

## REVIEW ARTICLE

# Emergency Management of the Adolescent Suicide Attempter: A Review of the Literature

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Suicide is the second leading cause of death among adolescents [1]. Management of suicidal youth in emergency departments (ED) is common, yet burdened with many challenges. Risk assessment is difficult because although suicide attempts are common and the risk of later death among attempters is substantial, completed suicide is itself quite rare [2]. Emergency department (ED) staff often have negative attitudes toward suicidal patients, possibly reflecting frustration and a sense of powerlessness [3]. There is little uniformity of care, as the treating professional's level of experience influences their patient disposition [4]. In addition, there is a deficit of both empirical intervention studies and standardized guidelines for managing these patients. Although research of suicide attempts among adults is more developed in this area, its applicability to youth is limited because of the distinct coping styles, biology, legal and financial status, social support networks, and types of stressors associated with adolescence [5].

Although hospitalization has no demonstrable impact on long-term outcome for suicidal adolescents [5], it remains a common "solution" to the ED "disposition dilemma." This refers to the common post-assessment dilemma of accepting risks associated with discharge versus admitting the youth for observation with suicide precautions. For youth discharged from the ED, possible noncompliance with the follow-up treatment plan is often overlooked during the ED visit, despite being a significant prob-

lem [6]. Many recent studies have explored approaches to enhancing compliance with treatment plans [6-14]. Literature on risk factors, assessment, disposition, treatment options and noncompliance of adolescent suicide attempters presenting to an emergency department will be reviewed. In addition, literature on ED staff attitudes toward suicidal patients, and on training programs for ED staff who manage suicidal youth will be discussed.

This review was conducted systematically using the Medline database from 1969 to 1999, with the following key words: "suicide," "suicidality," "adolescents," "children," and "treatment." Reference sections of published articles were also searched. Relevant studies with the potential to impact clinical practice were reviewed and emphasis placed on intervention studies. Studies of adults were only considered in special cases, where similar studies have not yet been published about youth. An assessment instrument was developed with guidelines for appropriate psychiatric referral of adolescent suicide attempters by ED staff. The Tool for Evaluating Suicide-Attempter Teens (TEST) takes into account accepted risk factors for reattempt, noncompliance with follow-up, and suicide completion. A model for ED management (Treatment team, Enhancing compliance, Admission to hospital, Management approach; [TEAM]) was also developed from this review and together with clinical experience put forth for future application and evaluation. No review of youth suicidality literature focusing on clinical practice has been recently published. This is an important endeavor owing to widespread health care system changes, increasing demand for evidence-based practice, and rising prevalence of adolescent suicidality.

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### *Background/Epidemiology*

Suicidal ideation and attempts are common among adolescents around the world, although rates vary across international boundaries. Completed suicides have been steadily increasing, with rates tripling in the United States and Australia from 1960 to 1990 [3], and doubling in Canada over the past 30 years [4]. In the United States in 1997, suicide rates for 15–24-year-olds were 18.9 per 100,000 for males and 3.5 per 100,000 females [15]. In Canada the same year, rates per 100,000 were higher for males, at 19.9 for 15–19-year-olds and 24.9 for 20–24-year-olds. Rates for females were also slightly higher at 5.5 for 15–19-year-olds and 3.6 for 20–24-year-olds [16]. Prevalence rates of past suicide attempts are also high; 6.6% of Australian youth [17], 7.1% of American high school students [18], 4% of Canadian “mainstream” youth [1], and 37% of American run-away youth [19].

The associations among suicidal ideation, suicide attempts, and completed suicide are not clear. Some have suggested that these factors lie on a continuum [20]. Lifetime prevalence rates of suicidal ideation were reported as 21.1% among a community sample of American adolescents and 19% among Canadian mainstream youth [1,18]. A completed suicide occurs for every 10 to 220 attempts [5,21]. This close link between attempting and completed suicide provides an opportunity for intervention.

As adolescents rarely seek help from mental health professionals [1,17], the identification of at-risk youth can be somewhat difficult. Also, Kienhorst et al. found that 40% of adolescent suicide attempters reported no specific precipitating event, whereas 37% reported no change in their normal activities during the hours preceding the attempt [22]. These numbers reflect the enormous clinical challenge of predicting imminent suicide.

Many nonclinical challenges also exist in the study of adolescent suicidality. Rotheram-Borus et al.’s 1994 review underscored the complexity of variables to be addressed in research, including the variety of suicidal patterns, the variability of suicide risk by age, developmental stage, emotional states, surrounding environmental stressors and supports, and the fact that imminent suicide danger is time-limited [23]. Greenhill and Waslick discussed two other major challenges to the study of suicide: suicidality is not a specific diagnosis, and suicide is an infrequent event requiring large sample sizes in high-risk populations [5].

### *Risk Factors*

Although risk factor evaluation is a necessary component of suicide assessment, no factors have been discovered that predict suicide completion at an individual level. Fawcett et al. asserted, “it is widely recognized from a scientific standpoint that the accurate prediction of any individual’s behavior and especially the prediction of a suicide, is statistically impossible” [24]. Similar laments were expressed by Tueth, who recognized the inherent difficulty of predicting a low frequency event such as suicide in a population with high frequency risk factors [25]. This section will emphasize predictors of suicide reattempts and noncompliance with outpatient care, rather than suicide completion.

A summary of selected risk factor studies is provided in Table 1 [7,19,26–45]. Risk factors fall into broad categories: “youth-related,” “psychological,” “family,” “environmental” and “precipitating” factors [46]. Generalizing across studies is difficult owing to diverse samples and outcome measures, such as suicide attempts versus completion. Although many suicide risk studies have been done on community or “normal” youth, only clinically based research will be reviewed, in order to permit better comparison with ED patient risk assessment. Studies that are relevant to ED presenters help to identify youth with likely imminent suicide reattempts, and noncompliance with outpatient care.

Table 1 indicates that there are several proven risk factors for the three outcomes of interest, which include follow-up noncompliance with treatment among suicide attempters, reattempts among suicide attempters, and suicide completion among clinical and community samples. Diverse risk factors for noncompliance with follow-up treatment have been identified. Both young [29] and older aged youth, and especially older males [28], have been described to be at risk of noncompliance. Risk factors for noncompliance range from mild suicidal ideation [7] and unplanned suicide [30] to severe depressive symptoms and suicidal ideation [31]. History of behavioral problems [27,30] and previous suicide attempts [26] have been reported as noncompliance risk factors, although having had no suicide attempts has also been identified as a noncompliance risk factor [30]. Other predictors of noncompliance include negative reactions to the initial referral by the youth [33] and by the mother [27], negative reactions to the personality style of the clinician [47], and family health problems [30].

Risk factors for suicide reattempt include: female

Table 1. Risk Factors for Suicidal Adolescent Noncompliance, Reattempts, and Completion

Author [Reference]	Method	Age (yrs)	Participants	Measures	Risk Factors for Cases
			ADOLESCENT FOLLOW-UP NONCOMPLIANCE		
Litt 1983 [26]	Chart review	10-17	14 discharged ER attempters: 61% noncompliers with 1 yr	Chart examination Referral MD contact	Past suicide attempt
Mattson 1969 [27]	Chart review	7-18	36 discharged suicidal youth: 49% noncompliers	Chart examination Parent telephone contact	Past behavior problems No ED-referral contact Parental dissatisfaction
Piacentini 1995 [28]	Prospective Follow-up	11-19	143 discharged ER attempters: 42% nonadherence	Weekly clinician logging	Older age
Rotheram-Borus 1996 [7]	Intervention trial	12-18	140 attempters	Semistructured interviews; BDI, HASS	Older males Mild suicidal ideation Higher self-esteem Less family cohesion
Spirito 1992 [29]	Prospective 3 mo. Follow-up	13-18	104 discharged ER attempters: 14.5% at 1st appointment 47% at 3rd appointment	Maternal BSI, FACES III Telephone interviews Questionnaires	Young age
Spirito 1994 [30]	Prospective Follow-up	13-17	62 ER attempters	MD measure Questionnaire	No past attempt Less attempt planning No alcohol at ER visit
Taylor 1984 [31]	Prospective	8-17	50 admitted attempters: 44% noncompliant with first appointment	Interviews	Past fighting behavior Family health problems Severe suicidal ideation
Trautman 1993 [32]	Chart review	10-18	115 attempters (77% noncompliers) 110 nonattempters	Chart examination	Severe depressive sx Females missed more No age or history effects
Viale-Val 1984 [33]	Chart review	13-18	102 psychotherapy patients	Chart examination	Same-sex therapist Coercive referral in Whites Low session frequency Internalizing disorders Extreme social classes
			ADOLESCENT SUICIDE REATTEMPT		
Deykin 1985 [34]	Chart review	13-17	323 suicidal ER patients;	Chart examination	Females 2-4 times risk
Gispert 1987 [35]	Case-control	Adolescent	Cases: 38 repeat attempters Controls: 43 first attempters	Interviews	Long-term stress School problems Increased anger Depressed mood 16-20-years-old 9.5% repeat attempts Depressive symptoms Trait anxiety
Goldacre 1985 [36]	Follow-up 1-5 year	12-20	2492 overdose attempters	Hospital data	
Goldston 1996 [37]	Case-control	12-19	Cases: 32 repeat attempters Controls: 27 first attempt inpts 40 completers, 126 nonsuicidal inpts	Interviews	

Table 1. (Continued)

Author [Reference]	Method	Age (yrs)	Participants	Measures	Risk Factors for Cases
Kotila 1987 [38]	Case-control	15-19	Cases: 180 repeat attempters Controls: 226 first attempters	Questionnaires Population Register Centre	Poor social situation Family dysfunction Past psychiatric history Prepubertal attempt Affective disorder
Pfeffer 1991 [39]	Naturalistic longitudinal 6-8 year	5-15	Cases: 106 suicidal inpatients Controls: 101 nonattempters	Interviews Suicide Behavior Scale, K-SADS, Schizophrenia- Present Episode, Epi version	Prepubertal attempt Antidepressant treatment Past attempts Psychiatric history Substance abuse School problems No physician
Pfeffer 1994 [40]	Naturalistic longitudinal 6-8 year	5-15	Cases: 69 suicidal inpatients Controls: 64 community	Interviews Suicide Behavior Scale	Age: bipolar disorder Comorbid affective disorder
Slap 1989 [41]	Case series	13-19	Cases: 56 attempters Controls: 248 nonsuicidal pts	Questionnaires (nonspecified)	Access to firearms No past mental health care Depression (OR = 27) Bipolar disorder (OR = 9) Substance abuse (OR = 8.5) Conduct disorder (OR = 6) Interpersonal conflict Relationship break-up Legal problems Concurrent substance abuse
Brent 1988 [19]	Case-control	ADOLESCENT Adolescent	ADOLESCENT SUICIDE COMPLETION Cases: 27 completers Controls: 56 suicidal inpatient reattempters	Psychologic autopsy	Family psychiatric disorder History of attempts Substance abuse, abuse Suicidal history Antisocial behavior Inhibited personality Family psychiatry history
Brent 1993 [42]	Case-control	Adolescent	Cases: 67 completers Controls: 67 community	Psychologic autopsy Interviews	
Brent 1993 [43]	Case-control	Adolescent	Cases: 67 completers Controls: 67 community	Psychologic autopsy Interviews	
Renaud 1999 [44]	Case-control	17.4 yr mean	Cases: 59 completers with CD/ADD Controls: 18 community with probable CD/ADD	Psychologic autopsy	
Shafiq 1985 [45]	Case-control	12-19	Cases: 20 completers Controls: matched pair	Psychologic autopsy	

BDI = Beck Depression Inventory; ED = emergency department; FACES III = Family Adaptability and Cohesion Evaluation Scales; HASS = Harkavy Anis Suicide Survey;  
K-SADS = Schedule for Affective Disorders and Schizophrenia for school-aged children; Maternal BSI = Maternal Brief Symptom Inventory.

**Table 2.** Tool for Evaluating Suicide-Attempting Teens (TEST)<sup>a</sup>

	Empirically validated questions			Clinically useful questions
	Risk Factors For . . .			
	Reattempt	Noncompliance	Suicide	
Have you attempted suicide before?	x	x	x	x
Have you been diagnosed with a mood disorder? (depression, bipolar/manic depression)	x	x	x	x
Do you not have a physician who you visit?	x			x
Have you had past psychiatric problems?	x			x
Are you doing worse in school lately?	x			x
Do you drink alcohol or use drugs?	x		x	x
Have you been diagnosed with conduct disorder or ADD?		x	x	x
Have you gotten into trouble with the law?			x	x
Have you been abused in the past?			x	x
Do you have access to a gun?			x	x
Have you had a recent fight/break-up?			x	x
Do any family members have psychiatric problems?			x	x
Has someone close to you or someone you admire recently committed suicide?			x	x
Did you think the attempt was really going to kill you?				x
Was the attempt planned?				x
Are you angry or disappointed that the attempt didn't work?				x
Do you feel hopeless about the future?				x
Do you have any one who supports you?				x
Would you return for an appointment with someone like me?		x		x
Will you agree to return if you feel unsafe/suicidal in the future?				x

<sup>a</sup> These questions have been deliberately phrased, such that a positive response indicates the presence of a risk factor. It is recommended that open-ended questions are used to preface the above closed-ended questions.

gender [34], affective disorder [39], depressive symptoms and trait anxiety [37], substance abuse, psychiatric history, absence of a family physician [41], school problems, increased anger, and long-term stress [35]. There are several studies of risk factors for suicide completion but owing to the very low frequency of suicide these do not directly help the front-line clinician to predict it in an individual [48]. Applying epidemiologic principles, this low positive predictive value is inevitable when the outcome of interest has a low incidence, despite having highly sensitive and specific risk factor screening questions. However, the presence of several risk factors may be used by ED staff as an indication for psychiatric consultation.

### Assessment/Evaluation Tools

Emergency assessment of suicidal youth is difficult at best. Rigid approaches to ED suicide assessment are unlikely to be beneficial, since each youth has a unique combination of genetic, psychological, and environmental risk factors. However, some tools may assist clinical decision-making. Accordingly, specific assessment approaches and measurement

scales have been developed for both clinical and research purposes [7,39]. Not all suicidal patients should be referred by ED staff for a psychiatric consultation; hence, the need for guidelines for an appropriate referral.

There has been poor instrument validation of scales designed to assess suicidality, with inconsistent definitions of suicidal terms among scales [49]. A new checklist is proposed (Table 2) which contains both clinically useful and empirically validated questions derived from studies of risk factors for suicide reattempt, noncompliance with follow-up recommendations, and suicide completion. This checklist is called "TEST," the Tool for Evaluating Suicide-attempter Teens. This tool is superior to preexisting instruments owing to its simplicity and its referencing of questions with specific risk outcomes. It should, however, be emphasized that these guidelines relate to risk factors and do not replace the primary utility of the clinical interview or the ensuing assessment process.

In most EDs, suicidal patients are very common. Although all of these patients will be assessed by ED staff, not all require a full psychiatric consultation. Indications for referral to a psychiatrist include: a

patient with acute suicidality and a combination of suicide completion risk factors, recurrent ED presentation within a short period (e.g., 1 week), nonexistent supports or mental health care, a specific plan with lethal means (e.g., accessible firearms), impulsivity and substance abuse, complicated psychopharmacology (e.g., comorbid medical illness), accidentally caught in a suicide attempt and unwilling to disclose history. Inappropriate ED psychiatric referrals include those for youth who remain intoxicated, obtunded or not medically cleared; those made only to calm insistent parents; and those made as a time-saving measure for ED staff. Some patients can safely await a rapid outpatient assessment, rather than requiring an emergency psychiatry consultation at that time.

### *Disposition*

The frequency of various ED dispositions have been examined in several studies. In 1989, Jay et al. reported on a chart review of 27 American adolescent suicide attempters presenting over a 1-year period. Thirty percent were treated and released, 11% were transferred directly to a psychiatric hospital, and 59% were admitted to that general hospital with an average hospital stay of 1.88 days [50]. In O'Dwyer et al.'s 1991 chart audit of 200 British adolescent suicide attempters, 44.5% were admitted, 40% were discharged without follow-up, and 15.5% were discharged with specific psychiatric consultation or other follow-up [51]. These studies were conducted on different continents, prior to the recent growth of managed care in the United States.

In a 1996 international review of ED disposition of suicidal adolescents, Safer compared studies from the United States and Western Europe [52]. A median of 39% of suicidal youth seen in U.S. EDs were referred for inpatient psychiatric treatment, whereas in western Europe the median was 12%. In the United States, hospitalized suicidal youth were predominantly female and mid-adolescent in age, resembling the profile of suicide attempters. In contrast, in Western Europe, the majority were male and in their late adolescent years, more closely resembling the profile of suicide completers. One potential explanation for these admission-rate discrepancies may be medicolegal concerns in the United States; hospital admission may be perceived as a protection from future lawsuits.

In-patient hospitalization is a frequently chosen treatment option for suicidal children and adoles-

cents. Suicidality is considered one of the most important indicators for hospitalization. However, Greenhill and Waslick warned that no study demonstrated that hospitalization prevents the high-risk patient from making another attempt or completing suicide [5]. In fact, self-harm behavior and completed suicide do occur on child psychiatric in-patient units [53,54]. Recently, Goldston et al.'s prospective 5-year follow-up study of 180 hospitalized suicidal adolescents revealed that 20.6% subsequently attempted suicide. The highest risk period was 6 to 12 months after hospitalization. Those with repeated suicide attempts and those with mood disorders were at increased risk of post-hospitalization suicidal behavior [55]. Although admission is clearly unable to prevent all future attempts, other benefits may result from hospitalization; quality in-patient care, and establishment of a therapeutic alliance, which may improve future adherence to management plans and minimize negative beliefs about psychiatry. Conversely, hospital understaffing and inappropriate or poorly managed hospitalization could hypothetically establish negative views of the mental health system.

Belfer pointed out that the suicidal child or adolescent presents significant diagnostic and disposition problems [56]. Indications for admission include the presence of both acute suicidality and an inability to contract for safety (a promise not to attempt suicide), in addition to one of the following:

- acute psychosis;
- untreated mood disorder, conduct/behavioral disorder, or substance abuse disorder;
- recent abuse, legal, interpersonal or school crises and no supports; and
- history of lethal suicide attempts and/or family psychiatric illness.

Those with acute suicidality and several noncompliance risk factors should be considered for short-term admission to strengthen their connection with the mental health care system. Further, when a suicidal youth is discharged (home), caregivers should be advised to eliminate access to firearms. If a nonpsychotic patient is able to contract for safety, to describe adaptive coping strategies for future stresses, and to promise to return to the ED if suicidality worsens, and if the staff believes these statements, then discharge is often advisable [56]. In addition to the empirically derived management guidelines identified, the clinician must rely on personal judgment and clinical acumen.

### *Treatment Options*

Following discharge from the ED or in-patient unit, there are a myriad of acceptable treatment options for suicidal adolescents, including psychotherapeutic, family therapy, and psychopharmacologic interventions. Selected outpatient nonpharmacologic treatment options for suicidal adolescents are identified in Table 3 [7,23,26,28,57–71]. Shaffer et al.'s review of treatment for adolescent attempters identified strategies such as crisis services, school-based interventions, controlled access to lethal methods, and limiting suicide imitation [72]. Greenhill and Waslick's review added telephone hotlines, cognitive-behavioral therapies and medication management [5]. Other options discussed in the literature on adult suicide include outreach teams, ED short-term holding beds, and case management. However, for clinicians in community, rural or small hospital settings, many of these options may not be available.

No medication has been found to directly "cure" suicidality, since it is not a biologically based diagnostic illness. However, several adult studies have attempted to identify biologic correlates of suicidality. Increased levels of CSF cholecystokinin (CCK) were found in suicide attempters [72]. Associations were found between low cerebrospinal fluid 5-hydroxyindolacetic acid (5HIAA) levels (representing low serotonergic brain function) and both attempts [73], and attempt lethality [74]. CSF 5HIAA levels in attempters were correlated with 3-year mortality rates [75]. Although intriguing, these studies do not support use of medication for all suicidal youth. However, many psychiatric illnesses are associated with suicidality, requiring a combination of psychotherapy and pharmacotherapy to treat both the suicidality and the underlying psychiatric diagnosis.

Although many in-patient and outpatient treatment options have been used for the adolescent suicide attempter, no study demonstrates superiority of one treatment over another. A number of innovative management approaches have expanded disposition options beyond in-patient admission. The emphasis on family therapy most clearly distinguishes the management of suicidal adolescents from that of adults. Indeed, adolescent suicide attempters are significantly more likely than their peers to have perceived family dysfunction [76]. Very few psychotherapeutic and pharmacologic efficacy studies focused on the adolescent population were found in the current literature review. Spirito stated that several intervention studies may have been done but not

published, owing to their lack of rigorous designs or successful outcomes [6].

### *Noncompliance*

Noncompliance with follow-up appointments has increasingly been recognized as a problem for adolescent suicide attempters. Suicide attempters stop treatment before nonsuicidal adolescents, thus receiving less medical or psychiatric follow-up [32]. Further, a potential consequence of noncompliance for suicidal teens is suicide completion. As discussed previously, several risk factors for noncompliance have been studied.

Multiple studies have demonstrated a high prevalence of noncompliance with ED follow-up among suicidal adolescents. Noncompliance rates with a first follow-up appointment, measured retrospectively by Litt et al. [26] and others [27–29], ranged from 17.5% to 41.6%. By the third appointment the reported drop-out rate is even higher at 52%, with a 7% reattempt rate by three months [30]. Noncompliance rates were higher for urban suicidal females from minority backgrounds; only 32% went more than twice to follow-up outpatient appointments [75].

The studies described above focused on youth discharged from the ED. Swedo reported that only 38% of suicide attempters admitted to a hospital with discharge planning and 6% of those without discharge planning, subsequently received post-hospitalization care [77]. In similar populations, Taylor and Stanfield found that only 56% attended follow-up treatment [31], Trautman reported a 59% adolescent clinic follow-up [2], and Schreiber and Johnson reported a 50% psychiatric clinic follow-up [78]. Thus, it has been clearly established that noncompliance by suicidal youths is a significant issue.

There are several identified risk factors for noncompliance, as outlined in Table 1. Spirito made several recommendations for improving compliance. These include setting a limited number of treatment sessions and demonstrating the potential usefulness of future therapy by using a direct problem-solving approach [6]. Rotheram-Borus et al. [7] compared a specialized ED program to standard care. The program involved three systemic changes in the ED including staff training workshops, video-tape development, and family therapy implementation. The multidisciplinary staff training workshops ascribed specific objectives to different ED staff groups along with common objectives of family interpersonal sup-

Table 3. Outpatient Nonpharmacologic Management Approaches to the Suicidal Adolescent

Author	Treatment Approach	Method	Evaluated	Subjects	Outcome for Treatment Group/Recommendations
Alvin 1993 [57]	Multi disciplinary approach	Experimental	No	178 suicidal inpatients	Multidisciplinary approaches are necessary
Deykin 1986 [58]	Community education and direct service to suicidal youth	Nonrandomized trial	Yes	172 with intervention 147 with standard care	1.9 × improved compliance, no decreased attempts
Greenfield 1995 [59]	ERFUT	Chart review	Yes	412 preintervention 568 postintervention	16% hospitalization reduction 0% mortality, same rate of emergency room return
Gutstein 1990 [60]	Systemic crisis intervention program	Pre-post comparison	Yes	47	Improved behavior, decreased severity of crisis Improved family functioning at 18-month follow-up
Harrington 1998 [61]	Social worker, home-based family intervention	Randomized trial	Yes	Cases: 88 with intervention Control: 77 with routine care	Decreased suicidal ideation in nondepressed only Parents more satisfied
Kerfoot 1995 [62]	Home-based intervention	Randomized trial	Yes	Attempts: 85 with intervention 77 with routine care	Decreased suicidal ideation in nondepressed attempters with intervention
Kruesi 1999 [63]	Emergency room parent injury prevention education	Prospective follow-up	Yes	Parents: 41 with intervention 62 without	No cost differences Associated with parental limitation of access of lethal means (adjusted OR = 3.6)
Lerner 1999 [64]	Social problem-solving therapy	Case-control	Yes	18	Significant reduction in suicidal ideation
Linehan 1991 [65]	Dialectical behavioral therapy	Randomized trial	Adults only	N/A	Reduction in severity and frequency of suicidal behavior
Litt 1983 [26]	Psychiatry outpatient appointment	Chart review	Yes	27	Decreased admission days Increased compliance at 1 yr 33% noncompliance with first appointment Identification of high noncompliance risk
McLeavey 1994 [66]	Interpersonal problem-solving skills training	Randomized trial	Adults only	39 to IPSST or standard care	Decreased repeat attempts at 1 yr
McManus 1997 [67]	Poison centre parent education	Chart review	Yes	71 attempters	Decreased access to lethal methods (86%) vs. (61%)
Piacentini 1995 [28]	Brief cognitive-behavioral family therapy	Descriptive	Yes	143 attempters	91% compliance with 1st appointment, highest in young males



Table 3. (Continued)

Author [Reference]	Treatment Approach	Method	Evaluated	Subjects	Outcome for Treatment Group/Recommendations
Rotheram-Borus 1987 [68]	2-tier assessment	Experimental	No	N/A	
Rotheram-Borus 1996 [7]	Specialized emergency room program	Nonrandomized intervention trial	Yes	65 attempters with intervention 75 attempters with routine treatment	Increased compliance with first follow-up session
Rotheram-Borus 1994 [23]	SNAP, CBT	Descriptive	Preliminary	100	Good face validity
Shaffer 1987 [69]	School-based programs	Descriptive	Yes	1000	3% students identified at risk
Walker 1983 [70]	Family therapy	Descriptive	No	N/A	Family should be involved in suicide crisis intervention
Zenere 1997 [71]	Urban multicultural suicide intervention and prevention program	Longitudinal	Yes	266,563 students initially 306,416 students at end	5 year, 62.8% reduction in annual suicide rate

CBT = cognitive-behavior therapy; ERFUT = emergency room follow-up team; IPSST = interpersonal problem-solving skills training; SNAP = successful negotiation acting positively treatment.

port provision and education regarding ED procedures, and emphasized treatment compliance. The video tapes portrayed experiences of two adolescent suicide attempters in a "soap opera" format, describing ED procedures and modeling adaptive coping strategies, to emphasize the importance of follow-up care. These were viewed by the family and youth in the ED waiting room. The family therapist (on-call 24-hours a day) conducted structured sessions to set goals for future treatment, to problem solve for future suicide-provoking situations, and to write a goal-setting contract. This study reported that suicide attempters receiving the specialized program were more likely to attend a follow-up treatment session (95.4% vs. 82.7%) [7].

As noncompliance is not exclusive to youth, some solutions to this problem can be borrowed from the literature on adults. Hofmann recommended discussing outpatient care during, rather than at the end of, emergency assessment, providing a specific name, a follow-up appointment time, and a telephone follow-up [8]. Schuster emphasized the importance of a good relationship between the ED staff and the consultant psychiatrist [9]. Other studies recommended a specific referral (e.g. time, place, and the professional's name), patient and staff agreement on a treatment plan [10], telephone reminders by emergency staff [11], negotiating disposition throughout the assessment [12], and communicating with appropriate community agencies [13]. Wilder et al. identified factors that decrease adults' compliance such as lengthy waits in the ED, interpersonal contact with several staff, and lack of contact between the ED and community agencies [14]. Thus, continuity of care is of central importance when considering measures to improve compliance.

### *Personal Characteristics of the Treating Professional*

The professional has an impact on both the subjective experience and the final outcome of the youth's ED visit. In contrasting with research that focuses on patient risk factors, a few studies have examined ED staff variables. Negative attitudes towards suicidal patients are common among ED staff [57]. The influence of professionals' attitudes, experience and educational background on the disposition status of youth have been examined and programs to improve staff attitudes have been developed [3,4,7,80,81].

Interestingly, Morrissey et al. found that preference to admit was inversely related to professional

experience [4]. Alvin identified challenges including fear, defensive attitudes, and lack of consensus among staff regarding management [57]. Boerger et al. contrasted staff perceptions with adolescents' stated reasons for their suicidal behavior [79]. Although staff considered such behavior to be primarily manipulative in nature, youth reported wishes to die, to escape, and to obtain relief.

A few studies have moved beyond an examination of attitudes towards developing intervention strategies that impact on these attitudes. Only two staff intervention studies were found in the adolescent literature. Rotheram-Borus et al. used training workshops for six primary staff groups working with female adolescent suicide attempters [7]. Piacentini described specific goals of decreasing staff questioning of the seriousness of attempt, negative attitudes regarding psychiatric patients in a medical ED, and blaming of parents [3]. No studies have trained hospital ED staff and community service providers jointly. Such training may improve community-based screening, communication, and the bi-directional case management that is required for proper disposition and continuity of care.

Negative staff attitudes and constructive responses to intervention programs have been described in the literature on adults. In Suokas and Lonnqvist's study [80], only 25% of ED nurses reported being as sympathetic and cooperative towards suicidal patients as they were towards others. Further, an alarming 75% agreed to some extent with the statement that suicidal patients "waste the staff's time," and 28% agreed that suicide attempters "misuse the ED facilities." This survey found clear attitudinal differences among staff in the ED ( $n = 64$ ), emergency ward ( $n = 47$ ) and intensive care unit ( $n = 73$ ), with the most negative attitudes among ED staff. Crawford et al. reported on a staff intervention program that resulted in increased staff confidence to assess and treat deliberate self-harm patients, and increased recognition that these patients are at risk of completed suicide [81].

### *Discussion and Recommendations*

Studies on risk factors for noncompliance with follow-up, suicide reattempts and suicide completion are common. However, they provide limited direction for the "front line" ED clinician working with individual suicide attempters. The TEST tool guides the clinician with pertinent questions to pose during a suicide assessment. Answers determine the pa-

tient's risk profile specific to three outcome domains, with more positive answers indicating a higher need to consider psychiatric consultation. Beyond consultation, there is a lack of randomized clinical trials measuring ED management outcomes and absence of consensus among ED staff treating suicidal youth. Regardless of the chosen management approach, the high noncompliance rates for follow-up appointments among suicidal youth are especially troublesome.

In response to the noted paucity of suicide intervention research, a new TEAM model for emergency management of the suicidal adolescent is next proposed. This idealized model could serve as a guide for EDs with the resources and adaptability to provide optimal care of the adolescent suicide attempter. Its basic concepts can be applied to general hospital or community EDs that provide care for suicidal patients of all ages. Derived from the research reviewed and clinical experience, the model incorporates four key aspects of suicide management. These include issues related to:

- Treatment team,
- Enhancing compliance,
- Admission specifics, and
- Management approach.

The TEAM model outlines important issues for consideration by clinicians, residents and medical students who encounter suicidal youth in the ED, and by hospital administrators who contribute to policy development. Because there is a paucity of standardized clinical guidelines for management of this high risk population, the proposed TEAM model attempts to fill this gap. This is based upon the empirically derived research findings identified in this review. In those settings that deal with individuals across the lifespan presenting with suicidal risk, the key elements of the TEAM approach can be applied. In addition, some aspects have been borrowed from the adult literature.

### *Treatment Team*

Alvin's research recommended the use of an integrated, multidisciplinary framework in ED management of suicidal youth [57]. Schuster's study emphasized the importance of a good relationship between the ED staff and the consultant psychiatrist [9]. The team should include ED staff, social workers, psychiatric nurses, psychologists, and psychiatrists. Close liaison with community service providers is impor-

tant. Professionals encountering suicidal adolescents in an ED should function as a team with excellent communication skills and clearly defined roles. This promotes a coordinated approach to intervention with both the youth and family, and provides a support network for staff. Joint training of community service providers and ED staff is recommended to increase familiarity of requisite services, and to foster communication and smoother transitions to and from specialized hospital care.

Ideally, rapid access should be available to on-site psychiatry consultation for severe cases, or to outpatient crisis appointments for less severe cases. Severity may be determined by the relative number of positive responses on the TEST tool, in combination with sound clinical judgment. ED nurses should be trained in suicide intervention via nursing school curricula and continuing education seminars. Information sessions and debriefing sessions for the entire team should occur regularly. Crawford et al.'s intervention program consisting of a 2-hr teaching session for ED nursing staff resulted in increased staff confidence and knowledge of risk [81]. For medical students and nonpsychiatric residents triaging these patients, a sample form such as that in Table 2, which contains essential history-taking items, should be used to educate about suicide risk factors and to promote optimum assessment.

### *Enhancing Compliance*

Throughout the ED visit, attention should be paid to enhancing compliance with follow-up procedures. Building a therapeutic alliance increases the likelihood that the youth will adhere to follow-up plans. This has been confirmed by Viale-Val et al. [33] who report that an initial negative reaction to the initial referral reduces compliance, and by Kellam et al.'s [47] finding that the youth's first impression of the referring professional's personality style has a significant impact on compliance. During the ED visit, problem solving for future stressors may improve compliance by demonstrating the usefulness of future therapy [6]. Seeking parental or caregiver agreement with the treatment plan could also increase compliance. Parental-related risk factors could also be identified. Walker has stressed the importance of including family members in the intervention process [70]. Written materials can reiterate points discussed in the emergency department, and can be created and individualized at any ED.

If an outpatient crisis appointment is the preferred

disposition, then the specific time, location, and professional's name should be provided [8]. This strategy has been shown to decrease noncompliance [10]. Keeping an appointment book in the emergency department or entering appointments into a computer schedule will facilitate this process. After the suicidal adolescent has left the ED, measures to increase compliance should include consultation with their current support providers. An ED case manager could increase compliance by serving as a liaison person for community partners [13], such as family doctors, social workers, group home workers, or trained adolescent peers. If case workers are not available, then simpler compliance-improving measures can be taken, such as a reminder phone call following the ED visit [11].

Negotiating follow-up disposition with suicidal youth throughout the ED assessment improves compliance [12]. As lengthy waits in the ED, and lack of contact between the ED and community agencies decrease adult compliance [14], the ED suicide assessment should be "streamlined." With an appreciation for staffing difficulties, consistency in key personnel interacting with the suicidal youth and her/his family (if appropriate) should be the goal.

### *Hospital Admission*

Crisis unit short-stay beds should be available to high-risk patients. Emphasis should be placed on limited length of stay, as research to date has not demonstrated decreased suicide risk associated with admission [45]. Hospitalization should be used to build the patient's alliance with the mental health care system. This process may include patient desensitization and competent helpful interventions by staff. Necessary referrals should be made to detoxification centers, addiction programs, or state child protection agencies. For suicidality related to psychosis, severe major depression, or severe complex cases, referral to an intermediate-term bed should occur. While in hospital, youth with complex case histories and recurrent problems should be assigned to a case worker, who will then follow them after admission.

Discharge planning should be initiated early in the hospital stay, following similar guidelines to those listed for community referrals from the ED. The importance of discharge planning is underscored by the high reattempt rates in 42% of youth [82]. Reattempters were less likely to have been discharged to their home and more likely to have

contact with a social agency, a limited social life, and previous parental losses. These findings point to the need to discharge to a supportive environment and encourage socialization, which involves liaison with community services.

### *Management Approaches*

In addition to the strategies identified above, several overall approaches to management should be used. A critical pathway should be developed and available for consultation in every emergency department caring for suicidal youth, with a posted flow chart outlining possible options. This may be complex or very simple, depending on resources available to the specific ED. A video tape for family and patient education that portrays realistic expectations for the visit should be shown while the adolescent is waiting for assessment. Rotheram-Borus recommended a two-tier assessment involving initial collection of data on suicide risk factors, followed by assessment of the adolescent's coping ability and coping resources [68]. If the suicide risk is deemed to be moderately high, a crisis worker (social worker or psychiatric nurse) should see the youth. If the risk is very high and admission appears likely, an immediate psychiatric consult should occur. For patients who return frequently, an intensive case management approach should be considered. The guardians of all suicide attempters discharged from the ED should be educated to remove firearms [83].

Researchers have been faced with a number of problems when attempting to validate risk evaluation procedures. There will also be challenges in systematically evaluating the TEAM model. To validate this as an effective approach for adolescent suicide attempters in the ED, research should consider direct and indirect benefits as well as the relative costs associated with each approach. For example, hospitalization may be more costly but no more effective than ED-based case management.

### *Conclusion*

Although researchers have repeatedly described the profile of youth at high risk for suicide, there is little empirical evidence of successful strategies by front line clinicians for suicide risk assessment in youth. The use of psychometrically sound forms or scales may complement assessment of coping style, perception of death, motivation for suicide, and general risk factor analysis. An assessment tool (TEST) based on

clinically useful and empirically validated questions is proposed. Given that noncompliance with follow-up treatment is a serious problem for adolescent suicide attempters, integrating compliance improvement strategies with the ED visit is imperative. A proposed model (TEAM) for emergency management of suicidal adolescents emphasizes a coordinated treatment team, compliance-improving measures, short-term admission when necessary, and specific ED management steps for suicidal youth. More rigorous studies are required to guide front line professionals caring for suicidal children and adolescents in EDs around the world.

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