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# Depression Screening for Adolescents in Primary Care

Louise B. Mermer

*University of Massachusetts Amherst*

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# SCREENING OF ADOLESCENTS FOR DEPRESSION

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## Depression Screening for Adolescents in Primary Care

Louise B. Mermer

UMass College of Nursing

Capstone Chair: Dr. Emma Dundon

Capstone Committee Member: Dr. Pamela Aselton

Capstone Mentor: Dr. Ann Dobbins

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### Abstract

**Background:** Depression is a serious problem in the United States with suicide the potential catastrophic result of this disease. Suicide is the third leading cause of death for youth between the ages of 10 and 24. At any one time, 5% to 6% of adolescents experience major depressive symptoms, with lifetime rates of major depression among adolescents reaching up to 20%. Adolescents see their primary care providers (PCPs) on average once or twice a year making this the ideal setting for identification of adolescent depression. A review of the literature supports the use of instruments to identify depression that can be incorporated during routine health exams and the need for depression screening for adolescents in primary care. **Purpose:** The goal of this quality improvement project was to implement depression screening into a pediatric primary care setting. This was accomplished through the development of a process to disseminate and score PHQ-9 questionnaires at all health maintenance visits. **Results:** A total of 306 adolescents were screened during their annual health maintenance visit with 24 screening positive for moderate depression. On follow up five were receiving regular visits with a mental health provider and another five had appointments scheduled. **Conclusions:** It is feasible to incorporate screening for depression for all adolescents at annual health maintenance visits utilizing the PHQ-9 questionnaire and facilitate referral of identified adolescents to mental health services.

### Keywords

Adolescents, Depression, Screening, Primary Care, Quality Improvement

### **Introduction**

Major depressive disorder (MDD) is a serious health problem among adolescents, impacting both family and peer relationships. Keenan-Miller, Hammen, and Brennan (2007), in their longitudinal study of 705 adolescents found that young adults who experience depression in early adolescence report more visits to health professionals and greater impairment in work functioning at 20 years old. Depression is the root cause of many adolescent behavioral problems including school failure, unsafe sexual activity, substance abuse, risky and self-injurious behaviors and suicide (Ozer et al., 2009). Suicide is the third leading cause of death for youth between the ages of 10 to 24 (Minino, 2010). In New Hampshire, according to the National Alliance for Mental Illness-NH report (2013), suicide is the second leading cause of death in this age group. The National Institute for Healthcare Management Foundation (NIHCM, 2010) noted that 90% of teens that die by suicide were suffering from an identifiable mental disorder at the time of their death, typically depression. It has been postulated by some that the true number of deaths from suicide may be higher because some adolescent deaths recorded as accidental may actually be suicides.

Costello, Egger, and Angold (2005) reviewed pertinent literature from the previous decade and found compelling evidence that many if not most of lifetime psychiatric disorders will first appear in childhood. Kessler, Avenevoli, and Ries-Merikangas (2001) found that while half of all lifetime diagnosable mental health disorders begin by age 14, only 50% of adolescents suffering from depression receive a diagnosis before reaching adulthood. It is critical to identify mental disorders as early as possible, facilitating the mitigation of medical and societal costs.

Despite the seriousness of untreated depression as many as 50% of cases of MDD are missed because of the absence of screening by primary care providers and of those identified, fewer than 35% receive treatment (United States Preventive Services Task Force (USPSTF 2009).

### **Problem Statement**

Major depressive disorder is a serious health problem among adolescents, impacting both family and peer relationships, with suicide the most serious potential outcome. Multiple sources disagree on the exact prevalence of depression among adolescents but there is consensus that depression represents a concern for primary care providers.

### **Background**

Taliaferro et al. (2013) state that at any time 5% to 6% of adolescents experience significant depressive symptoms, whereas 30% to 35% experience elevated symptoms that don't reach criteria for the diagnosis of MDD. According to a publication by the National Institute of Mental Health, cited in Contemporary Pediatrics (2013), the rates of major depression in preadolescent children are only 2%, but the rates increase two to three-fold by adolescence and into adulthood. Deaths from suicide are only part of the problem. Each year 157,000 youth between the ages of 10 and 24 receive medical care for self-inflicted injuries at emergency departments across the US (CDC, 2014). The USPSTF (2009) and the American Academy of Pediatrics (AAP) recommended routine screening for depression in adolescents if systems are in place to insure accurate diagnosis, careful selection of treatment and follow-up. USPSTF (2016) reinforced this recommendation stating that currently available basic screening tools are equally adequate in recognizing the signs of Major Depressive Disorder (MDD) as other more extensive diagnostic tools and all adolescents should be screened by their primary care providers even if more sophisticated diagnostic systems are not in place.

### **Review of the Literature**

This literature review focuses on studies supporting the recommendations to screen adolescents annually for depression as well as studies that demonstrate effective screening programs in primary care with the goal of determining which evidence-based screening tool and implementation strategy is most appropriate for adolescents in a primary care practice.

### **Methods**

A systematic review of the literature was done by searching the following databases: PubMed of the National Library of Medicine, Cumulative Index of Nursing and Allied Health Literature (CINAHL), Cochrane Central Registry of Controlled Trials and Nursing@Ovid. Key words utilized were: adolescent, depression, screening, primary care, and quality improvement. Additional criteria included articles published in English within the last 10 years. A total of 305 articles resulted from the search, of which 20 were chosen for review. Chosen articles contained three or more key words in their titles or abstracts, including, at minimum adolescent, depression, and screening.

### **Results**

#### **Screening.**

Research supports the screening of adolescents for depression in primary care. Zuckerbrot and Jensen (2006) through a systematic review of the literature, found that few health care professionals used systematic depression identification methods despite growing evidence for their validity and feasibility. According to their data, primary care providers' reliance on presenting complaints and family concerns to identify depressed youth yielded severe

under-identification. Their research proposed that training would increase the rates of depression screening, but that use of an adolescent depression symptoms screening tool would be more successful to that end. Zuckerbrot et al. (2007) found that universal, systematic depression screening, using a standardized screening tool, met with little resistance by patients and was well-received and accepted by providers.

The survey of expert opinions conducted by Cheung, Zuckerbrot, Jensen, Stein, and Laraque (2008) had a 96% response rate. Fifty-three percent were primary care professionals. This survey was developed on the basis of information received from focus groups of patients, parents, and professionals. It surveyed experts on key management issues regarding adolescent depression and contained sections on identification, assessment, diagnosis, initial management, treatment, and ongoing management. Adolescents are being treated for mental health issues in primary care practices due to easier access. Primary care practices, therefore, have become the de facto mental health clinics for teens with mental health problems such as depression. There is, however, little guidance for primary care professionals who are faced with treating the population. The responding experts endorsed routine surveillance as well as the use of standardized measures as diagnostic aids.

Much new information has come forth regarding the management of adolescent depression, but few studies have examined the aspects of depression identification and initial assessment. Two articles questioned the efficacy of universal adolescent screening for depression. Gadowski, Scribani, Krupa, and Jenkins (2014) found that the screening process alone did not improve time to diagnosis or patient outcomes. Their study analyzed the ICD-9 codes of a small rural primary care practice from 1994 through 2010, using two strategies. The first was a time series analysis of the rate of Mental Health diagnoses of 8112 adolescents aged



13-15 years before and after the implementation of the Guidelines for Adolescent Preventive Services (GAPS) questionnaire. The second was a historical cohort pre- and post GAPS comparison of time to mental health diagnosis for 1531 adolescents aged 13-15 years. Limitations of the study were the rural population preventing generalization of findings to the larger adolescent population and the potential for duplication given that only 440-568 adolescents were screened annually during the 15-year study period and no stratification of data was specified.

Wissow et al. (2013) in their narrative synthesis following a systematic review of three databases with data extracted from 45 papers meeting inclusion criteria, found inconsistencies in how mental health screening tools were used. They also found inconsistencies in how mental health screening tools were administered and by whom, how referrals to mental health providers were determined and what follow-up was done. The reviewed studies reported low rates of patient follow-through with recommended mental health services. No reviewed papers addressed patient outcome. The literature suggested that a dearth of research has addressed the process of optimizing the engagement of patients and their families in mental health screening in primary care or how clinicians can most effectively use screening results. Screening is seen favorably when it is framed as universal, confidential and designed to improve communication to the benefit of the adolescent.

### **Screening Tools**

An integrative evidence review of 5737 abstracts and 480 full texts by the USPSTF (2009) on screening for child and adolescent depression in primary care found that data from six fair quality studies evaluating the accuracy of screening instruments reported sensitivity of 73 to 100 percent and specificity of 65 to 94 percent. The studies were referenced as fair quality for

several reasons. The large number of instruments, the sample and setting heterogeneity made generalizations across the studies difficult and might explain the wide range of performance characteristics that were reported. Each of the studies also had methodologic limitations including small sample sizes, nonrandom selection, high attrition levels, excessive delays between screening and diagnostic interviews, and the lack of a uniform standard for the diagnosis of depression. In a listing by the NIHCM Foundation (2010) seven tools were identified for use with adolescents. The criteria for tool use was that it be a free tool capable of being completed on paper, by the adolescent, in about five minutes, and scored easily by clinicians. The two tools that met the criteria were the Patient Health Questionnaire 9 (PHQ-9) and the Pediatric Symptom Checklist and Pediatric Symptom Checklist-Youth Report (PSC & Y-PSC). Both of these tools are MassHealth Approved Screening Tools.

In a randomized controlled trial (RCT) with blinded outcome assessment evaluating the PHQ-9 for detecting major depression among adolescents, Richardson et al. (2010) found that a PHQ-9 score of 11 or more had a sensitivity of 89.5% and a specificity of 77.5%. The PHQ-9 is available at no cost and can be completed by the adolescent in less than 5 minutes, making it a viable tool in primary care.

The USPSTF (2009) recommended that clinicians and health care systems should try to consistently screen adolescents for major depressive disorder when systems are in place to ensure accurate diagnosis, therapy and follow-up. The 2016 guidelines amplified these recommendations. The USPSTF (2016) stated that equally adequate screening tools were available for use in primary care practices enabling consistent screening of adolescents for major depressive disorder.

Taliaferro et al. (2013) found in their single qualitative, emailed survey of 3337 providers, with a 20% response rate, that two factors were positively associated with administering a standardized instrument for screening. These factors included having clear protocols for follow-up after depression screening and the provider feeling better prepared to address depression among adolescents.

### **Screening Implementation**

In the only quality improvement study of the implementation of a screening program for adolescent depression found in the literature search, Libby, Stuart-Shor, and Patankar (2014) demonstrated that it was feasible to implement a depression screening and treatment program in primary care. The sample size was small, 266 adolescents, and the initial project conducted over only eight weeks, but 100% of adolescents were screened for depression using the PHQ-2 and PHQ-9 and the 12 adolescents identified received treatment within 8 days in contrast to the pre-project average of 6 to 8 weeks. Additional limitations included that practice characteristics were heavily weighted in state-funded health insurance. Further studies are needed in more diverse populations and for longer periods of time.

### **Screening follow-up and treatment**

Innovative programs are needed to address the problem of limited mental health services. In a randomized controlled trial, Asarnow et al. (2005) demonstrated the effectiveness of a quality improvement intervention in primary care augmenting usual care with mental health providers trained in cognitive behavioral therapy (CBT) and care management services within the primary care practice. Results of this RCT confirmed significant intervention effects on rates of severe depression at six months. Eisen et al. (2013) reported on a pilot study of an innovative program, CATCH-IT, linking adolescents identified as being at risk for depression through

screening to an internet-based intervention that uses 14 modules to teach the subjects how to reduce behaviors that increase vulnerability to depressive disorders. This pilot program has shown promise to create a feasible and cost-effective model for prevention of mental disorders in adolescents in primary care. A five-year multi-site clinical trial is in progress.

### **Summary**

The foregoing literature review provides a foundation, augmented by clinical expertise, for the evidence-based practice (EBP) of screening adolescents for depression in a primary care practice. The Agency for Health Research and Quality (AHRQ), USPSTF, and Bright Futures (AAP, 2014) all heartily endorse regular screening of adolescents for depression. Eighty-nine percent of children 12-17 years old have contact with a healthcare professional for children under the age of 18 years annually (CDC, 2012). On average 70% of adolescents have a preventive health visit every four years (Nordin, Solberg, and Parker, 2010). The primary care medical home is the most appropriate and feasible location to conduct depression screening for adolescents as well as to coordinate treatment if necessary.

### **Theoretical Framework**

This capstone was the implementation of depression screening among adolescents 11-18 years old in a primary care practice. An editorial by Jackie Green (2000) argues that empirical evidence alone is insufficient to guide practice and that recourse to the explanatory and predictive capability of theory is essential to the design of both programs and evaluations. Kurt Lewin (1951) succinctly stated, “There’s nothing so practical as a good theory” (p.169).

Kurt Lewin’s Change Management Theory (1951) formed the framework of this project. Others, including Lippitt, Watson, and Westley (1958), with their 7-step theory that focused more on the role of the change agent than on the progression of the change itself and Rogers

(2003) with the even more complex Diffusion of Change theory have expanded on the theory but Lewin's clear-cut theory continues to be a model for the implementation of change.

Lewin's model is comprised of three phases through which change agents must proceed before change becomes part of the system. The first, Unfreezing, occurs when a need for change is perceived by one or more individuals in the organization. This perceived need for change may be stimulated by external forces such as guidelines from accreditation organizations or best practice recommendations, or from individuals within the organization that recognize that efficiencies are possible in the provision of care for patients. In this phase the problem or opportunity for improvement is identified and strategies are developed to enhance the driving forces of change. Key stakeholders are identified and meetings are held to brainstorm ideas identifying the strengths and weaknesses within the organization that will either facilitate or impede change.

In this capstone project, key stakeholders, who agreed on the need for implementation of depression screening, met to develop processes to implement screening and identify barriers within the organization to implementation. Institute for Healthcare Improvement (IHI) writings on the Science of Improvement (IHI, n.d.) stress the importance of having team members that are familiar with all components of the process being revised. The team was comprised of managers and administrators as well as those who work with the developed screening process including providers, nurses, and frontline workers.

The second phase is Moving. This is where the actual change took place after the process was developed, piloted, and revised utilizing the Institute for Healthcare Improvement's (IHI) Plan, Do Study Act (PDSA) system for this quality improvement project. Change is a process

not an event and encouragement and open communication facilitated the movement toward change.

The third phase is Refreezing. The change, in this case the process for implementation of screening for depression for adolescents, needed to be solidified or “frozen”. Lewin shared that a change to a higher standard of group performance is frequently short-lived unless all users are comfortable with the process and it becomes part of the norm.

### **Project Design and Methods**

The goal of this quality improvement project was to identify adolescents at risk for depression. This was accomplished through the development of a process to disseminate and score PHQ-9 questionnaires at all adolescent health maintenance visits. This collaborative process facilitated buy-in by all stakeholders in the need for depression screening and in the development and implementation of the screening process.

A second goal was to insure that all identified adolescents were referred to appropriate mental health services thereby reducing the risk of depression sequelae. This was accomplished through the development of an annotated list of area mental health providers that could be disseminated to adolescents and their parents. Additionally tickler files of adolescents who were referred for Mental Health services were developed and maintained to insure timely access and follow-up. A letter was also developed to send to parents of referred adolescents who couldn't be reached in follow-up after three telephone attempts.

A third goal was to implement the screening process while maintaining or enhancing patient and staff satisfaction measurements. This was accomplished through the development of a letter for parents introducing the depression screening process and the rationale behind it.

Parents and adolescents were also afforded the opportunity to ask questions while insuring confidentiality.

Goals	Objectives	Expected Outcomes
<p>To identify adolescents at risk for depression in a primary care practice.</p>	<p>(1) To develop the process to disseminate and score PHQ-9 questionnaires at the annual adolescent health maintenance visit.                      (2) To achieve buy-in by all stakeholders in the need for screening and in the development of the screening process.</p>	<p>(1) 95% of adolescents will be screened at their annual health maintenance visit.                      (2) 100% of providers will implement the screening process within 60 days.                      (3) 95% of Nursing and ancillary staff will be champions of the process.</p>
<p>To insure that identified adolescents are referred to appropriate Mental Health services thereby reducing the risk of depression sequelae</p>	<p>(1) To develop an annotated listing of Mental Health providers for adolescents and their parents.                      (2) To develop a tickler-file of identified adolescents who have been referred for Mental Health services to insure timely access and follow-up.</p>	<p>(1) 100% of adolescents with positive screens will be referred to appropriate services in a timely way.                      (2) At least 75% of referred adolescents will make contact with a Mental Health provider within 30 days after referral.                      (3) 100% of adolescents identified as being at risk for self-injurious behavior will have emergent referral to a Mental Health provider within 48 hours.</p>
<p>To implement the screening process while enhancing or maintaining patient satisfaction measurements.</p>	<p>(1) To develop an introduction letter for parents explaining the screening process and the rationale behind it.                      (2) To provide opportunities for questions to be answered while insuring patient confidentiality.</p>	<p>(1) Press Ganey scores will be maintained or enhanced after implementation of the screening process.</p>

## **Setting and Resources**

**Description of the group, population or community.** The site chosen for this project was a primary care pediatric practice in Southern New Hampshire. The city in which the intervention took place is the second largest city in New Hampshire with a population of 87,137. It is 79% White, 2.7% Black or African American, 2.7% American Indian or Alaskan Native, 6.5% Asian, 9.8% Hispanic or Latino and 2.5% two or more races (United States Census Bureau, 2012). Twenty-two percent of residents are under the age of 18 years. No statistics were available delineating serious mental illness under the age of 18 years within the year 2011-2012 in New Hampshire. For individuals over the age of 18 the rate was 4.05% similar to the US average of 3.97% (NAMI NH, 2013).

There is an area mental health center that provides mental health services for adults as well as children and adolescents, predominantly those with public insurance. Counseling appointments take weeks to obtain and appointments with a psychiatrist are made only after the individual has at least three appointments with a counselor. This is the rule even if the patient has just been released from an inpatient psychiatric facility.

There are multiple options for mental health counselors, psychologists, psychiatric nurse practitioners and psychiatrists in the area but access is dependent upon individual insurance coverage. Additionally, there are far fewer resources available for children and adolescents than there are for adults even with private insurance.



**Organizational analysis of project site.** The site selected for this project was a primary care pediatric practice located in a medium-sized city in New Hampshire. The practice did not use a validated questionnaire for depression screening at adolescent health maintenance visits. Diagnosis of depression was made through patient or parent verbalized concerns and clinical judgment. There was no comprehensive list of area mental health providers in the area for dissemination to adolescents and families who needed services. No statistics of adolescents diagnosed with depression were maintained or available to access. No statistics regarding how many adolescents were receiving mental health services were available. Electronic medical records are not utilized by the facility. Mass Health, the public insurance provider in Massachusetts, requires the use of a validated depression questionnaire annually during health maintenance visits. No such screening questionnaires are required in New Hampshire.

The project site is a division of a community hospital. The practice provides comprehensive care for 22,259 patients from birth through 22 years, with five physicians and one nurse practitioner. Each provider has a dedicated nurse. There are additional nurses for weekend and evening coverage. There are two telephone triage nurses Monday through Friday from 8:00 am until 5:00 pm and a sole telephone triage nurse evenings 5:00 pm to 7:30pm and on weekends 8:00 am to 1:00 pm. There is a nurse-on-call service after hours. There is a medical assistant who performs simple lab tests, does vision & hearing screening and sometimes puts patients into rooms. The office manager and patient services representatives (PSRs) provide office support, scheduling future appointments, making reminder calls, pulling charts for messages and appointments, etc. As mentioned previously, there is no EMR.

Approximately 7391 patients are between the ages of 11 and 18 years old. Nordin, Solberg, and Parker (2010) found that 70% of adolescents have a health maintenance visit at

least every four years. This was before passage of the Affordable Care Act and the waiving of co-pays by most insurers for preventive care visits. This capstone project was the development of a comprehensive screening program for depression in adolescents. Individuals identified as possibly having depression were referred for further evaluation with a mental health provider, and follow-up was provided for identified patients to insure that they received appropriate care in a timely way.

### **Implementation**

The Institute for Healthcare Improvement (IHI) Model for Improvement (MFI) framework was used in the development of the implementation program to screen adolescents for depression in a primary care practice using the PHQ-9 questionnaire. The following questions were asked:

What were we trying to accomplish? The team, comprised of the office manager, the nurse liaison, a PSR, a nurse, and the DNP student was trying to implement a screening process that would identify adolescents with major depression and to insure that identified adolescents were referred to appropriate mental health services in a timely way.

How will we know that a change is an improvement? The project was determined to be successful when at least 95% of adolescents were screened at their annual health maintenance visits and that systems were in place to refer those adolescents with positive screens in a timely way based on acuity.

What changes can we make that will result in improvement? The team developed an annotated listing of mental health providers for adolescents to include special interests and expertise as well as insurances and payment plans accepted by individual providers. The team

developed a process to disseminate and review questionnaires giving adolescents the opportunity for privacy. The team refined the process until it could be accomplished within the 30-minute health maintenance visit, so as not to negatively affect patient flow. The team provided information regarding the purpose of the project and allowed opportunities for questions from both parents and adolescents.

Prior to the initiation of the intervention, the team compiled the annotated listing of area mental health providers who provide services to adolescents and developed the process to refer identified adolescents for services and follow-up. This included the development of a letter that was given to parents explaining the process and rationale for the initiation of depression screening. A follow-up process was necessary because as Rushton, Bruckman, and Kelleher (2002) have demonstrated, more than one-third of children and youth who are referred to mental health specialists fail to make contact with the specialist provider over the next six months.

After completion of the referral list all staff was educated regarding the goals of the project and the importance of screening adolescents for depression using the PHQ-9 questionnaire. The project was implemented on a small scale after the annotated community mental health resource list was developed. Concurrent with the development of the list, processes were developed to incorporate the utilization of the PHQ-9 for all adolescent health maintenance visits. Multiple Plan-Do-Study-Act (PDSA) cycles (IHI, n.d.) were needed to arrive at a process that could be implemented on a practice-wide scale. A PDSA cycle starts with a prediction, of how the proposed change or process will work (PLAN). Who will be responsible for what, when and where? Through team collaboration a plan is developed. It was then tested on a small scale. IHI uses the 1-3-5-all method. In this case it was one provider implementing the developed process for one week and gathering data. Problems were

documented, unexpected observations and what worked was noted (STUDY). After analysis the process was adjusted as indicated and a second cycle occurred with additional providers with the same PDSA format (ACT). The process was implemented by the practice as a whole when there was confidence that it would perform effectively. It should be noted that key to IHI's philosophy is that if something doesn't work it's the fault of the process not the people. This openness encourages the sharing of ideas. The importance of including stakeholders from every area of the practice in developing procedures was acknowledged to insure acceptance and achieve lasting results. Data were collected on a weekly basis including the number of adolescent patients eligible to receive a PHQ-9 questionnaire at their annual health maintenance visit, the number of questionnaires returned and reviewed, the number of adolescents identified as needing further evaluation for depression and referred to mental health providers, the amount of time between the initial recommendation for mental health services and the first contact with a mental health provider, and the identification of any impediments to the receipt of services.

### **Ethics and Protection of Human Subjects**

Despite the importance of screening for depression among adolescents, it would be unethical to do so unless, as stated by both the USPSTF and the AAP, systems are in place to insure accurate diagnosis, careful selection of treatment, and follow-up.

Quality Improvement (QI) projects differ from research in that they are designed to implement knowledge, develop or assess a process as judged by established standards. Information acquired is integral to ongoing management systems for delivering health care. The process is iterative and not fixed allowing for changes as the process develops. This is contrasted with Human Subjects Research that is designed to develop or contribute to generalizable knowledge through a fixed goal, methodology and time table. After submission of

the University of Massachusetts at Amherst Institutional Review Board (IRB) application the project received an IRB exemption.

Studies have indicated that there is no potential for harm for individuals participating in a screening process for depression. Confidential information was protected by HIPAA regulations. The practice where the QI project took place utilizes paper charts. Charts are filed in a secure location in the office. Only staff who require a particular chart for patient care have access to individual patient information. Individual providers kept a secure list of those adolescents who were referred for further evaluation in order to ensure ongoing follow-up. The cumulative data collected weekly by each individual provider's nurse for the DNP student held no protected individual health information, but solely maintained aggregate information for reporting purposes.

### **Results**

**Outcomes.** The project implementation took place over 11 weeks. Three hundred and ten, or 99.35% of those eligible to receive the PHQ-9 questionnaire according to the project guidelines were distributed. Three hundred and six, or 98.7% of those questionnaires distributed were completed, returned, and reviewed. One parent declined to allow her child to complete the questionnaire despite that child receiving ongoing counseling services. Another parent declined to let her child complete the questionnaire because she felt that question 9, "Thoughts that you would be better off dead, or of hurting yourself" was inappropriate. This was despite discussion by the provider with the parent as to the questionnaire's validity and safety. A third adolescent wasn't able to complete the questionnaire due to severe autism.

Twenty-four adolescents, or 7.8%, scored 11 or higher on the PHQ-9 questionnaire and they and their parents were given the annotated list of mental health providers, with the

recommendation to schedule an appointment for further evaluation. In a study by Richardson et al (2010) a score of 11 or greater on the PHQ-9 questionnaire was found to be predictive of moderate depression with a sensitivity of 89.5% and a specificity of 77.5%.

When contacted two weeks after their health maintenance visit:

- Five adolescents reported being in counseling at the time of their health maintenance visit, with counseling ongoing.
- Five adolescents had appointments scheduled.
- Four adolescents were on waitlists to schedule an appointment.
- Two adolescents planned to self-refer to a counselor at college.
- One adolescent had been in counseling previously and the parents planned to re-refer.
- Two adolescents refused to go to counseling after appointments had been obtained.
- Three adolescents' parents stated that they believed counseling wasn't necessary.
- Two adolescents' parents couldn't be reached by telephone and letters were sent.

At the end of the project period, six adolescents, not previously in counseling, are known to have had at least one appointment with a mental health provider. Three adolescents, with private insurance, received appointments quickly. Two had an appointment scheduled in 14 days and one in 21 days. Three adolescents, referred for mental health services, with public insurance, had their first appointments after 60 days.

All adolescents identified as being in need of referral to a mental health provider for further evaluation and treatment received the annotated mental health provider list, with a recommendation to self-refer for services. All adolescents so identified were placed in tickler files to insure timely follow-up. Unfortunately, access to mental health services was limited due to inadequate resources in the area especially for those individuals with public insurance and

waiting times to receive services were prolonged for some. Parents reported that multiple calls were necessary to find a mental health provider for their adolescents and phone messages left were rarely returned. As a result only 58% of identified adolescents made contact with a mental health provider in 30 days in contrast to the 75% expected outcome. No adolescent was identified as being at risk for self-injurious behavior at the annual health maintenance visit and in need of emergent referral to mental health services.

**Facilitators and barriers.** Facilitators of the implementation included circumstances that had increased the practice's sensitization to the problem of depression and suicide among adolescents; accreditation agencies, insurers, and professional organizations were beginning to identify screening for depression among adolescents as a quality measure. Additionally, the DNP student who championed the proposed change was known and respected in the practice which enhanced communication and responsiveness of the providers.

Implementation barriers included provider resistance to change, that is, resistance to the acceptance of a universal, standardized screening tool. The Institute for Healthcare Improvement's Goldmann (2014) has demonstrated that this resistance can be mitigated through the implementation of seven rules for engaging clinicians in quality improvement. These consist of emphasizing improvement not assurance (process change, not individual assessment), providing relevant data, and avoiding mystical (Eastern) language, accommodating clinicians' workload and schedule in the provision of training, being up front about the fiscal agenda, and relating the importance of the change to what matters most to clinicians. Goldmann's seven rules were incorporated in the development of this process.

Resistance of clinicians and staff due to time constraints within a 30-minute adolescent health maintenance visit to accommodate screening was addressed in the planning phase/ PDSA

cycles. Staff resistance to change was addressed through education and communication.

Resistance was addressed early on with open communication. Achievement of measurable goals was clearly celebrated, as was positive patient/parent feedback regarding the process.

Lack of electronic medical records presented a barrier to data collection and the establishment of a follow-up system. Manual systems were developed and maintained, but relied on consistent input by multiple nurses. This created more of a barrier than was initially expected.

### **Discussion**

This quality improvement project was successful in that the process of disseminating and reviewing PHQ-9 questionnaires for all adolescents at annual health maintenance visits is now embedded within the organization. The dissemination of the annotated mental health provider list and recommendation for self-referral to a mental health provider occurs consistently when an adolescent scores above eleven on the PHQ-9. The mental health provider list has also proven to be a valuable handout when children and adolescents present at acute visits with depression and/or anxiety.

Follow-up has been inconsistent due in part to a paper tracking system. Multiple nurses were charged with maintaining the individual provider's tickler file, which resulted in erratic follow-up for some rather than the every two-week follow-up as planned. There was a lack of feedback from mental health providers due to the confidentiality inherent in self-referrals.

With the exception of the few parents who declined to allow their children to complete the PHQ-9 the anecdotal feedback acquired through provider, PSR, and nurse interviews was favorable. Press Ganey results improved for the project period over the same period in 2014. Results were not available for the first two weeks of 2016. Dialogue regarding adolescent



depression occurred due to the parent letter and the PHQ-9 questionnaire. This was yet another positive outcome of the project identified by adolescents, parents, providers and staff.

### **Conclusion**

Adolescent depression is a frequently recurring disorder with serious morbidity and mortality. Most mental health problems diagnosed in adulthood have their start in adolescence. Despite this fact, fewer than 50% of adolescents with depression are diagnosed before adulthood, and only 35% of those receive appropriate treatment. Screening, using a validated screening instrument, has been shown to identify adolescents with depression far better than relying on patient self-report or voiced parental concerns. Zuckerbrot et al. (2007) found that universal, systematic screening, using a standardized screening tool, met with little resistance by patients and was well-received and accepted by providers. This project confirmed those findings. This capstone project was the development of a comprehensive depression-screening program for adolescents in a primary care practice utilizing the PHQ-9 tool.

Lewin's Change Management Theory (1951) formed the framework in the development of this capstone project. The first phase, Unfreezing, occurred when stakeholders became aware of best practice recommendations and insurers' and certification bodies' intentions to make universal adolescent depression screening a quality measure. This facilitated dialogue between the DNP student and practice stakeholders in identifying strengths and weaknesses within the organization to achieve the goal of developing a comprehensive depression-screening program for adolescents. The second phase, Moving, where the actual change took place, utilized the IHI Plan, Do, Study, Act (PDSA) system. Change is a process and PDSA dovetailed well with the Moving phase of change allowing the gradual development of the screening process with input from all interested staff. Lewin's third phase, Refreezing, has occurred in that the screening

system that was implemented is now embedded within the practice routine and all users are comfortable with the process.

**Plan for action and dissemination.** Adolescents with public insurance have been shown both in the literature and in this capstone project to have extensive waiting times prior to receiving services. Additionally, the choice of provider is limited by type of insurance. It is necessary for parents to repeatedly call mental health providers before appointments are scheduled which places another barrier to the acquisition of services. Future plans for this practice include incorporating a cognitive-based theory program to ameliorate depressive symptoms in adolescents, Creating Opportunities for Personal Empowerment (COPE; Lusk & Melnyk, 2011).

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Appendix

PATIENT HEALTH QUESTIONNAIRE (PHQ-9)

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

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

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

add columns  +  +

(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card). TOTAL:

10. If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?	Not difficult at all	_____
	Somewhat difficult	_____
	Very difficult	_____
	Extremely difficult	_____

PHQ-9 Patient Depression Questionnaire

**For initial diagnosis:**

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

**Consider Major Depressive Disorder**

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

**Consider Other Depressive Disorder**

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

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

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

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

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

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

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

**Interpretation of Total Score**

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

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