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Implementing Routine Suicide Risk Screening for Psychiatric Outpatients with Serious Mental Disorders: II. Quantitative Results

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Abstract

To test feasibility of a routine screening tool and to examine factors associated with suicide and suicidal behaviors. Subjects included outpatients with serious mental disorders. One hundred and sixteen clinicians routinely screened randomly selected adult clients for suicide risk during a 6-month period. Forty-three (9%) clients reported thoughts to hurt/kill self (screened positive), which spurred enhanced clinical intervention. There was no increase in frequency of suicide attempts. A history of multiple suicide attempts, recent stressful events and present hopelessness were associated with a positive risk screen, clinician rating of risk, or altered treatment plan. It is feasible to safely implement a brief routine screening process in psychiatric outpatient settings. Future research is needed to determine overall utility for routine screening.

Keywords

public mental health system; risk screening; suicide prevention

INTRODUCTION

Suicide is one of our nation's leading public health issues (U.S. Public Health Service, 1999); it is now the 11th leading cause of death (Centers for Disease Control and Prevention, 2004). Each day we lose 84 Americans to suicide—one person every 17 minutes (American Association of Suicidology, 2004; Kochanek, Murphy, Anderson et al., 2004). Suicide deaths consistently outnumber homicide deaths 3 to 2 in the United States

(Kochanek, Murphy, Anderson et al., 2004). More than a half million people require emergency room treatment each year as a result of attempted suicide (McCraig & Burt, 2004). Many argue for more targeted interventions for groups that have emerged as identifiable high-risk populations, particularly those characterized by chronic mental illness (Beautrais, 2004a, 2004b; Beautrais, Joyce, & Mulder, 2000).

In a companion paper we describe the process and challenges associated with the implementation of a screening program in public outpatient mental health settings to detect factors that potentially reflect a heightened near-term risk of suicide (published in this issue as a companion article). While a large majority of staff members readily participated in this effort and found screening useful, feasible and helpful, a small number were reticent or vocally resistant. Most of these cited fears of inciting more suicidal behavior; others worried that they would be subject to potential liability if they failed to detect risk factors prior to an attempt or death.

A major goal of our screening program was to determine whether such screening efforts are associated with unintended adverse outcomes—particularly suicide or suicide attempts. As we discussed in the prior paper, therapist reluctance to use the tool dropped substantially when we offered enhanced training that targeted recognition of risk factors and how best to manage clients at heightened risk once they had been identified. Another goal was to determine the fewest number of items needed to assure optimum screening utility; since clinicians are busy, this is important, especially if clients are to be reassessed regularly.

METHODS

This project was approved by the Institutional Review Board of the New York State Office of Mental Health (OMH) Central Office/Research Foundation for Mental Hygiene, Inc. The study sites, participating clinicians, and clients have been described in detail (published in this issue as a companion article). In brief, this project involved 10 outpatient clinics that are part of the South Beach Psychiatric Center (SBPC); 153 SBPC outpatient clinicians received a list of up to five randomly selected clients for routine suicide risk screening during a 6-month pilot period that commenced in December 2006. A total of 719 clients were randomly selected for screening. The random sample reflected the SBPC adult outpatient client demographic profile for the calendar year prior to the screening project, which was: 56% female, 44% male; 78% White, 17% Black, 5% Asian; 18% also identified themselves as Hispanic or Latino(a).

We asked each clinician to screen his or her selected clients at least monthly during a 6-month period. The monthly schedule was approximate, given varied session frequencies, and clinicians had the option to screen more frequently if they believed additional screening to be clinically useful for any particular client. Following administration of the screening items as part of routine clinical interactions, the clinicians sought consent from their clients to share results of the screening and their treatment data during the screening period with the research team. We merged the informed consent and HIPAA authorization into one form that included a full project description, all components of a consent form, and an authorization to release de-identified data. Data were not extracted from the computerized medical record for those who declined.

We used the OMH incident reporting system, operated by the OMH Bureau of Quality Management, to monitor participants for any increase in attempts or suicides at SBPC. In the event the number of suicide-related incidents increased beyond what would be expected based on averages during previous reporting periods, we planned to stop the project.

Data

Our pilot test screening instrument contained seven items pertaining to recent (past 30 days) symptomatology, feelings, thoughts (e.g., felt overwhelmed, hurt, agitated, low self-esteem, hopelessness), and recent stressor(s), ending with an inquiry on any thoughts about hurting or killing one's self. Response options included *yes*, *no*, and *prefer not to answer*. A positive response to the last item (any thoughts of hurting or killing self), client reticence (prefer not to answer), or clinician discretion led to the administration of eight additional assessment items that focused on intent, means, ability, lethality and options. We also included a clinician report that captured the clinician's impressions and treatment actions following the screening and clinical session. This report contained four sections of check boxes regarding history of suicidality, recent suicidality, outcome (clinician's assessment of client risk and treatment actions), and process feedback. The clinician's assessment of risk (low, moderate, high, or extreme) was used in preliminary analysis of the screening items. The suicide risk screen, assessment, and clinician report were computerized on the SBPC intranet and were administered by the clinician. Clinicians could print out a summary for each client's chart.

Analysis

Descriptive statistics, group comparisons and logistic regression analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 15.0 for Windows. We conducted logistic regression with a stepwise backwards likelihood ratio elimination using responses to each screening item, stressful events, demographics, and client history as predictors to 1) a positive screen, 2) clinician subjective rating of risk, and 3) any clinical intervention for suicide risk beyond routine treatment. For these analyses, we coded text descriptions for stressful events into 12 areas: 1) psychological symptomatology, 2) medical/illness, 3) illness of significant other, family or close friend, 4) discord with family member or significant other, 5) friends/social, 6) employment/school, 7) housing issues, 8) finance issues, 9) legal issues, 10) death/loss or anniversary of a loss of family member, significant other, close friend or pet; 11) holidays; and 12) other. History items were comprised of: 1) childhood trauma (physical, sexual or psychological), 2) family history of suicide (first degree, parents/siblings), 3) single suicide attempt, 4) multiple suicide attempts, 5) recent, planned serious attempt in past 3 months, and 6) impulsivity.

RESULTS

Screening, Risk, and Intervention

One hundred sixteen (out of 153) clinicians screened at least one client. In all, 471 of 719 (66%) potential clients were screened a total of 1,671 times (mean=3.6±1.9 *SD*; mode=4.0; range=1–8). The demographic information revealed that the screened sample was very close to the typical demographic profile of SBPC, and therefore likely to be a representative sample of SBPC outpatients. One hundred six (23%) clients were screened only once. (Please see our prior report in this issue for more details regarding clinician and client variables contributing to results). Forty-three (9%) clients screened positive across 69 (4%) screening instances; 14 (33%) of the clients with positive screens had multiple positives over the 6-month period; 29 (67%) had only one occurrence. As shown in Figure 1, about 275 clients were screened monthly. On average, there were 12 positive screens per month, slightly more near the beginning of the study (ranging from 12–16 in months 1–4) and fewer at the end of the pilot period (ranging from 6–8 in months 5–6). Clinicians conducted further assessments for 62 of 69 positives, and the same number, 62 (5%) of the negative screens. Overall, 7% (119/1671) of the screening sessions prompted clinical interventions for suicide prevention beyond “routine” (see below); thus screening seems to have prompted changes in care even when many evaluations were “negative.”

We categorized clinical interventions provided by clinicians specifically for suicide prevention on an approximate continuum of intensity: advanced (e.g., inpatient, partial, or day hospitalization); intermediate (e.g., medication adjustment, increased frequency of clinical sessions, telephone check-ins, increased case management, referral to advocate, and/or family intervention); precautionary (e.g., full assessment by the clinical team/psychiatrist); basic (e.g., provision of, or review of safety plan); and routine (continued screening). A small number of clinicians indicated “no additional treatment” specific to suicide risk.

Thirty-four (49%) of the 69 screening sessions with a positive screen resulted in the clients receiving some level of clinical intervention beyond “routine.” In contrast, only 5% ($N=84/1598$) of the screening sessions that were negative resulted in enhanced clinical interventions for suicide prevention.

In this project, routine screening did not increase rates of suicide or suicide attempts. During the three 6-month periods prior to the study, there were four suicide attempts per period among the 3,350 clients in the SBPC active outpatient case-load. Four attempts occurred during the study period as well; only one of the four clients who attempted suicide had been screened. This particular individual was screened twice, and attempted suicide with a “low degree of harm” 30 days after the clinician conducted the second screening. Both screenings for this client were negative, and the clinician rated the client at low risk on both occasions. A second client who attempted suicide had been chosen for random screening, but his clinician refused to conduct screenings. The remaining two clients who attempted suicide had not been selected for pilot screening, and their respective clinicians did not screen clients.

Item Responses

We also explored relationships between item responses and indicators of increased clinical vigilance. Eighty-two percent (386/471) of screened clients provided authorization to release their individual level screening data for further analyses; however, one of these never underwent screening. Among the remaining 385 clients, we analyzed individual responses for their 1,446 screenings to ascertain which items were most often affirmed in relationship to: 1) a positive screen, 2) clinicians’ subjective rating that a client was at elevated risk, and 3) receiving clinical intervention that was beyond “routine.” We examined all of these “positive responses” because each category reflected some type of “signal” that a client’s condition or social situation may have changed in a fashion to alter clinical “facts of the case.” Table 2 depicts descriptive data for these clients. As shown in Table 2, 26% of the clients screened had a history of single or multiple attempts of suicide, and 6% had a first-degree relative who died by suicide.

Clients with positive screens most often endorsed all screening items. There were 93 instances where response to the suicide inquiry was *Yes*, *Prefer not to answer*, or blank; of these, the response to five or all six screening items was *Yes* in 73 (79%) of the instances. In contrast, there were 731 instances where all 6 screening items were endorsed *No*, and in every case the suicide item was also *No*. Among recent stressors, either *discord with family/significant other* or *housing* were the most common stressors associated with either a positive screen, a clinician rating of elevated risk, or the decision to increase clinical interventions.

Logistic regression results for positive versus negative screens, clinician ratings of low versus higher risk, and clinical intervention beyond routine are depicted in Table 3. Demographics were not significantly different across all comparisons.

For positive screens, client history was significant ($\chi^2(3, N=1446)=62.05, p<.001$, Nagelkerke $R^2=.15$); those with a positive screen were significantly more likely to have experienced childhood trauma, and to have had either a single previous suicide attempt, or multiple attempts. Four of the screening items remained in the final step and the model was significant ($\chi^2(4, N=1350)=179.93, p<.001$, Nagelkerke $R^2=.45$), showing that people with positive screens were more likely to feel hurt/anguished/miserable, agitated, hopeless and to have experienced a recent stressful event. Notably, people reporting hopelessness were nearly 9 times more likely to have a positive screen. Several stressful events were associated with positive screens ($\chi^2(6, N=1446)=36.92, p<.001$, Nagelkerke $R^2=.09$): psychological symptomatology, medical/illness, employment/school, housing issues, finance issues and loss/death. Positive screens were also significantly related to clinician rating and enhanced clinical intervention. A client with a positive screen was 13 times more likely to receive a clinician risk rating of moderate or high, and was 17 times more likely to receive intervention targeted to suicide prevention.

Results for clinician ratings of elevated risk nearly mirrored those for positive screens (see Table 3). History of childhood trauma and multiple attempts were significant ($\chi^2(2, N=1205)=57.09, p<.001$, Nagelkerke $R^2=.17$) predictors of clinicians' higher ratings of client risk for suicide. Only two screening items were predictors ($\chi^2(2, N=1121)=47.48, p<.001$, Nagelkerke $R^2=.16$), hopelessness and recent stressful event, and these were associated with a clinician rating of moderate or high risk. Specific stressful events experienced by the client had a significant impact on clinicians' risk rating ($\chi^2(4, N=1205)=36.02, p<.001$, Nagelkerke $R^2=.11$), namely psychological symptomatology, discord with family/significant other, employment/school, and loss/death. As might be expected, clinician ratings were related to their clinical intervention; clinicians were 75 times more likely to provide enhanced intervention for suicide prevention for clients that they rated at moderate or high risk.

As noted in Table 3, we found that client history was predictive of intervention ($\chi^2(2, N=1449)=46.19, p<.001$, Nagelkerke $R^2=.08$), specifically family history of suicide and history of multiple attempts of suicide. Only two of the screening items were significant predictors of intervention ($\chi^2(2, N=1351)=58.91, p<.001$, Nagelkerke $R^2=.12$): feeling hurt/anguished/miserable and hopelessness. Three types of stressful events remained in the model ($\chi^2(3, N=1449)=31.90, p<.001$, Nagelkerke $R^2=.06$), namely psychological symptomatology, employment/school issues, and housing issues.

Overall we found four areas that were significant across all domains: a history of multiple suicide attempts, present hopelessness, and recent stressors related to psychological symptomatology and employment/school. These were significant predictors of a positive suicide risk screen, a clinician rating of risk as moderate or high, and receipt of clinical intervention for suicide prevention. However, when we tested these four factors together, recent stress concerning psychological symptomatology was eliminated in the stepwise procedure in each of the three domains, leaving three collective predictors. A history of multiple suicide attempts, recent stressors related to employment/school and present hopelessness together accurately predicted a positive screen, clinician rating and enhanced intervention 94–96% of the time.

DISCUSSION

We found that routinely screening psychiatric outpatients for suicide risk was feasible and without apparent unintended consequences or ill-effects. While we noted in our companion paper that some clinicians claimed that a small number of clients were feeling more “paranoid,” this occurred only when the clinicians incorrectly presented the screening

process itself as a research procedure. We found no discernible negative consequences among the clients of clinicians who readily adopted the program. Using the OMH incident monitoring system, we could discern no change in the frequency of attempts or suicides for the entire SBPC complex of outpatient facilities. While this covered a much larger population than our sample—and both suicide and suicide attempts are relatively low frequency events—it provided some additional validation that screening was not dangerous for the subjects who took part in the study.

It was noteworthy that the screening process seemed to stimulate changes in clinical regimen, even when clients were discerned to be of low risk, or have a negative screen. We do not know, however, the “base rate” of regimen change in the SBPC outpatient population, and therefore we can only suggest in the most tentative fashion that screening may have resulted in increased awareness of significant changes in client status, and this in turn may have led to alterations in care.

This was a “phase 1” study, somewhat akin to the first level of medication trials mandated by the FDA. It was most useful for exploring safety concerns and feasibility, and looking for signs of potential therapeutic benefit. It allowed us to examine items more closely to assess which had most apparent utility, with an eye to further simplifying the tool. Further larger scale studies appear to be warranted based on what we have found.

One of the challenges for future screening work involves design of research protocols and the related ethical concerns. Our implementation procedure involved extensive training to facilitate the screening process. For the next level of investigation, it is clear already that simply sending an administrative edict for clinicians to undertake screening (and supplying the tool without extensive training) will be insufficient to implement widespread use. Were the effects of the tool directly related to its use, prior training, or a combination? Is it necessary to have a “treatment as usual” condition, with neither training nor tool use, or should we randomize the two to different sites? Another challenge is disentangling any potential clinical impact of the screening process itself from that of subsequent clinical intervention since it is ethically unacceptable to not intervene with “screen positive” individuals. Thus, inevitably, use of a screening tool must be part of a broader clinical intervention program.

This underscores the observation that assessing a screening tool is not the same as assessing a screening program (Pena & Caine, 2006). It is the latter which holds, in the end, public health significance. In the same way that cholesterol screening has no utility unless elevated blood levels lead to needed life-style and medical changes, the use of a tool in isolation of a capability of responding effectively will have little benefit.

This study represents an effort to explore such use in a busy outpatient setting where the ubiquitous presence across clients of serious psychiatric disorders is the norm. In such settings, knowledge of diagnosis and level of psychiatric symptoms may not in themselves be sufficient for detection of time-dependent elevated risk for suicide. It is in such settings where we will continue to study the utility of tools, and programs, to identify those most in need of near-term changes in their clinical regimen as a way to lower suicide rates among “high risk” individuals. As noted in our companion paper, responding to this challenge must include both a process to better identify clients whose personal circumstances have recently changed and extensive efforts to bring along the minority of clinicians who do not readily adopt new approaches to care.

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FIGURE 1.
Screening outcomes by project month.

TABLE 1
Summary of Clinical Intervention by Screening Results and Clinician Rating of Client Risk for Suicide (*N*=number of screens)

	Clinical intervention				
	Advanced	Inter-mediate	Pre-cautionary	Basic	Routine
Positive screens (<i>N</i> =69)					No additional treatment
CR=Low	1	5	2	8	33
CR=Moderate	2	10	2	2	0
CR=High	0	2	0	0	0
CR=Extreme	0	0	0	0	0
	3	17	4	10	33
Negative screens (<i>N</i> =1,598)					
CR=Low	4	11	27	17	1,182
CR=Moderate	6	12	2	4	8
CR=High	0	0	0	0	0
CR=Extreme	0	0	0	0	0
CR=Missing	0	1	0	0	9
	10	24	29	21	1,199
Missing * (<i>N</i> =4)					
CR=Low	0	0	0	0	3
CR=Moderate	0	1	0	0	0

CR=Clinician Rating.

* Screen contains missing data for hurt/kill self item and considered neither positive nor negative.

TABLE 2

Descriptive Information for Clients Screened

Variable	All screened (N=385 clients)
Demographics:	
Gender (% male)	50%
White	66%
Black	15%
Hispanic	13%
Asian	6%
Age: Mean (SD)	50 (12)
Years in treatment from admission date: Mean (SD)	8 (7)
History:	
Childhood trauma	30%
Family history of suicide	6%
Single suicide attempt	11%
Multiple suicide attempts	15%
Recent planned, serious attempt	1%
Impulsivity	21%

TABLE 3

Predictors of Positive Screen, Clinician Rating of Risk, and Clinical Intervention

Predictor	Positive screen	Clinician rating of risk as moderate, high or extreme	Any clinical intervention beyond routine treatment
Demographics			
Gender	n/s	n/s	n/s
Ethnicity/Race	n/s	n/s	n/s
Age	n/s	n/s	n/s
Years in treatment	n/s	n/s	n/s
History			
Childhood trauma	OR=2.9, $p<.001$	OR=2.3, $p<.01$	n/s
Family history of suicide	n/s	n/s	OR=2.5, $p<.01$
Single suicide attempt	OR=5.3, $p<.001$	n/s	n/s
Multiple suicide attempts	OR=2.6, $p<.01$	OR=7.5, $p<.001$	OR=4.6, $p<.001$
Recent planned, serious attempt	n/s	n/s	n/s
Impulsivity	n/s	n/s	n/s
Screening items:			
Felt stressed, overwhelmed or pressured	n/s	n/s	n/s
Felt hurt, anguished or miserable	OR=4.9, $p<.01$	n/s	OR=1.9, $p<.05$
Felt agitated	OR=3.4, $p<.01$	n/s	n/s
Low self-esteem	n/s	n/s	n/s
Hopelessness	OR=8.5, $p<.01$	OR=3.4, $p<.001$	OR=4.3, $p<.001$
Recent stressful event(s) (any)	OR=4.6, $p<.01$	OR=6.2, $p<.001$	n/s
Specific recent stressful event(s)			
Psychological symptomatology	OR=2.9, $p<.05$	OR=7.7, $p<.001$	OR=4.6, $p<.001$
Medical/illness	OR=2.8, $p<.01$	n/s	n/s
Illness of another	n/s	n/s	n/s
Discord with family/significant other	n/s	OR=3.3, $p<.001$	n/s
Friends/social	n/s	n/s	n/s
Employment/school	OR=3.3, $p<.05$	OR=5.3, $p<.001$	OR=4.6, $p<.001$
Housing	OR=3.5, $p<.001$	n/s	OR=2.3, $p<.01$
Finance	OR=2.3, $p<.05$	n/s	n/s
Legal	n/s	n/s	n/s
Loss/death	OR=3.2, $p<.05$	OR=4.4, $p<.01$	n/s
Holidays	n/s	n/s	n/s
Other	n/s	n/s	n/s
Positive screen	—	—	—
Clinician rating	OR=13.0, $p<.001$	—	—
Clinical intervention beyond routine	OR=17.1, $p<.001$	OR=75.1, $p<.001$	—

OR=Odds ratio.