screening increased to 90% or higher.

DISCUSSION

We successfully increased adolescent depression screening rates and initial management actions in a large academic PCN. We improved screening rates and initial management for patients with a positive screen through clinician education, performance feedback, tablet-based screening, and EHR modification. Ensuring appropriate management after a positive screen is a crucial aspect of comprehensive screening that improves patient outcomes.

This QI project highlights the importance of provider education and feedback combined with EHR support to make meaningful, sustainable improvements to healthcare delivery. A key innovation linked PHQ-9A screening results with specific structured options for initial management. Prior studies have shown that education plus provider feedback can improve the diagnosis of mental disorders in the primary care setting.[15,16] Similarly, this QI project increased depression screening rates through embedding screening results within the EHR.[12] Previous studies have also demonstrated that utilizing a treatment algorithm within the EHR can increase the number of

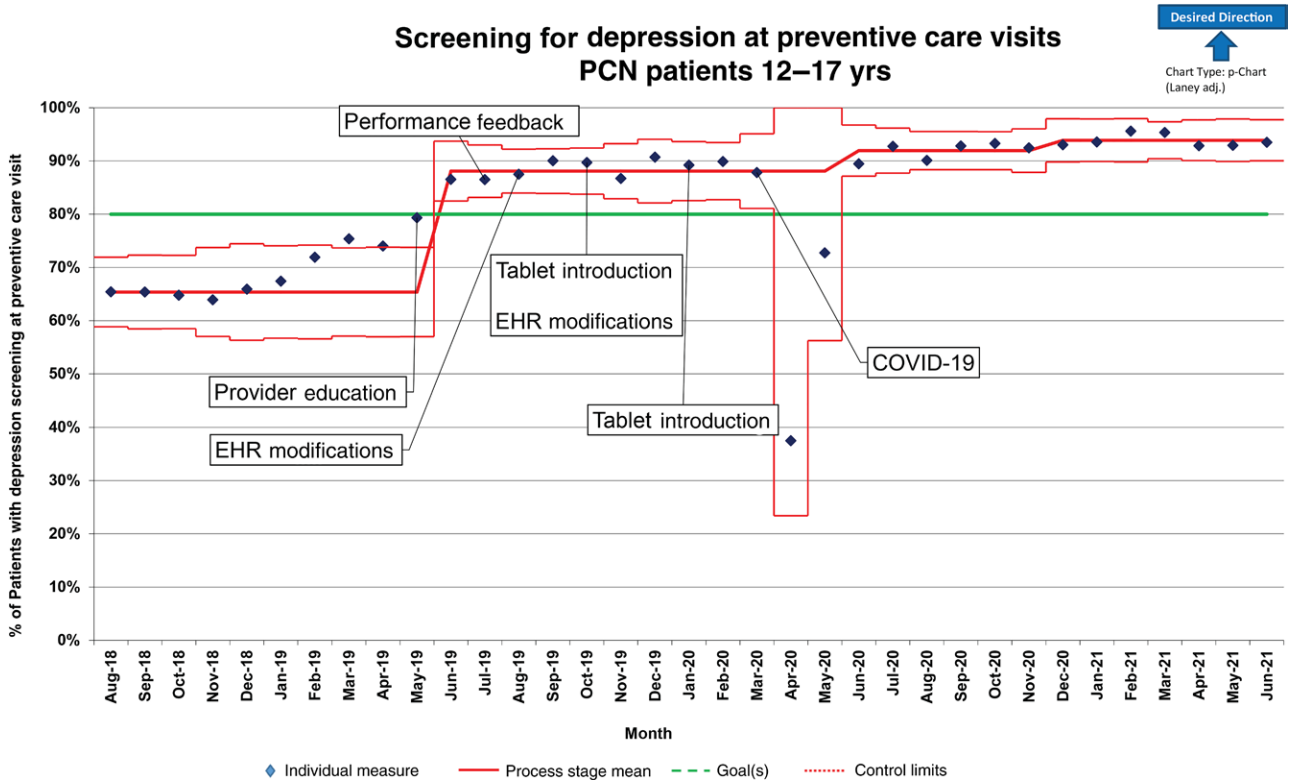

Fig. 3. Control chart demonstrating the percentage of adolescents with a depression screening at the preventive care visit.

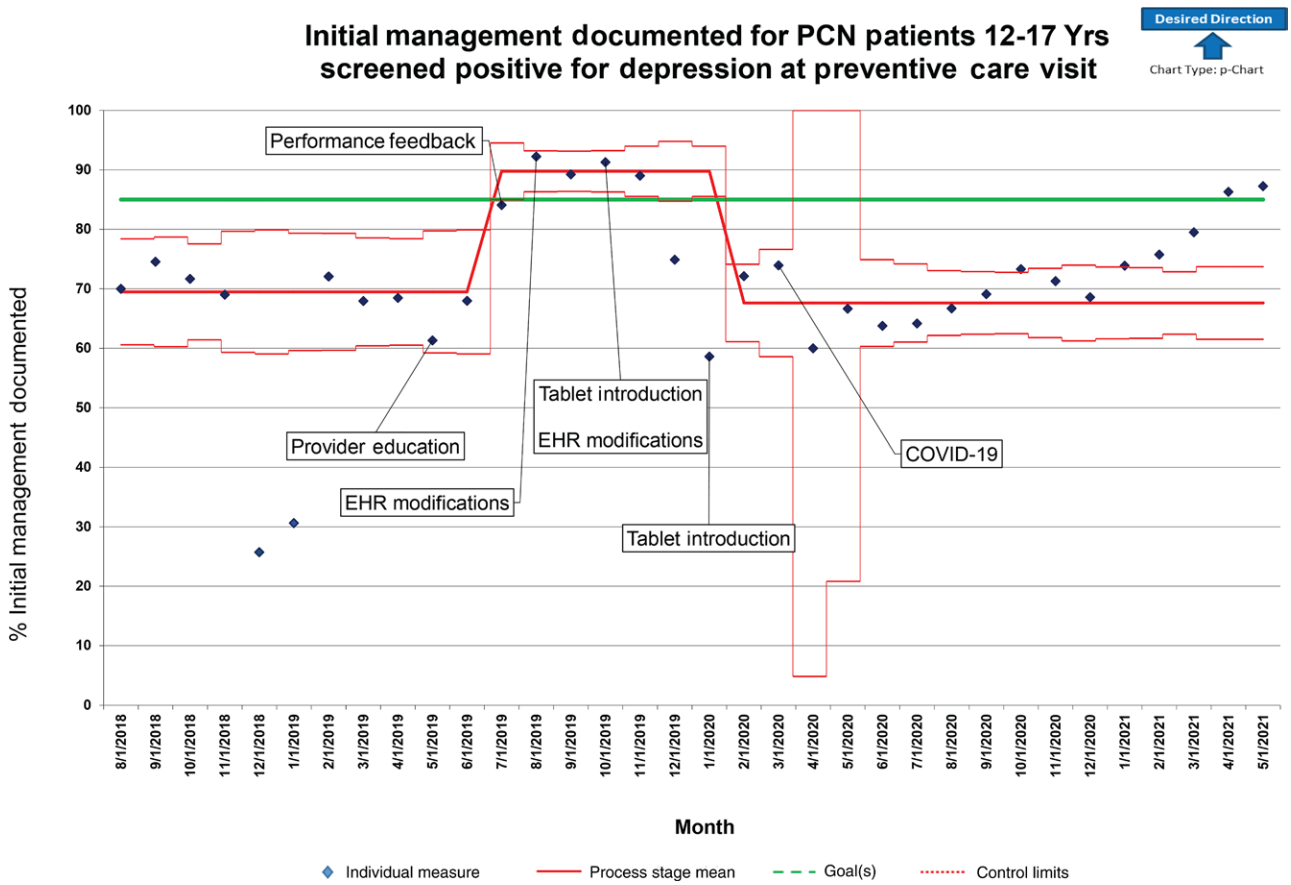

Fig. 4. Control chart demonstrating the percentage of initial management documented after a positive depression screen.

mental health referrals and SSRI prescriptions for more severe depression screening results.[17] In our QI project, we documented initial management over a wider range of positive depression screening scores.

As was the case with previous studies necessitating manual chart review, we encountered problems with EHR data extraction in this project.[16,17] Through provider feedback and plan-do-study-act (PDSA), we changed our documentation options to reflect the many reasons for a positive screen. These actions reduced free-text comments to allow accurate data collection without the need for manual chart review.

At the start of the study, we hypothesized that implementing the tablet for screening would simplify and streamline the depression screening process and facilitate appropriate initial management. However, we learned that simply creating the electronic environment does not singlehandedly improve care. Therefore, we addressed the preliminary gap in initial management documentation through provider education, audit, and feedback. This intervention also allowed us to change how a positive depression screen in the EHR facilitated documentation and tracking of results. Consequently, we confirmed a centerline shift in the documentation of initial management after a positive PHQ-9A screen from 69.5% to 89.7%.

In retrospect, we should have anticipated the decrease in the documentation of initial management after tablet introduction. For example, before entering the examination room, nurses gave the clinician positive screen results before tablet introduction. After tablet introduction, however, the depression screen and score automatically loaded into the EHR. As a result, the clinician had to independently navigate to a separate screen within the EHR or start a visit note to see screening results. For clinicians unaccustomed to looking in the EHR for results or completing the history and examination before starting a note, this resulted in missing screening results. Although direct input of electronic depression screens to the EHR saves documentation time, the workflow had to be adjusted to ensure that screening results would not be overlooked. Changing this workflow necessitated significant new education for the whole clinic and required directed feedback to alter well-established habits.

There are two significant limitations of this QI project. First, we did not study completion rates of the initial management plans documented after a positive screen. We also did not evaluate the degree to which screening led to a reduction in depression. One factor that could limit the generalizability of our findings is that the initial management options were based on the availability of social workers and integrated psychologists within our practice network. Others interested in replicating this work will have to tailor options based on the availability of local resources for follow-up care.

CONCLUSIONS

Through this QI project, we successfully increased adolescent depression screening from 65.4% to above our goal of 80%. Although we sustained these changes for 23 months, ensuring documentation of initial management after a positive screen has been more challenging. A key lesson from our QI work is that, although EHR-based solutions are important, they are not sufficient to change complex workflow issues, even in resource-rich environments. However, a comprehensive approach of process mapping, providing meaningful information, embedding decision support within the EHR, and giving targeted provider education, can lead to substantial improvements in adolescent depression screening.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

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