Standardized Screening for Suicidal Adolescents in Primary Care

Matthew B. Wintersteen

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Standardized Screening for Suicidal Adolescents in Primary Care

WHAT’S KNOWN ON THIS SUBJECT: Several associations and federal agencies have called for depression screening in pediatric primary care. Screening for suicide risk is a natural adjunct to this call.

WHAT THIS STUDY ADDS: To our knowledge, this is the first study to prospectively examine the impact of standardized screening for suicide risk on detection and referral rates in pediatric primary care.

abstract

OBJECTIVE: To determine if brief standardized screening for suicide risk in pediatric primary care practices will increase detection rates of suicidal youth, maintain increased detection and referral rates, and be replicated in other practices.

PATIENTS AND METHODS: Physicians in 3 primary care practices received brief training in suicide risk, and 2 standardized questions were inserted into their existing electronic medical chart psychosocial interview. The questions automatically populated for all adolescents aged 12.0 to 17.9 years. Deidentified data were extracted during both intervention trials and for the same dates of the previous year. Referral rates were extracted from social work records.

RESULTS: The rates of inquiry about suicide risk increased 219% (clinic A odds ratio [OR]: 2.04 [95% confidence interval (CI): 1.56–2.51]; clinic B OR: 3.20 [95% CI: 2.69–3.71]; clinic C OR: 1.85 [95% CI: 1.38–2.31]). The rate of case detection increased in clinic A (OR: 4.99 [95% CI: 4.20–5.79]), was maintained over 6 months after the intervention began (OR: 4.38 [95% CI: 3.74–5.02]), and was replicated in both clinic B (OR: 5.46 [95% CI: 3.36–7.56]) and clinic C (OR: 3.42 [95% CI: 2.33–4.52]). The increase in case detection was 392% across all 3 clinics. Referral rates of suicidal youth to outpatient behavioral health care centers increased at a rate equal to that of the detection rates.

CONCLUSIONS: Standardized screening for suicide risk in primary care can detect youth with suicidal ideation and prompt a referral to a behavioral health care center before a fatal or serious suicide attempt is made. Pediatrics 2010;125:938–944

AUTHOR: Matthew B. Wintersteen, PhD
Division of Child and Adolescent Psychiatry, Department of Psychiatry and Human Behavior, Thomas Jefferson University, Philadelphia, Pennsylvania

KEY WORDS
suicide, adolescent, screening, behavioral health, primary care

ABBREVIATIONS
OR—odds ratio
CI—confidence interval

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Youth suicide presents a serious health problem for the nation and a clinical challenge for health providers. As the third leading cause of death among adolescents, suicide accounts for more deaths than the top 7 non–injury-based medical conditions combined.1 Every year, 20% of adolescents contemplate suicide, and 5% to 8% attempt suicide.2 The Centers for Disease Control and Prevention reported that 1983 adolescents aged 12 to 19 years died from suicide in 2005, representing the first increase (14.5%) in teen-aged suicide rates in more than a decade. Youth suicide is a major public health problem that has severe negative consequences on youth and society. Understanding of suicide is limited, and few methods to prevent it exist. Although numerous risk factors have been associated with youth suicide,3 the effectiveness of many prevention and intervention programs relies on early detection. Although a history of a past suicide attempt is the best predictor of a future attempt,4-6 focusing on attempted suicides is a highly specific but less sensitive method of identifying those at risk. Suicidal ideation, on the other hand, is more prevalent than actual attempts7 and usually precedes suicide attempts in adolescents.7 Suicidal ideation is also more sensitive and thereby more appropriate for a screening program and clinical follow-up. In fact, the presence of suicidal ideation in an adolescent, even if only historical, places him or her at risk for future suicide attempts7-8 and other poor psychological and social outcomes.8 Thus, a prevention program focused on early detection of suicidal ideation may capture a broader risk population and connect adolescents in need with behavioral health services before a suicide attempt.

Given its increasing function to serve as a gateway for behavioral health9 and the prevalence of behavioral health issues presenting in the primary care setting,10 the primary care practice is an ideal location for an early-detection program. In fact, several health organizations and policy statements have called for suicide screening in primary care.12-14 The Joint Commission of Accredited Health Organizations now mandates screening for suicide risk in patients being treated for a behavioral or emotional problem. The current study intervention directly addressed this by examining whether a brief physician training on suicide, along with the addition of 2 standardized suicide questions into an existing semistructured physician psychosocial interview, was associated with a significant increase in detection of adolescents with suicidal ideation presenting in a primary care clinic compared with a non–intervention-matched control clinic. We tested 3 hypotheses: (1) rates of detection for suicidal adolescents will increase as a result of the intervention; (2) increased rates of detection will be maintained after the intervention; and (3) increased rates of detection will be replicated in the matched control clinic and a third clinic.

PATIENTS AND METHODS

Study Design

Two clinics were selected to participate in the study. Using a prereplication/postreplication design, 1 clinic was offered physician education, followed by a 3-month trial (intervention phase 1) of standardized screening for suicide risk in all patients between the ages of 12.0 and 17.9 years. After completion of Intervention Phase 1, a second clinic received the same intervention of physician education and standardized screening (intervention phase 2). Standardized screening continued in the first clinic during phase 2. Deidentified data were extracted from 100% of patients’ electronic medical charts during both intervention trials, as well as from the same dates in the previous year to control for seasonal effects. All elements of this study were approved by the hospital’s institutional review board.

Selection of Intervention Clinics

Two primary care clinics associated with a large, urban pediatric hospital were selected as intervention clinics. The first clinic (clinic A) only treats adolescents between the ages of 11 and 24 years. Approximately 58% of the patients are female; 77% are black, 16% are white, 2% are Hispanic, and 5% self-identify as “other.” The second clinic (clinic B), located approximately 3 miles away, treats all pediatric patients from infancy through adolescence. Approximately 52% of the patients are female; 77% of the patients are black, 19% are white, 1% are Hispanic, and 3% self-identify as “other.” These 2 clinics were selected for comparison because of similar patient demographics, as well as a similar rate of suicide inquiry before the intervention (40.6% at clinic A, 38.2% at clinic B), based on a 20% extraction of deidentified medical charts. During Intervention Phase I, a third clinic (clinic C) inquired about participating in the study and was offered the intervention. Thus, the effect in clinic A would be replicated in both clinics B and C. The demographics of clinic C were different from those of the other 2 clinics. Almost 99% percent of patients were black, and 48% were female. Insurance information suggests that all 3 clinics serve patients with similar socioeconomic status. Providers at clinic A were specialists in adolescent medicine, whereas providers at clinics A and B were pediatricians.

Intervention Design

All providers at the intervention clinics were invited to a 90-minute training on youth suicide, which included the topics of epidemiology, risk and protec-

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ative factors, assessment, management of suicidal patients in the office, and triage/treatment. The training ended with the introduction of a standardized screening for suicide risk in adolescents.

Screening consisted of 2 core items inquiring about lifetime thoughts of morbid ideation (ie, thoughts of death with no evidence of suicidal intent, “Have you ever felt that life is not worth living?”) and suicidal ideation (ie, thoughts in which self-inflicted death is the desired outcome, “Have you ever felt like you wanted to kill yourself?”). Endorsement of either item prompted 6 additional items. Two items inquired about lifetime suicide planning and preparation and suicide attempts, and the remaining 4 items focused on past-week experiences of thoughts of morbid ideation, suicidal ideation, suicide planning and preparation, and suicide attempts. It should be noted that intent was not assessed with suicidal ideation; however, providers were assisted with assessing intent during the training session. The suicide questions were presented automatically during the normal flow of the standard psychosocial screening template of the electronic medical chart and followed previous sections on school, home, activities, and depression. The default response was “not asked”; thus, providers were required to manually select “yes” or “no” to each question. There were 2 templates used by providers for adolescent visits: the standard template and a brief template. The suicide screening questions existed in both templates and followed questions regarding depression in both instances.

Outcomes

Before the intervention, electronic medical charts contained 1 cell for “suicidality.” Providers were required to document whatever information they felt appropriate in that cell. To compare postintervention identification rates with preintervention identification rates, preintervention rates were defined as cells containing a narrative consistent with suicidal ideation, or thoughts of engaging in a self-injurious behavior with the intent of dying. This included a simple response of “yes” in the suicidality cell. Both the author and an independent reviewer examined all preintervention data and rated them for suicidal ideation/risk. Interrater reliability was high (κ = 0.96). Postintervention suicidal ideation/risk was defined as any positive endorsement of the second core standardized question (ie, suicidal ideation) or any endorsement of past-week symptoms beyond thoughts of morbid ideation.

Referral rates were compared by examining social work records for the number of referrals made to outpatient behavioral health care by social workers within each clinic.

Analytic Plan

Data analysis was restricted to the first visit of each participant. A logistic regression model was fit to a positive response for suicidal ideation/risk with predictors of season, site, and preintervention and postintervention, along with 2-way interactions among those predictors. The model was then reduced with backward variable selection, removing the worst predictor when P was >.15, after adjusting for all other predictors, as long as a hierarchical structure was maintained. This process tends to improve parsimony and reduce prediction error. The test of hypothesis 1 was made by examining the resulting coefficient for intervention along with its associated SE according to the Wald test. The test of hypothesis 2 was made by examining the season (epoch) by intervention interaction in the same manner. The test of hypothesis 3 involved running the same model with no season while removing epochs 2 and 4 from clinic A and testing the site by intervention interaction.

RESULTS

Rates of Inquiry According to Providers

Table 1 lists the rates of inquiry according to clinic. Logistic regression models showed significantly increased rates of inquiry across all 3 clinics (clinic A odds ratio [OR]: 2.04 [95% confidence interval (CI): 1.56–2.51]; clinic B OR: 3.20 [95% CI: 2.69–3.71]; clinic C OR: 1.85 [95% CI: 1.38–2.31]). The overall rate of inquiry across all clinics increased by 219%. No differences were found on the basis of standard or brief psychosocial template.

Rates of Detection of Adolescents With Suicidal Ideation

Table 2 lists the number of adolescents screened and identified at each clinic according to time point. A logistic regression model showed a significantly increased positive response rate after the intervention at clinic A (OR: 4.99 [95% CI: 4.20–5.79]) compared with detection during the same period the previous year. Thus, the rate of detec-

<table>
<thead>
<tr>
<th>Clinic</th>
<th>Preintervention</th>
<th>Postintervention</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>30.5</td>
<td>80.4</td>
<td>2.04</td>
<td>1.56–2.51</td>
</tr>
<tr>
<td>B</td>
<td>27.2</td>
<td>87.0</td>
<td>3.20</td>
<td>2.69–3.71</td>
</tr>
<tr>
<td>C</td>
<td>42.7</td>
<td>78.8</td>
<td>1.85</td>
<td>1.38–2.31</td>
</tr>
<tr>
<td>Total</td>
<td>36.5</td>
<td>82.1</td>
<td>2.49</td>
<td>2.02–2.97</td>
</tr>
</tbody>
</table>

The rate of inquiry was calculated as the number of suicide risk inquiries divided by the total number of visits and expressed as a percentage.
tion of potentially suicidal youth increased as a result of the screening. This increase was maintained at clinic A into intervention phase 2 (OR: 4.38 [95% CI: 3.74–5.02]) after adjusting for a relatively weak seasonal effect (OR: 0.63 [95% CI: 0.28–0.98]). The season-by-intervention effect was nonsignificant (OR: 0.79 [95% CI: 0.38–1.20]).

To determine if the effect of the intervention could be replicated in a second clinic, a similar logistic regression model was tested for clinic B. This clinic, which had a lower case-detection rate, showed a similar intervention effect (OR: 5.46 [95% CI: 3.36–7.56]). Clinic C also had a lower initial case-detection rate and a strong intervention effect (OR: 3.42 [95% CI: 2.33–4.52]) compared with clinic A, demonstrating the robustness of the intervention across treatment providers. The final replication model had a strong intervention effect (OR: 4.33 [95% CI: 3.72–4.94]) after adjusting for a relatively weak seasonal effect (OR: 0.78 [95% CI: 0.59–0.97]). The overall rate of detection increased by 392% across all clinics. No differences were found on the basis of the standard or brief psychosocial template. No demographic variables significantly affected detection rates.

**Rates of Referral to Treatment According to Social Work**

Rates of referral of suicidal youth to outpatient care made by clinic social workers increased at a rate equal to that of the detection rates (OR: 4.33 [95% CI: 3.72–4.94]). A comparison of social work records before and after the intervention revealed that all youth who presented with concerns about suicide risk at each of the 3 clinics were referred to outpatient care, at a minimum, by the clinics’ social workers. These results include 9 youth from the postintervention phase who were already engaged in behavioral health services and had chart notes indicating that a referral would have been made. Social workers attempted to contact each of these patient’s behavioral health provider once a detection of risk was made.

**DISCUSSION**

This study examined the impact on suicidal inquiries and detection of suicidal youth in primary care clinics through the inclusion of a brief training on suicide risk and 2 core standardized suicide screening items. Results suggest that medical providers increased their likelihood of inquiring about suicide risk by 219% when this intervention was built into an existing psychosocial screening. In addition, detection of suicidal youth was significantly increased, maintained over time, and replicated in 2 additional clinics. Across all 3 clinics, there was a 392% increase in detection of youth who had expressed suicidal ideation. Participating clinics already routinely referred youth to specialty behavioral health services, and the results of the intervention revealed that the number of referrals to behavioral health services increased at rates exactly equal to that of the detection rates. The results expand on the recent work of Bryan et al,16 who incorporated a behavioral health consultant into a large adult-focused family medicine practice to serve as a second-tier screener for psychosocial problems. They found a 600% increase in detection of suicidal ideation when the consultant used a standardized screening tool compared with routine physician practice. Our study demonstrates that primary care providers are capable of detecting youth at risk for suicide by using a similar screening method but without the addition of the behavioral health consultant.

Although a broad-based behavioral health screening in primary care has the potential for detecting a large number of youth, thus potentially burdening staff, the results of our study suggest that detection of patients with suicide risk does not increase at an overwhelming rate. In fact, across all 3 clinics (that average >2000 adolescent patients per year), detection rates increased by an average of 13.33 youth per 3-month period, or approximately 1 youth per week over a 12-month period. Indeed, increased case detection does not necessarily translate into an increase in youth requiring specialty behavioral health services. In addition, some identified youth may already be connected to services. The screener used in our study was designed to detect suicidal ideation and behavior in youth and prompt additional examination by the medical provider regarding associated risk before triage, treatment, and/or referral.

Prevalence rates of youth with suicidal ideation were lower in our study than in previous research.3,7,17–18 Although many factors may contribute to this discrepancy, methodologic differences in data collection likely led to fewer youth reporting suicidal symptoms. Most previous reports of prevalence rates for suicidal ideation in youth3,7,17–18 were derived from research-based epidemiologic studies without a clinical component (although they most certainly had safety protocols to manage acutely sui-

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**TABLE 2 Rates of Identification of Youth With Suicidal Ideation**

<table>
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<tr>
<th>Clinic</th>
<th>Preintervention</th>
<th>Postintervention</th>
<th>OR 95% CI</th>
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<tr>
<td></td>
<td>Screened, n</td>
<td>Identified, n (%)</td>
<td>Screened, n</td>
</tr>
<tr>
<td>A</td>
<td>1016</td>
<td>8 (0.8)</td>
<td>661</td>
</tr>
<tr>
<td>B</td>
<td>237</td>
<td>1 (0.4)</td>
<td>304</td>
</tr>
<tr>
<td>C</td>
<td>308</td>
<td>4 (1.3)</td>
<td>450</td>
</tr>
<tr>
<td>Total</td>
<td>1551</td>
<td>13 (0.8)</td>
<td>1415</td>
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cidual youth). One common source for these data is the Centers for Disease Control and Prevention’s Youth Risk Behavior Survey, an anonymous survey completed in schools, in which there are no direct consequences for reporting suicidal symptoms. In our study, however, data were collected by primary care providers during routine examinations of patients who were seeking their consultation, far from a research laboratory or anonymous survey. Concerns about anticipated provider actions after disclosure of suicidal thoughts may have influenced reporting. Thus, it is likely that data from this study are underestimates of actual rates of suicidal ideation and behavior in pediatric primary care patients. Additional research that detaches patients from direct provider inquiry is needed to gain a more accurate estimate of the prevalence rates of suicidal ideation in pediatric primary care. Finally, many previous studies did not differentiate between morbid and suicidal ideation, as suicidologists have historically struggled to operationalize definitions, perhaps leading to inflated rates of true suicidal ideation. Maintaining this distinction is a strength of this study.

One limitation of this study centers on the proximity of suicidal ideation to the assessment. Suicidal ideation was based on history, not necessarily present thoughts. Some readers may question the value of this perspective in assessing risk for suicide because providers frequently are primarily interested in imminent risk, particularly in emergency settings. Given the relatively high prevalence of lifetime suicidal ideation in youth, its impact warrants additional examination. Reinherz et al found that suicidal ideation in adolescence doubles one’s risk of a Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition axis I disorder by age 30 and makes one 12 times more likely to make a future suicide attempt. After psychiatric hospitalization, suicidal ideation tends to reemerge within a year, and Joiner and Rudd speculate that less stress is necessary to precipitate a suicidal crisis after being inoculated to an initial crisis. To further exemplify the risk associated with lifetime suicidal ideation, Nock et al reviewed the prevalence rates for suicide across 17 countries and found that among suicidal ideators, 29% would go on to make a suicide attempt. Among those with ideation and a plan, 56% would later attempt suicide. Prinstein et al found that severity of suicidal ideation predicted future suicide attempts above and beyond a previous suicide attempt. Therefore, although it may wax and wane, a history of suicidal ideation can have significant detrimental effects on health and well-being.

A second limitation centers on the impact of the brief training in suicide risk. The effect of this aspect of the intervention was not specifically examined in this study. Previous research has shown that physician training is one of only two effective suicide-prevention strategies that have reduced deaths (the other being restriction of lethal means). Given the systemic challenges to incorporating standardized screening, the call for increased behavioral health treatment in primary care, and evidence from participating practices, it is unlikely that a screening program would be acceptable to primary care staff without this component.

Finally, there are a number of barriers to standardizing screening in primary care. Perhaps the most challenging obstacle is time. Yet, even when a behavioral health issue is identified as the primary reason for the visit, physicians tend not to ask about suicide. In addition, without a thorough knowledge of risk, protective factors, and warning signs for suicide, there may be a tendency to focus on a psychiatric diagnosis. It is interesting to note that Joe et al examined a national sample of black youth and found that 41.3% of suicide ideators and 47.3% of suicide attempters had no psychiatric diagnosis before the onset of ideation or at the time of their suicide attempt. Clum et al found psychosocial variables to be more predictive of suicidal ideation than diagnostic variables. Thus, although a psychiatric illness may be present, it is neither necessary nor sufficient for making an accurate assessment.

CONCLUSIONS

The findings from this study are particularly timely after the recent recommendation of the US Preventive Services Task Force to routinely screen youth for a major depressive disorder. In addition, the American Academy of Child and Adolescent Psychiatry along with the American Academy of Pediatrics Task Force on Mental Health also released a joint article in which routine behavioral health screening in primary care was recommended. Consistent with these recommendations, standardized screening for suicide risk in primary care can identify youth in need of behavioral health care before making a fatal or serious suicide attempt. Both reports cautioned against screening when psychotherapy follow-up was not readily available. Thus, developing partnerships among physical and behavioral health providers may facilitate treatment planning and care for youth with newly detected suicidal ideation.

ACKNOWLEDGMENTS

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Bariatric Surgery Numbers for Older Children and Teens Grow: When an obese adolescent undergoes bariatric surgery, they lose an average of 76.3 pounds or 28% of their total body weight as compared to only 6.6 pounds or 3% of body weight in those who try to lose their weight by diet and exercise. According to an article in The Wall Street Journal (Mathews AW, February 10, 2010), summarizing an article from the Journal of the American Medical Association (O’Brien PE, Sawyer SM, Laurie C, et al. Laparoscopic adjustable gastric banding in severely obese adolescents: a randomized trial. JAMA. 2010;303(6):519–526), the results in the US, although substantial, are not quite as good as those in this Australian study, perhaps due to teens not being covered by health insurance that will allow for appropriate follow-up care after the surgery. An article on the same topic in The New York Times (Beil L, February 16, 2010) quoted Dr Evan Nadler, co-director of the Obesity Institute at Children’s National Medical Center as saying, “I honestly believe that in 5 to 10 years you’ll see as many children getting weight-loss procedures as adults.” More cautious is Dr Edward Livingston, chair of gastrointestinal and endocrine surgery at University of Texas Southwestern Medical Center, who notes that, like adults, “…some [pediatric patients] are going to regain weight” and “some of them are going to have long-term complications and we won’t find out until later.”

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