Increasing Adolescent Suicide Risk Identification Using the Ask Suicide Questions (ASQ)

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A DNP Project Manuscript
Submitted in Partial Fulfillment of the Requirements for the
Doctor of Nursing Practice Degree

University of Maryland School of Nursing
May 2023

Author Note

There are no known conflicts of interest to disclose. Correspondence concerning this article should be addressed to Angela Rizakos, aleasca@umaryland.edu.

Abstract

Problem: Suicide is the second leading cause of death in children and adolescents aged 10-19 years old in the United States and the prevalence of depression among adolescents has doubled since the start of the COVID-19 pandemic. A small, privately-owned pediatric primary care clinic in Baltimore County, Maryland noted an increase in adolescent patients presenting for sick visits with a chief complaint of depression or suicidal ideation (SI) between 2018 and 2021. **Purpose:** The purpose of this quality improvement project was to increase the identification of SI in adolescents at one primary care clinic through standardized screening using the Ask Suicide Questions (ASQ). The main outcome goal was to increase early referral to mental health specialists. **Methods:** Over a 20-week implementation period, all patients aged 10 and older seen for any well child or non-febrile sick visit were screened using ASQ. On intake, a medical assistant administered the screen following a structured script. A "yes" response to any of the four items indicated a positive screen for suicide risk, and triggered further assessment from the provider using the Brief Suicide Safety Assessment (BSSA). If active risk for suicide was identified, the patient was immediately referred to the emergency department for safety evaluation. Otherwise, the provider created an individualized plan, which included referral to a therapist. **Results:** 85.3% of eligible patients received ASQ screening, with six non-acute positive results. 100% of these patients received a BSSA and a referral to a mental health specialist. There were no acute positive screens. **Conclusions:** These results suggest that universal ASQ screening for patients aged 10 and older has increased the identification of SI in adolescents at this primary care clinic, resulting in earlier referral to mental health specialists. Providers reported satisfaction with this the implementation of ASQ screening and believe it provided valuable data. ASQ screening remains a permanent practice change at this site. Efforts to sustain the practice change include training for newly hired staff members and use of change champions. **Keywords**: suicide, mental health, pediatrics, primary care, screening

Increasing Adolescent Suicide Risk Identification Using the Ask Suicide Questions (ASQ)

Suicide is the second leading cause of death in children and adolescents age 10-19 years old in the United States, with a rate of about 14 suicides per 100,000 adolescents (CDC, 2019). According to the National Alliance for Mental Illness (NAMI, 2023), nearly 20% of high school students report serious suicidal ideation (SI) and 9% have attempted suicide. Furthermore, the prevalence of depression among adolescents has doubled since the start of the COVID-19 pandemic, with suicide ideation rates rising concomitantly (Racine et al., 2021).

Unfortunately, epidemiologic data suggests that many patients who complete a suicide had contact with the healthcare system in the preceding weeks (Knesper, 2010). However, there is a large gap between the number of adolescents struggling with suicidal thoughts (1 in 10) and the number of adolescents who complete a suicide (1 in 14,000), indicating an opportunity to identify these feelings of SI and work to prevent successful suicides (NAMI, 2023). The pediatric primary care setting acts as the medical home for many health conditions and thus plays an important role in the identification, assessment, and management of mental health concerns. Current guidelines from the American Academy of Pediatrics (AAP) for the treatment of adolescent depression in the primary care setting recommend that primary care clinicians be able to assess for suicide risk and act in accordance but fail to specify recommendations for suicide screening and management methodology. Research shows that only about two-thirds of pediatric primary care providers (PCPs) routinely screen adolescents for mental health problems, but this rate is about five times higher among PCPs who self-report adequate knowledge of suicide risk assessment (Diamond et al., 2012).

A small, privately-owned pediatric primary care clinic in Baltimore County, Maryland noted an increase in adolescent patients presenting for sick visits with a chief complaint of depression or suicidal ideation between 2018 and 2021. For over half of these patients, depression and/or risk for suicide had not been previously identified or included on their problem list. The standard of practice at this clinic was to screen for depression and suicide ideation concurrently for patients age 12 and older annually at well child exams using the Patient Health Questionnaire (PHQ-9). A quality improvement project was implemented at this clinic to implement an evidence-based solution to the practice problem of under-identification of risk for suicide. The purpose of this project was to increase the identification of SI in adolescents through standardized screening using the Ask Suicide Questions (ASQ). The main outcome goal was to provide early referral to mental health specialists.

Available Knowledge

The National Institute of Mental Health (NIMH) developed the ASQ as a suicide risk screening tool for youth ages eight and above (NIMH, 2023). The tool, which is non-proprietary and available free of charge in multiple languages through the NIMH toolkit, is designed to identify patients in need of further mental health and suicide safety assessment. In the pediatric primary care setting, the tool has demonstrated content validity with 87.9% specificity and 100% sensitivity, which means the screening tool yields few false positives or false negatives (Aguinaldo et al., 2021).

Table 1 shows an evidence review table summarizing the results of a literature review examining the effectiveness of ASQ screening in pediatric primary care. The outpatient setting presents the largest opportunity for suicide risk screening, but most adolescents interviewed in an outpatient clinic reported that they had never been screened for suicide risk before (Roaten et al., 2021; Tipton et al., 2021). Universal screening compared to selective screening helps identify additional cases of suicidal ideation and behaviors that result in subsequent emergency room visits (DeVylder et al., 2019). Additionally, evidence suggests that universal suicide risk screening with ASQ leads to increased detection of suicide risk among adolescents when compared to use of the PHQ-9 depression screen (Kemper et al., 2021; Milliman et al., 2021; Ngai et al., 2022).

One article described the impact of ASQ screening in a pediatric primary care practice as part of a quality improvement project using the plan-do-study-act approach. Horowitz et al (2022) screened a total of 271 patients aged 12-25 years during their routine well visit. 11.4% of patients had a positive screen with one patient (3% of positive screens, 0.4% of total sample) screening positive for active suicidality requiring immediate intervention. Additionally, most patients, parents, and clinic staff reported satisfaction with ASQ screening. At this time, no additional articles exist examining the effects of this practice change among similar target populations.

Rationale

The promoting action on research implementation in health services (PARiHS) quality improvement framework guided the implementation of ASQ into practice at this site. This framework was derived from observation of successful implementation in health care, and suggests that "successful implementation (SI) is a function (f) of the nature and type of evidence (E), the qualities of the context (C) in which the evidence is being introduced, and the way the process is facilitated (F); SI = f (E, C, F)" (Kitson et al., 1998). Successful implementation of research into clinical practice is a complex process that is equally dependent on the strength of the evidence and on contextual factors of the setting and the way that implementation is facilitated. For this quality improvement project, strong literature evidence existed to support ASQ screening. Thus, the PARiHS framework reinforced the importance of a facilitation process strongly tailored to the culture and context of the site. Practice change was facilitated by highly engaged and motivated leaders within the clinic who were enthusiastic about the importance of the practice change. Site leadership worked closely with the project lead and clinic staff to support education to change knowledge, attitudes, and beliefs. They also provided infrastructure support to implement ASQ screening.

Methods

Context

The fishbone method was used to examine the systems and processes within the project in order to understand contextual factors that contribute to the practice problem. This root cause analysis identified organizational factors such as lack of relevant processes and resources as the root cause of the gap in identification of suicide risk. Prior to this quality improvement project, the standard of practice at the project site was to screen for depression and suicide ideation annually at well visits for adolescents 12 years and older using the PHQ-9, a widely used depression screen that includes one question about suicidality. However, annual screening with the PHQ-9 leaves patients vulnerable to unidentified suicide risk during other parts of the year and research has shown that PHQ-9 screening alone may fail to identify some patients at risk for suicide (Horowitz et al., 2021). A team of site stakeholders worked together to guide the quality improvement project. The team consisted of a project lead who maintained primary responsibility for design and implementation, a clinical site representative (CSR) for operational support, a sponsor for administrative support, a faculty advisor for academic guidance, change champions to support practice change, and clinic staff for practice implementation.

Intervention

During the 15-week intervention period, ASQ screening was introduced for all patients aged 10 and older who were seen at the primary care clinic for any well child visit or non-febrile sick visit. The ASQ is a brief, four-question self-report instrument that takes less than 20 seconds to administer (Figure A1). The medical assistant or staff member who completed the intake paperwork with the patient administered the screen privately, preferably without the parent present, following a structured script (Figure A2). A “yes” response to any of the four items indicates a positive screen for suicide risk, and triggers further assessment from the provider using the brief suicide safety assessment (BSSA). Patients who screen positive were also asked an additional acuity question about the presence of current suicidal ideation. An acute positive indicates active risk for suicide, and the patient is immediately referred to the emergency department for a safety evaluation. A non-acute positive allows the provider to create an individualized plan which may include interventions such referral to a therapist, close follow up with the primary care provider, or creation of a safety plan. A process map outlining the implemented screening process is presented in Figure 1, and relevant ASQ toolkit materials are presented in Appendix A.

Implementation strategies and tactics to support the successful implementation of ASQ screening were carefully selected based on facilitators and barriers of the project site to address accountability, buy-in, and process changes. In the month preceding implementation, the project lead mobilized an interdisciplinary team of stakeholders to ensure site readiness, including integration of the ASQ as part of the intake paperwork. The cornerstone of the implementation plan was comprehensive standardized education for all staff members about the quality improvement project’s goal and rationale. The project lead hosted weekly lunch and learn education sessions prior to implementation of ASQ screening. Educational material was based on non-proprietary material publicly available through the NIMH ASQ toolkit (2023) but was tailored to the project site and goals. Education included information about the background and rationale of the quality improvement project, as well as proper use of the screening tool, including a script for staff to use when introducing and completing the screening. During the implementation period, the project lead provided clinical supervision with weekly check-ins on site to provide feedback and address any concerns. The project lead was assisted by change champions, who were available to answer any questions in real time and assist with maintaining intervention fidelity when the project lead was not on site.

Measurement

Structure, process, and outcomes goals were identified during project development to guide data collection. To determine that the site was ready for go live, the structure goals were to have the screening tool added to the intake paperwork and to have 100% of the staff educated about the QI project and use of the ASQ tool prior to the start of the implementation period. The main process goal was that 100% of eligible patients would be screened using ASQ. This was measured as a proportion of the eligible patients seen at the clinic who had a screen completed, with measures taken weekly for four weeks prior to implementation and continuing throughout the implementation phase. To measure the impact of the process change, the main outcome goal was that by the end of the implementation period, the proportion of patients who receive referrals to therapists or mental health specialists would increase compared to baseline. This was measured as a proportion of the number of eligible patients seen weekly during implementation who received a referral and compared to a pre-implementation time point.

The first data element of interest was the number of eligible patients seen in the clinic each week. Measurements began four weeks prior to the implementation period to provide baseline data. Data points collected from completed screens included the percentages of: (a) eligible patients who had ASQ screening completed, (b) eligible patients identified as being at risk for suicide (positive ASQ), (c) positive screens that were acute or non-acute positive, (d) patients with positive ASQ screening who received a brief suicide risk assessment by their provider; and (e) patients who were referred to mental health specialists.

Ethical Considerations

This quality improvement project was submitted to the University of Maryland School of Medicine's Institutional Review Board (IRB) and received non-human subjects research determination from the Human Research Protections Office (HRPO). This project posed no threat of physical or psychological harm to participants. Patient privacy and confidentiality was maintained at all times, and no demographic or identifying patient information was collected during the data collection process. Completed screens were stored in a locked office at the clinic. All project data was collected weekly by the project lead in a private area and recorded onto REDCap, a HIPAA compliant, password protected server.

Results

Descriptive statistics were used to analyze the data and report the impact of the process change. Weekly data points from the implementation period were plotted in run charts with time as the independent variable. Run charts allow for data to be analyzed in terms of trends over time, and patterns of variation are analyzed to distinguish between common-cause variation, resulting from expected random variance in data, and special-cause variation, which can be attributed to the practice change.

During the pre-implementation phase, 100% of clinic staff received the planned education about the QI project and the intake process for eligible patients was modified to include ASQ screening. A total of 252 eligible patients were seen at the clinic during the implementation phase, ranging weekly from 5-28 (see Table 3). Of those screened, 85.3%

(n=215) were screened using ASQ during their visit. Figure 2 shows a run chart of completed screens, indicating special cause variation with an upward trend in completed ASQ screens coinciding with go-live of the implementation phase of the project on week 5.

Out of the 215 patients who completed the ASQ, 6 (2.8%) screened positive for suicide risk. 100% (n=6) of all positive screens were non-acute positive results. There were no acute positive screen results during the implementation phase of this project. 100% of patients with positive screen results received a brief suicide safety assessment (BSSA) by their provider as well as a referral to a mental health specialist (Figure 3 and Figure 4). Analysis of these run charts to assess for special cause variation is limited by the low number of positive screens.

After completing the BSSA, the provider had the ability to write any interventions that were provided in addition to referral to mental health specialists on the completed screen for review as part of data analysis. For one patient, the provider helped create a suicide safety plan and the patient was also given a resource handout with multiple phone numbers and website links in case of escalating suicidality (Figure A3). Additionally, this patient was asked to come back in two weeks for mental health follow up with their primary care provider. Another patient was restarted on Sertraline (Zoloft), an antidepressant that the patient had previously been prescribed. The other two patients with positive ASQ screens did not receive any additional interventions besides referral.

These results reflect the structure, process, and outcome goals of the quality improvement project. The structure and process goals were both met, facilitated by staff enthusiasm for the importance of the QI initiative and support from site leadership. However, there was a gap in the proportion of eligible patients who completed the screening tool, indicating that the main process goal of having 100% of eligible patients screened was not met. Barriers to meeting this goal included reliance on paper charts during the visit that are not integrated with electronic health record. While the screening form was included in the intake paperwork, patients did not always complete the form and return it to the staff member assisting them during triage. Because the form was not included in the EHR, the staff member did not have a reminder to follow up on the ASQ screening. The project lead addressed this gap with clinic staff weekly and reinforced the importance of administering the screens verbally and reviewing the screen with patients during their visit.

Discussion

The results from this quality improvement project support universal suicide screening in pediatric primary care. Implementation of ASQ screening results in increased proportion of patients undergoing a BSSA and receiving referral to a mental health specialist. It is important to note that this quality improvement study found a much lower rate of positive screens (2.8%) compared to what has been previously reported in the literature (11.4-13%) (Aguinaldo et al., 2021; Horowitz et al., 2022). One possible explanation for this is the limitation of a short study period and small sample size. Adolescent well visits tend to reach their highest volume during the summer and early fall months when patients are on a break from school and may have school forms due. While the implementation period for this project captured the tail end of this surge in annual adolescent well visits, the number of eligible patients seen decreased throughout the implementation period. A longer study period would capture more eligible patients and may allow for enhanced analysis of positive screens.

Nevertheless, ASQ screening is feasible to implement, acceptable to clinic staff, and non-disruptive to workflow. Administration of the screen takes less than 30 seconds, representing minimal burden to staff or increase workload during the intake and triage portion of a patient's visit. These findings are consistent with literature findings discussed previously that found ASQ screening to be feasible and acceptable to patients, families, and staff in the outpatient setting (Horowitz et al, 2022; Tipton et al., 2021).There are no costs associated with this process change.

Conclusions

The goal of this quality improvement project was to evaluate the impact of a process change in the way this clinic screens for suicide risk. Implementation of ASQ screening at this primary care clinic was successful in increasing the identification of suicide risk, resulting in earlier referral to mental health specialists. As a result, the project site has implemented ASQ screening as a permanent practice change. To sustain practice change, standardized training on the use of the ASQ has been added to the orientation of all new staff members at the clinic. Additionally, three members of the staff have been trained as change champions to serve as a clinical resource and support system for any questions that may arise. Next steps for this clinic center around integration of ASQ into the EHR to assist with removing barriers to screening.

Pediatric primary care settings planning to implement ASQ screening should have a clinical pathway in place to serve as an evidence-based guide to clinical decision making following ASQ screening. One major barrier to suicide prevention among adolescents is the long wait time to be seen by mental health specialists. For this reason, pediatric primary care clinics that plan to implement suicide screening may benefit from creating strong connections with mental health providers in the community to provide their patients with appropriate follow up service following a positive suicide screen.

Pediatric primary care providers are on the front lines of the current adolescent mental health crisis. This quality improvement project has shown that implementing ASQ screening is an evidence-based practice change that provides a quick and cost-effective opportunity for early detection of risk for suicide. Screening results in earlier referral to mental health specialists.

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Table 1

Evidence Review Table

Aguinaldo, L.D., Sullivant, S., Lanzillo, E.C., Ross, A., He, J.P., Bradley-Ewing, A., Bridge, J.A., Horowitz, L.M., Wharff, E.A. (2021). Validation of the ask suicide-screening questions (ASQ) with youth in outpatient specialty and primary care clinics. *General Hospital Psychiatry, 68*(2021), 52-58. https://doi.org/10.1016/j.genhosppsych.2020.11.006					Level II Quality A
Purpose	Design	Sample	Intervention	Outcomes	Results
To test the validity of the ASQ to identify individuals with elevated suicide risk with youth outpatient specialty and primary care clinics (non-emergency setting)	Quasi-experimental quantitative design Cross-sectional instrument validation study	**Sampling technique:** convenience sample **Eligible participants:** adolescents 10-21 years of age (n=918) **Setting:** 4 outpatient specialty clinics in Kansas and 1 primary care clinic in Massachusetts **Excluded:** developmental disability, cognitive impairment, communication disorder, physiologically unstable medical illness, non-English speaking patient or guardian (n=91) **Accepted/completed study**: n=515	No control group **Intervention:** Consent was obtained and patients were enrolled during check-in for their scheduled visit. A trained research assistant verbally administered the ASQ along with the SIQ/SIQ Jr. (a different validated screening tool that measures the severity of suicidal ideation in adolescents). **Intervention fidelity**: Demographic information was collected first. Order of screening was alternated to control for possible fatigue order effects. All data was collected verbally, then recorded into the EHR via tablets. All study participants were given a $10 gift card as a thank you as well as a suicide prevention resource sheet.	**Dependent variable:** concordance of ASQ with SIQ/SIQ jr. in identifying individuals at elevated risk of suicide. Content validity is reported with high specificity and high negative predictive value, which demonstrates its ability to limit both false positive and false negative screens.	In outpatient specialty clinic setting, sensitivity 100.0% (95% CI, 80.5-100.0%), specificity 91.2% (95% CI, 97.5-100.0%). Positive LR 11.4 (95% CI, 8.0-16.2), indicating that someone at risk for suicide was 11.4 times more likely to screen positive than someone not at risk. Substantial agreement with SIQ/SIQ jr. (AUC = 95.6%) In primary care setting, sensitivity 100.0% (95% CI, 59.0-100.0%), specificity 87.9% (95% CI, 82.0-92.3%). Positive LR was 8.2 (95% CI, 7.7-13.1), indicating that someone at risk for suicide was 8.2 times more likely to screen positive than someone not at risk. Substantial agreement with the SIQ/SIQ jr. (AUC = 93.9%)

DeVylder, J.E., Ryan, T.C., Cwik, M., Wilson, M.E., Jay, S., Nestadt, P.S., Goldstein, M., Wilcox, H.C. (2019). Assessment of selective and universal screening for suicide risk in a pediatric emergency department. *JAMA Network Open, 2*(10), 13. https://doi.org/10.1001/jamanetworkopen.2019.14070					Level II Quality B
Purpose	Design	Sample	Intervention	Outcomes	Results/conclusions
To test the association of positive ASQ screens with subsequent suicide-related outcomes in a selective screening sample compared to a universal screening sample in a pediatric emergency room.	Retrospective cohort study (quantitative)	**Sampling technique:** convenience. All patients aged 8-18 as part of routine care (no informed consent required; no inclusion/exclusion criteria other than age) **Setting**: large urban pediatric ED **# eligible:** n=15,003 **# accepted:** n=15,003 # in selective screening group: n=4,666 # in universal screening group: n=10,337 Low homogeneity between groups. Statistically significant difference between groups in race, gender, and age.	Patients screened with ASQ screening as part of routine triage. If patient screened positive, provider notified and patient received further assessment and referrals as appropriate (protocol not explicitly described) Sequential implementation: selective screening of patients aged 8-18 years old presenting with psychiatric or behavioral concerns from 3/18/2013-12/31/2016, then universal screening for all patients aged 10-18 years old presenting for any reason.	**Dependent variable:** positive ASQ screen In the pediatric ED setting, ASQ has a sensitivity of 96.9%, specificity of 87.6%, and a negative predictive value of 99.7% for patients with medical/surgical concerns and 96.9% for patients with psychiatric/behavioral concerns.	Protocol compliance ranged from 59-81% during selective screening phase and 80-86% during universal screening phase. 7.8% screened positive in the universal screening group compared to 29.9% in the selective screening group Positive screen in either group was significantly associated with subsequent ED visit(s) for suicidal ideation and behavior (hazard ratio 6.8 [95% CI 4.2-11.1] in universal screening group; hazard ratio 4.8 [95% CI 3.5-6.5] in selective screening group

Kemper, A. R., Hostutler, C.A., Beck, K., Fontanella, C.A., & Bridge, J. (2021). Depression and suicide-risk screening results in pediatric primary care. *Pediatrics, 148*(1), 49-58. https://doi.org/10.1542/peds.2021-049999					Level II Quality A
Purpose	Design	Sample	Intervention/procedures	Outcomes	Results/conclusions
To evaluate the magnitude of positive screens for adolescent depression using the PHQ-9 compared to the	Retrospective cohort study (quantitative)	**Sampling technique:** convenience **Eligible participants:** adolescents aged ≥12 years (n=972)	No control group **Intervention**: ASQ screening was added to routine preventive visits where PHQ-9 screening was already being completed.	**Dependent Variable**: “positive screen.” **DV measure:** 2 screening thresholds for PHQ-9. Positive for any type of depression was a	56.4% of participants had a positive PHQ-9 screen for any type of depression; 24.7% of participants had a positive PHQ-9 screen for MDD

incremental yield of positive screens for suicide risk with the ASQ.		**Setting**: 12 primary care practices in Columbus, Ohio **Excluded:** depression or self-harm on problem list at time of visit; antidepressant prescription within 6 months of screening; incomplete PHQ-9 or ASQ (n=169) **Accepted**: n=803 **Power analysis:** not reported	**Intervention fidelity:** screenings competed by patients on tablet computers prior after checking in for visit and automatically uploaded to the electronic health record (EHR). For non-English speaking adolescents, screening questions were asked by an interpreter with responses recorded by nursing staff.	response of 2 or 3 in questions 1 to 8 or a 1, 2, or 3 in question 9. Positive for major depressive disorder (MDD) was a total score ≥10. Positive ASQ was an affirmative response to any of the 4 items on the screening tool. A positive ASQ result triggers a fifth question to assess current suicidal ideation.	21.1% of participants had a positive ASQ screen. Of those with positive ASQ screen, 3.6% were positive for active suicidality. McNemar's test showed that adding ASQ screening to PHQ-9 screening increased the number of adolescents with positive screen (P < .0001 each) Conclusion: using the ASQ identifies additional cases of suicide risk.
Milliman, C.C., Dwyer, P.A., Vessey, J.A. (2021). Pediatric suicide screening: A review of the evidence. *Journal of Pediatric Nursing, 59*(2021), 1-9. https://doi.org/10.1016/j.pedn.2020.12.011					Level V Quality A/B
Purpose	Design	Sample	Intervention/procedures	Outcomes	Results/conclusions
A comprehensive literature review to answer the PICO question: for pediatric patients (P) does suicide screening at every health encounter (I) compared to an annual screen (C) increase clinician identification of patients at risk for suicide (O)?	Comprehensive literature review and qualitative synthesis	Literature search of CINAHL, CDSR, and Pubmed Yielded 415 published sources **Inclusion criteria**: published between 1/1/2011-4/3/2020; sample limited to patients under age 21, relevant information **# eligible:** n=29 **# accepted:** n=10	Evidence level and quality ratings based on data extraction following The Johns Hopkins Nursing Evidence-Based Practice Non-Research Evidence Appraisal Tool and Research Evidence Appraisal Tool. All articles independently read and appraised by 2 authors. Quality level assessments were discussed until inter-rater consensus was achieved.	Among the 10 articles reviewed, 5 used a quantitative descriptive design, 1 used a mixed methods design, and 4 used a qualitative design (1 quality improvement study, 2 secondary data analyses, 1 instrument development) 3 themes emerged from analyzing the literature: general characteristics of positive screens, instrumentation, feasibility for screening.	Found a gap between national recommendations to screen pediatric patients for SI and widespread clinical practice. When pediatric patients are screened for suicide risk across settings (ED, urgent care, inpatient and outpatient) at risk patients can be identified and interventions can be implemented.

Ngai, M., Delaney, K., Limandri, B., Dreves, K., Tipton, M., Horowitz, L.M. (2022). Youth suicide risk screening in an outpatient child abuse clinic. *Journal of Child and Adolescent Psychiatric Nursing, 35*(?), 38-44. https://doi.org/10.1111/jcap.12335					Level V Quality B
Purpose	Design	Sample	Intervention	Outcomes	Results
Does implementation of a universal suicide risk screening and assessment protocol improve detection of suicide risk in an outpatient child abuse clinic?	Descriptive study Quality improvement project using the plan-do-study-act (PDSA) cycle “Experiential quantitative evidence”	**Sampling Technique**: convenience sample for implementation group. Random sampling of prior appointments for chart review to obtain baseline data (n=53). **Inclusion criteria**: all patients ages 10-18 years who received services at child abuse center in Oregon **# eligible:** n=162 **# accepted**: n=162 No power analysis reported **Group Homogeneity:** demographic data other than age not collected for privacy reasons	Control group: Pre-implementation group (n=53). The clinic’s prior screening protocol screened all patients aged 13 years and older for depression and suicide risk with the PHQ-9. **Intervention**: all patients screened for suicide risk with the ASQ during initial visit **Intervention fidelity**: ASQ administered verbally by medical assistant, with results documented in EHR and reviewed by clinician during visit. If a patient screened positive on ASQ, the clinician administered the ASQ Brief Suicide Safety Assessment (BSSA) and documented it in the EHR.	**Dependent variable**: positive suicide screen rate Data collected by retrospective chart review.	90.7% of patients were screened for suicide during implementation period. 11.3% of patients screened positive for suicide risk on PHQ-9 in pre-implementation group (prior to implementation) compared to 29.2% patients screened positive on ASQ during intervention period Statistically significant difference in proportion of patients identified to be not at-risk for suicide between groups (83% of pre-implementation group vs. 63% of post-implementation group) (χ^2=8.862, p=0.035) Universal suicide risk screening with ASQ led to increased detection rate of patients who screened positive for suicide risk compared to a depression screen.

Roaten, K., Horowitz, L.M., Bridge, J.A., Goans, C.R.R., McKintosh, C., Genzel, R., Johnson, C., North, C.S. (2021). Universal pediatric suicide risk screening in a health care system: 90,000 patient encounters. *Journal of the Academy of Consultation-Liaison Psychiatry, 62*(4), 421-429. https://doi.org/10.1016/j.jaclp.2020.12.002					Level III Quality A
Purpose	Design	Sample	Intervention	Outcomes	Results
To report the frequency of risk identification across a variety of health care settings (emergency department, inpatient, primary care, outpatient specialty clinics) after a healthcare system implemented universal screening for all patient encounters	Retrospective cohort study (quantitative)	Sampling Technique: Convenience sample (all discrete encounters with the health care system **# eligible**: n=92,862 patient encounters for patients aged 10-17 **Exclusion criteria:** inconsistent or missing data **# accepted:** n=91,580	No control group (non-experimental design) Intervention fidelity: de-identified data from all discrete patient encounters during the study period of 5/20/2015-8/6/2018 was imported from the EHR to statistical software for analysis.	No dependent variable (descriptive study)	89% (n=79,616) of screenings took place in outpatient clinics Overall, 2.9% of visits yielded positive screen but proportion of positive screens varied by setting (highest in ED 8.5% compared to 2.2% in outpatient clinics and 2.1% in inpatient units) Significantly higher positive screen rates for patients presenting with psychiatric problem (27.6%) than non-psychiatric presenting problem (2.3%) (OR 16.22, 95% CI 14.49-18.16)
Tipton, M.V., Arruda-Colli, M.N.F, Bedoya, S.Z., Pao, M., Wiener, L. (2021). The acceptability of screening for suicide risk among youth in outpatient medical settings: Child and parent perspective. *Journal of Psychosocial Oncology, 39*(6), 789-795. https://doi.org/10.1080/0734332.2020.1856997					Level III Quality A/B
Purpose	Design	Sample	Intervention	Outcomes	Results
Pilot study examining acceptability of screening medically ill pediatric outpatients for suicide risk	Descriptive study	Sampling Technique: convenience sampling **Eligibility criteria**: outpatients ages 8-21 years old already enrolled in an ongoing medical research study at the National Institutes of Health	No control group (non-experimental design) **Intervention fidelity:** data collectors approached patients during their regularly scheduled outpatient visits and obtained consent. Patients and parents independently completed a	9.3% (n=3) of patients screened positive for suicide risk (non-acute positive, no active current suicidality) Only 1 parent whose child screened positive accurately identified the child's suicide risk.	75% of patients and 84.4% of parents believed that it is acceptable to be screened for suicide risk in medical settings. 65.5% of patients reported that they had never been screened for suicide risk before.

		# eligible: n=32 **Exclusion criteria**: non-English speaking, psychotic symptoms, cognitive impairment (n=0) **# accepted:** n=32	distress screening tool (about the patient) that included a ASQ suicide risk screening questions. After completing the tool, patients and parents were asked a series of questions about their experience being asked about suicide in a medical setting. Any patient who screened positive received a follow-up BSSA to determine disposition.		Results limited by small sample size
Zuckerbrot, R.A., Cheung, A., Jensen, P.S., Stein, R.E.K., Laraque, D. (2018). Guidelines for adolescent depression in primary care (GLAD-PC): Part I. Practice preparation, identification, assessment, and initial management. *Pediatrics, 141* (3), e20174081. https://doi.org/10.1542/peds.2017-4081					Level IV Quality A/B
Purpose	Design	Sample	Intervention	Outcomes	Results
Updated clinical practice guidelines for the identification, assessment, and initial management of depression in the pediatric primary care setting.	Guidelines developed based on combination of research evidence synthesis and expert consensus. A systematic literature review was conducted via search of Medline and PsycInfo databases; all primary studies published between 2005 and 2018 were reviewed. The evidence was reviewed by an expert committee of mental health and primary care experts. The guidelines were developed by a steering committee comprised of experts	n/a 156 articles referenced 5 areas of adolescent depression management: identification and assessment, initial management, safety planning, treatment, and ongoing management.	No true intervention- CPG based on systematic review of research and expert consensus Evidence was graded based on the University of Oxford's Centre for Evidence-Based Medicine grade of evidence system with the strength of the recommendation rated based on strength of expert consensus.	Suicide screening literature was not reviewed in the process of creating this CPG, but it is included in many of the depression screens recommended. The CPG notes concern for lack of evidence for primary-care-based interventions following the positive identification of suicide risk.	2 recommendations each for the areas of practice preparation, identification and surveillance, assessment/diagnosis. 3 recommendations for initial management. Recommendation to tailor depression screening to the targeted population and available resources within the practice setting. Also recommends establishing relevant resources in the community for referral and collaboration. Literature related to suicide screening was not reviewed. Recommendation that primary care providers

	in coordination with the AAP.				assess for suicide risk and act on it when recognized.

Note. Evidence level and quality rating based on Dang et al., 2021. See tables A3 and A4 for rating scales used.

Table 2

Synthesis Table

Category	Total number of sources	Overall quality rating	Synthesis of findings
Level I	0	n/a	n/a
Level II	3	A	Aguinaldo et al. (2021) found that the ASQ is a valid and reliable tool to screen for suicide risk in the outpatient setting. The tool reported content validity, high specificity, and high negative predictive value, which means the screening tool yields few false positives or false negatives. When using the ASQ, in the outpatient setting, someone at risk for suicide is 8.2 times more likely to screen positive than someone not at risk (Aguinaldo et al., 2021). A study comparing universal screening to selective screening in the emergency department found that positive ASQ screening result is associated with subsequent ED visit(s) for suicidal ideation and behavior, thereby supporting its use for universal screening (Devylder et al., 2019). Additionally, in the outpatient setting, using the ASQ in addition to the PHQ-9 depression screen, which includes questions about suicidality, identifies additional cases of suicide risk (Kemper et al., 2021).
Level III	2	B	The majority of adolescent patients interviewed in an outpatient clinic had never been screened for suicide risk before, but patients and their parents find suicide screening acceptable in medical settings (Tipton et al., 2021). Similarly, when reviewing all charts across a variety of settings within a healthcare system, Roaten et al. (2021) found that the largest opportunity for suicide risk screening is in the outpatient setting. 89% of all screenings within a hospital system that implemented universal screening in all settings took place in outpatient clinics, but the proportion of positive screens varied by setting and were much lower in outpatient settings compared to the ED (Roaten et al., 2021).
Level IV	1	A/B	The AAP guidelines for the identification, assessment, and initial management of depression in the pediatric primary care setting recommend that primary care clinicians be able to assess for suicide risk and act on it when recognized. However, suicide screening literature was not reviewed in the process of creating this CPG due to concern for lack of evidence for primary-care-based interventions following the positive identification of suicide risk. Thus, no specific screening tool is recommended. The CPG recommends establishing relevant resources in the community for referral and collaboration (Zuckerbrot et al., 2018).
Level V	2	B	A comprehensive literature review found that screening for suicide risk is effective at identifying patients at risk but is not widespread in clinical practice (Milliman et al., 2021). However, universal suicide risk screening with ASQ leads to increased detection rate of patients who screened positive for suicide risk compared to a those detected through depression screening (Ngai et al., 2022).
Good and consistent evidence – indication for practice change			

Table 3

Summary of Eligible Patients

	Implementation Week	Eligible Patients	Completed Screens	Proportion of Eligible Patients Screened
Pre - implementation Phase	1 (7/25/22-7/30/22)	16	0	0%
	2 (8/1/22-8/6/22)	19	0	0%
	3 (8/8/22-8/13/22)	21	0	0%
	4 (8/15/22-8/20/22)	26	0	0%
	5 (8/22/22-8/27/22)	28	0	0%
Implementation Phase	6 (8/29/22-9/3/22)	27	27	100%
	7 (9/5/22-9/10/22)	20	18	90%
	8 (9/12/22-9/17/22)	27	16	59.3%
	9 (9/19/22-9/24/22)	28	26	92.9%
	10 (9/26/22-10/1/22)	23	21	91.3%
	11 (10/3/22-10/8/22)	23	20	86.9%
	12 (10/10/22-10/15/22)	5	5	100%
	13 (10/17/22-10/22/22)	14	11	78.5%
	14 (10/24/22-10/29/22)	11	10	90.9%
	15 (10/31/22-11/5/22)	8	7	87.5%
	16 (11/7/22-11/12/22)	11	9	81.8%
	17 (11/14/22-11/19/22)	11	9	81.8%
	18 (11/21/22-11/26/22)	12	11	91.7%
	19 (11/28/22-12-3/22)	17	14	82.3%
	20 (12/5/22-12/10/22)	15	11	73.3%

Figure 1

Process Map of ASQ Screening Process

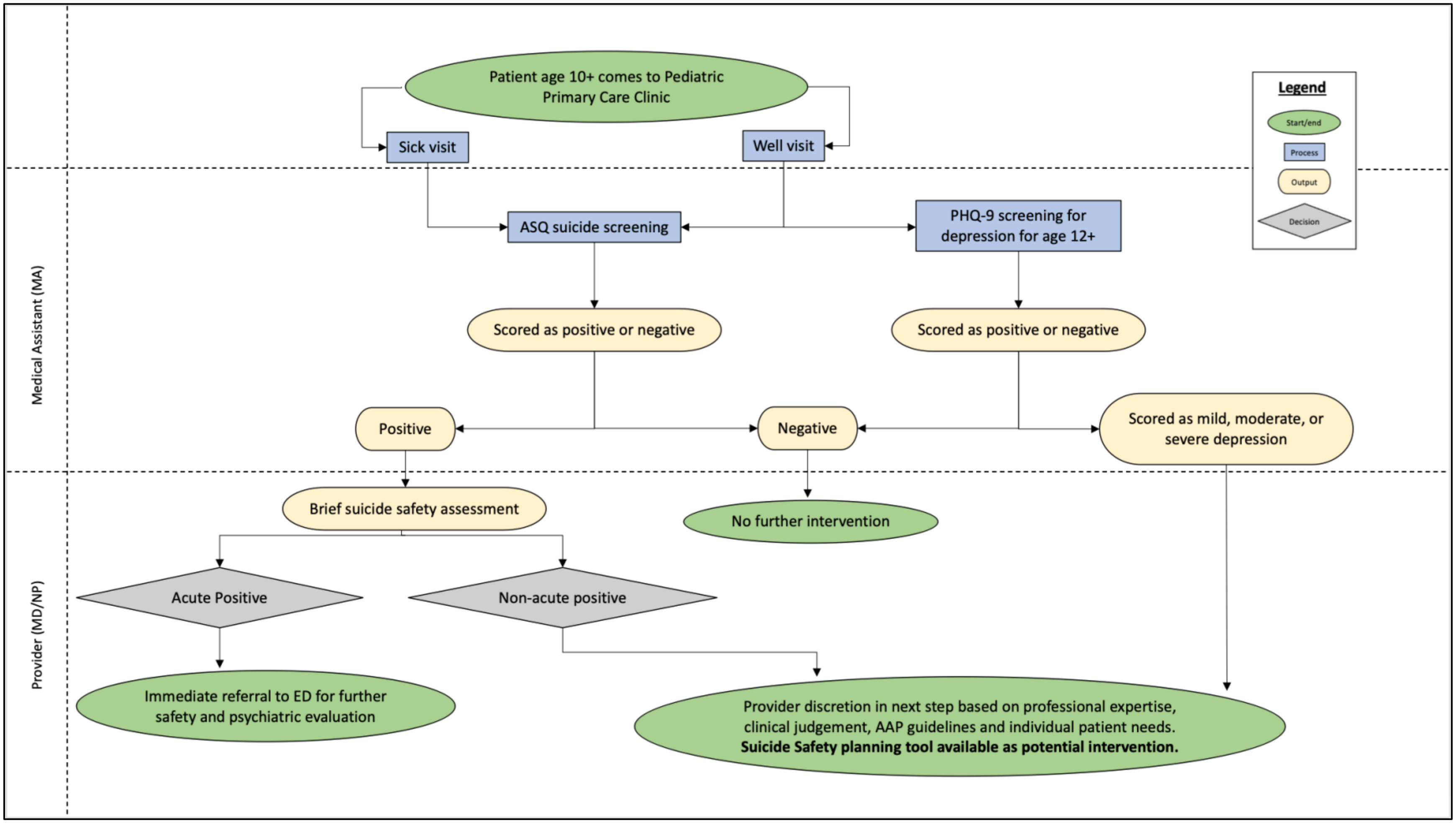


Figure 2

Proportion of Eligible Patients Who Received ASQ Screen

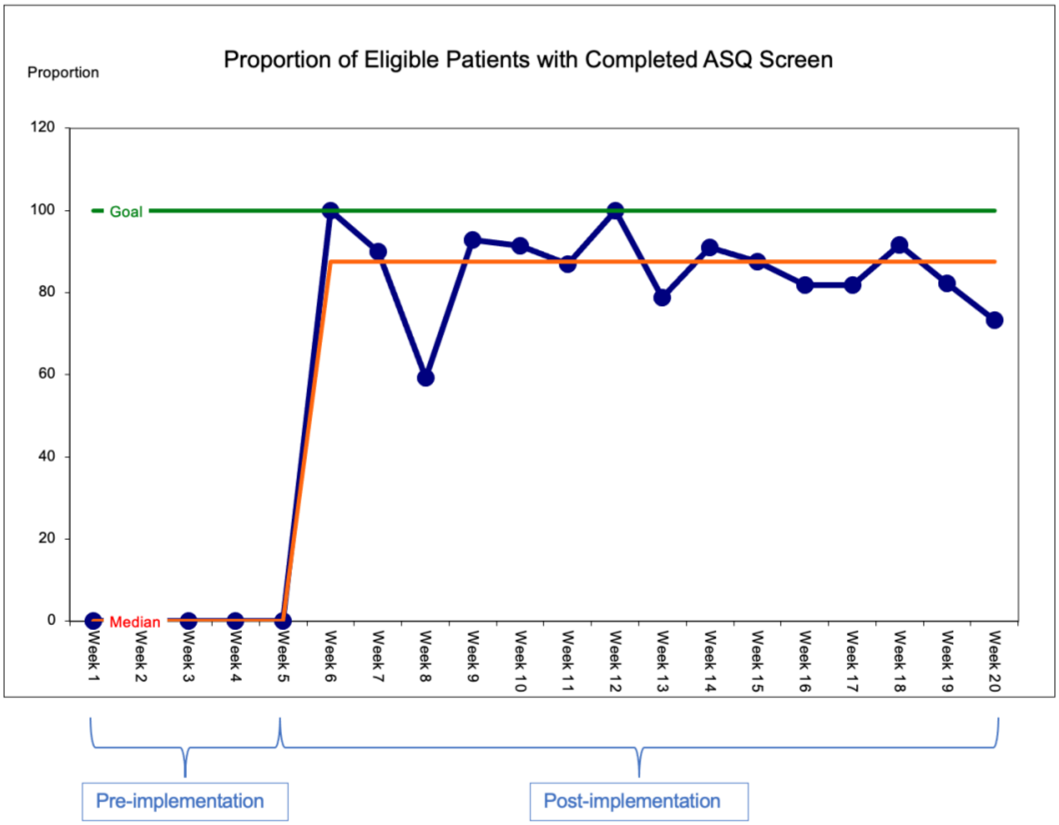


Figure 3

Proportion of Patients with Positive ASQ who received BSSA

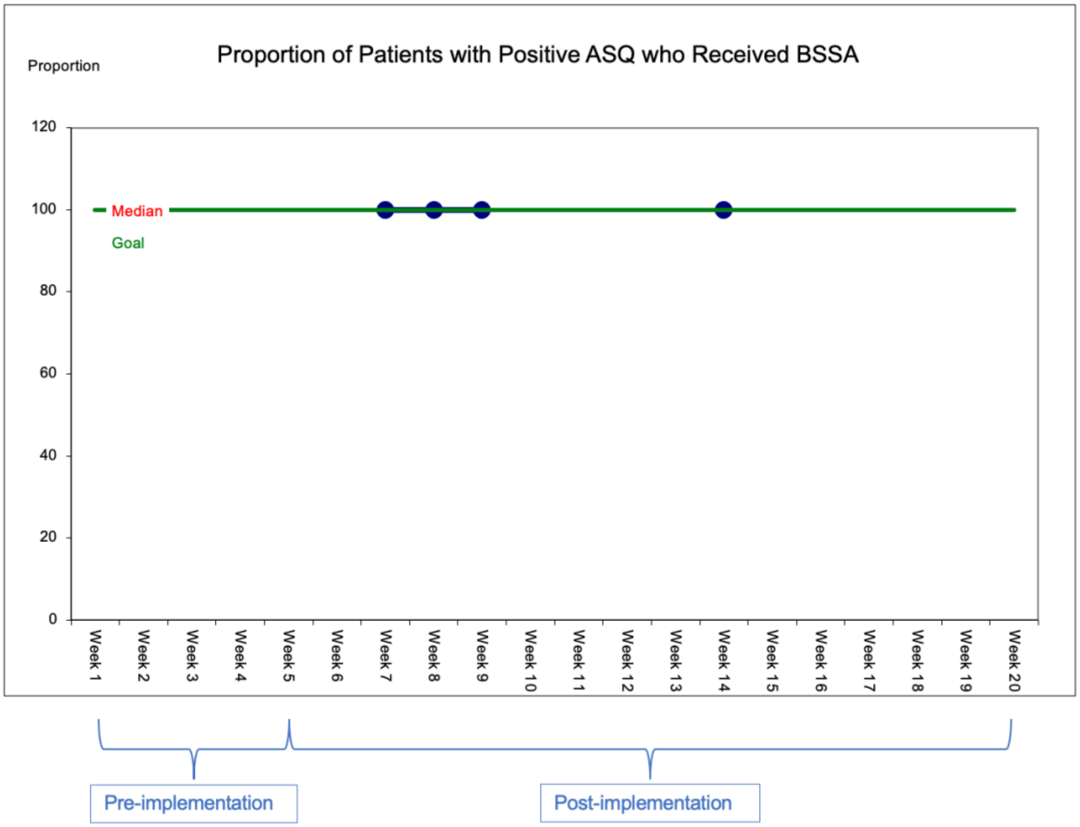
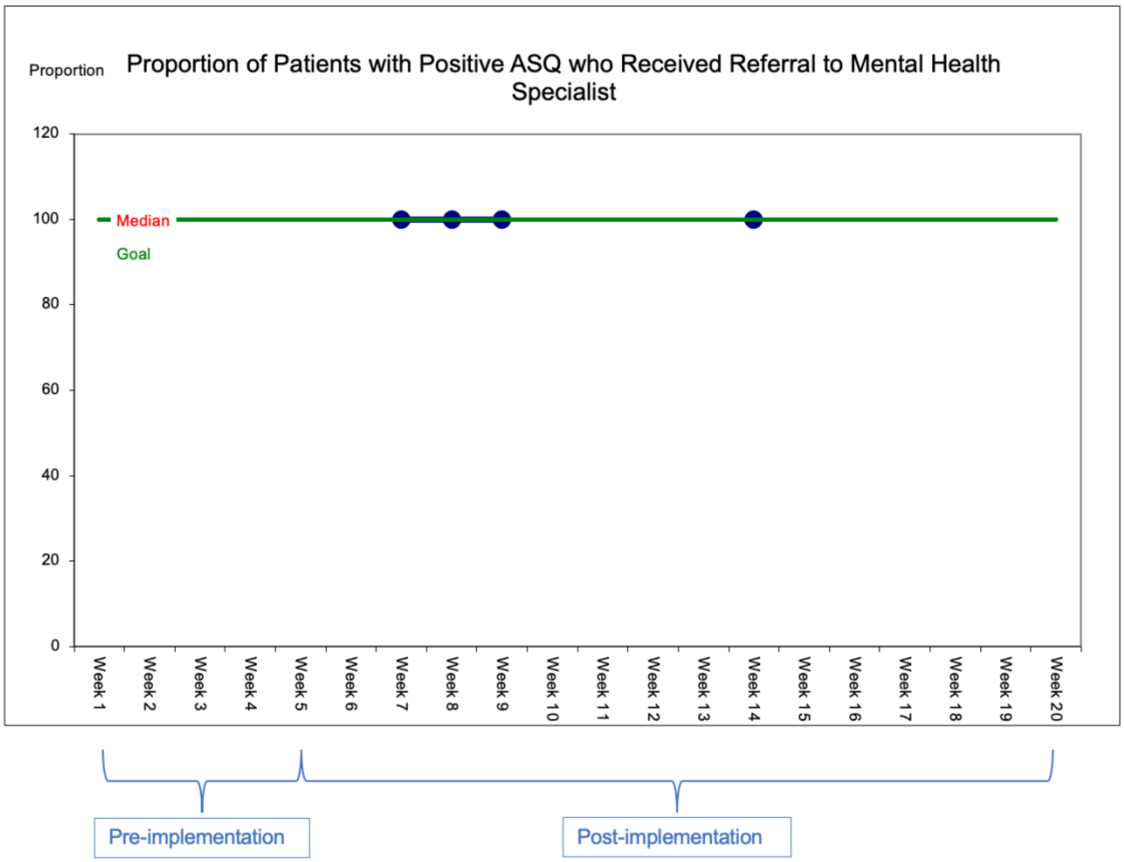


Figure 4

Proportion of Patients with Positive ASQ who received Referral to Mental Health Specialist

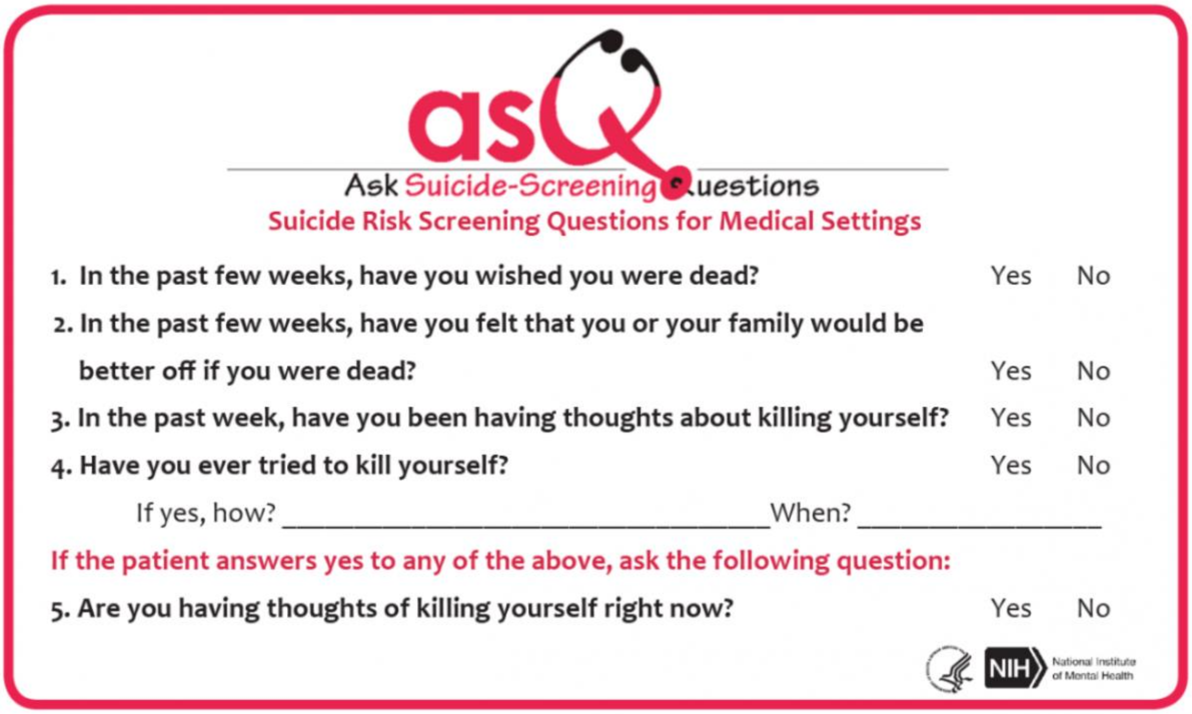


Appendix A

ASQ toolkit materials

Figure A1

ASQ Screening Questions



asQ

Ask Suicide-Screening Questions

Suicide Risk Screening Questions for Medical Settings

1. In the past few weeks, have you wished you were dead? Yes No
2. In the past few weeks, have you felt that you or your family would be better off if you were dead? Yes No
3. In the past week, have you been having thoughts about killing yourself? Yes No
4. Have you ever tried to kill yourself? Yes No

If yes, how? ______________________________ When? ______________

If the patient answers yes to any of the above, ask the following question:

5. Are you having thoughts of killing yourself right now? Yes No

NIH National Institute of Mental Health

National Institute of Mental Health, 2022

Figure A2

ASQ Script for Staff Completing Screening

asQ Ask Suicide-Screening Questions

NIMH TOOLKIT: YOUTH OUTPATIENT

Script for nursing staff

Say to parent/guardian:
"National safety guidelines recommend that we screen all kids for suicide risk. We ask these questions in private, so I am going to ask you to step out of the room for a few minutes. If we have any concerns about your child's safety, we will let you know."

Once parent steps out, say to patient:
"Now I'm going to ask you a few more questions."
Administer the ASQ and any other questions you want to ask in private (e.g. domestic violence).

If patient screens positive, say to patient:
"These are hard things to talk about. Thank you for telling me. I'm going to share your answers with [insert name of MD, PA, NP, or mental health clinician] and he/she will come speak with you."

If patient screens positive, and parent/guardian is awaiting results, say:
"We have some concerns about your child's safety that we would like to further evaluate. It's really important that he/she spoke up about this. I'm going to talk to [insert name of MD, PA, NP, or mental health clinician], and he/she will further evaluate your child for safety."

asQ Suicide Risk Screening Toolkit NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH) NIH 7/1/2020

National Institute of Mental Health, 2022

Figure A3

Mental Health Resource Handout

asQ Ask Suicide-Screening Questions

NIMH TOOLKIT

Mental Health Resources

National Mental Health Crisis Hotline
988

National Suicide Prevention Lifeline
1-800-273-TALK (8255)
Spanish/Español: 1-888-628-9454

Crisis Text Line
Text HOME to 741-741

Suicide Prevention Resource Center
www.sprc.org

National Institutes of Health
www.nimh.nih.gov

Substance Abuse and Mental Health Services Administration
www.samhsa.gov

Local Counseling Services

Advanced Behavioral Health	301-345-1022
Carroll County Youth Service Bureau	410-848-2500
Cedar Ridge Counseling Center	410-552-0773
Main Street Mental Health	410-526-7882
Metro Maryland Counseling Center	410-561-9584
Spring Board	410-366-1980
Safe Harbour Counseling	800-305-2089

Adapted from National Institute of Mental Health, 2022