

# Screening for suicide risk in the pediatric emergency and acute care setting

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## Purpose of review

This paper reviews epidemiology, psychiatric comorbidities, risk factors, warning signs, screening measures, and issues related to screening for suicide risk in the pediatric emergency department and acute care settings.

## Recent findings

For the first time in over a decade, rates of adolescent suicide are increasing. A recent review found physician gatekeeper training to be one of only two effective prevention strategies. Limited methods exist to assess for suicide risk in pediatric acute care settings that are able to meet the demands and challenges presented in time-limited medical settings.

## Summary

Suicide is the third leading cause of death in adolescents. Although a prior suicide attempt is the single most important risk factor, affective, cognitive, family and peer factors also affect risk of completed suicide. Practitioners in the acute care and emergency department setting are well positioned to identify, assess, and appropriately refer these adolescents and their families. Screening instruments in this setting need to be accurate, brief, and relevant to patients, families, and providers. We propose a two-question algorithm that targets imminent risk for a suicide attempt. This type of screening also needs to be accompanied by hospital or community-based support systems for further assessment, intervention and follow-up.

## Keywords

acute care, emergency department, pediatrics, screening, suicide

## Introduction

Suicide is the third leading cause of death in adolescents aged 10–24 years [1]. More teens and young adults die from suicide than from cancer, heart disease, AIDS, birth defects, stroke, pneumonia, influenza, and chronic lung disease combined [2]. Approximately one million teenagers attempt suicide, and 20% of adolescents contemplate suicide each year [3]. Despite a slight decline in suicide deaths between 1995 and 2003, the 1983 suicide deaths in the 10–19-year-old age range in 2004 represent a 14.5% increase over the previous year [4].

Even when a suicide attempt is unsuccessful, suicidal ideation and behavior are often associated with a host of other psychosocial problems (e.g. depression, drug use, school failure, family conflict) and troubling for parents, teachers and physicians [5]. In fact, the presence of suicidal ideation in early adolescence, even in the absence of an attempt, has been found to predict poorer functioning in multiple domains in early to middle adulthood [6,7<sup>\*\*</sup>]. Given the grave consequences of suicidal behavior and its associated problems, early identification of youth at risk for suicide can help prevent these problems. In the absence of many effective prevention efforts, physician gatekeeper training has been identified as one of only two effective interventions, with restriction of lethal means being the other [8]. The focus of this review will be on physician training, screening, and risk assessment. While there are no simple indicators to predict youth suicide, we outline several factors that may help physicians assess this problem area, including demographics, psychiatric comorbidities, risk factors, and warning signs.

## Epidemiology

While it is impossible to simply look at an individual and assess suicide risk, demographic factors such as age, gender, and race have all shown important distinctions for completed suicide. Suicide is fairly uncommon in children and young adolescents. The rate for suicide is 1.3 per 100 000 in the 10–14-year-old age range, with 89% of these between 12 and 14 years. In the 15–19-year-old age range, the rate increases six-fold, to 8.2 per 100 000, with almost half of these occurring between 18 and 19 years old [1]. Females are three times less likely than males to complete suicide, but are more likely to exhibit persistent suicidal ideation and nearly twice as likely to engage in self-injury and parasuicidal behavior, or self-harm behavior without expressed intent to die [9<sup>\*</sup>,10].

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## Abbreviations

**ED** emergency department  
**SSRI** selective serotonin reuptake inhibitor

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Racial differences also exist [11<sup>••</sup>]. Adolescent American Indians are at the greatest risk for suicide, with a rate of 13.25 per 100 000, increasing to 23.25 per 100 000 in the 15–19-year-old age range. In this latter age group, white males are nearly twice as likely as black males to complete suicide. This difference, however, has been narrowing, as the rates of teen African–American deaths by suicide have increased each year [10,12<sup>•</sup>].

### Comorbidity

Approximately 90% of all youths who commit suicide had at least one prior psychiatric diagnosis [3,10,13,14]. Substance use and mood-related disorders (e.g. depression, bipolar disorder) are most commonly associated with suicide [15]. Prior disruptive behavior disorders, personality disorders, and adjustment disorders have been found in more than 10% of completed suicides [13,16]. Panic and posttraumatic stress disorders have also been associated with suicide [17]. In addition to psychiatric problems, risky behavior (e.g. interpersonal violence, binge drinking, disturbed eating, tobacco use, illicit drug use, high-risk sexual behavior) is also often associated with suicidality [18]. Not surprisingly, the more psychiatric and risk behaviors present, the higher the risk for more serious suicidal behaviors and death.

### Risk factors

A previous suicide attempt is the strongest predictor of completed suicide [3,10]. For adolescent males, this increases risk 30-fold [14]. Family history of suicidal behavior also increases risk. Agerbo and colleagues [19] found youth suicide to be nearly five times as likely in offspring of mothers who committed suicide and two times as likely in offspring of fathers who committed suicide.

Other risk factors may be categorized as affective, cognitive, family and peer factors. Affective factors such as impulsivity, impulsive aggression, poor affect regulation, and general aggression, especially when paired with adverse life events, have all been linked to suicide risk [20–23]. Cognitive factors such as hopelessness, poor social problem solving, and the difference between the wish to live versus the wish to die have also contributed to suicide risk [14,24–26]. Hopelessness, however, has not proven to be a unique contributor once depression is taken into account [27].

Stressful life events often precede suicides or suicide attempts. Sankey and Lawrence [28] found that 66% of adolescent suicides in Australia from 1996 to 2000 resulted from enduring psychosocial difficulties, and an additional 14% were the result of pivotal life events. A history of physical or sexual abuse has been associated with heightened suicide risk [29–31], although the increased risk associated with childhood sexual abuse may be con-

founded by other factors [10]. Brent and colleagues [5] found that family conflict preceded 20% of suicide deaths and 50% of nonfatal attempts in adolescents. Parental criticism, lack of parental support, and general impairment in the parent–child relationship also contribute, whereas a strong parent–child relationship serves as a protective factor against suicide [32<sup>•</sup>,33<sup>•</sup>,34]. Some evidence suggests that gay, lesbian, or bisexual youth are at heightened risk for suicide [35,36], although, like heterosexual adolescents, enhancing protective factors within this population may decrease risk [37<sup>•</sup>]. Finally, Gould and Kramer [38] have found evidence to support the existence of suicide contagion in adolescence.

### Warning signs

Given the prevalence of suicide risk factors in the population and the low base rate for suicide deaths, attention has been turned to identifying warning signs of suicide above and beyond risk factors. To help define the difference between risk factors and warning signs, the American Association of Suicidology developed a mnemonic ‘Is path warm?’ (Table 1) [39<sup>••</sup>,40] to help identify key warning signs. Simply having undergraduate psychology majors read the list of warning signs has been shown to effectively increase their ability to recognize suicide crises without creating or magnifying stigma [41].

Much attention has recently been focused on suicide risk associated with adolescents taking antidepressant medications, particularly selective serotonin reuptake inhibitors (SSRIs). Although data indicate a 4% increase with SSRIs versus a 2% increase with placebo, there have been no completed suicides associated with taking these medications [42<sup>••</sup>,43<sup>••</sup>]. Other investigators suggest that SSRI prescriptions are actually associated with lower rates of suicide in children and adolescents [44<sup>•</sup>–46<sup>•</sup>]. Still, children and adolescents on SSRIs should be monitored closely for suicidal thinking and behavior.

### Protective factors

While the absence of risk factors may be viewed as protective, some evidence supports key relationships in a positive social context as also being protective. Strong peer relationships have repeatedly been noted as protective factors in adolescents [47,48]. For boys with a history of prior suicide attempts, school relations seem to protect against suicide, even when peer relations were poor, yet family relations are the strongest protective factor [33<sup>•</sup>].

### Screening in the acute care and emergency department setting

Acute care settings, such as the emergency department (ED), can serve as safety nets for a variety of psychosocial problems. An estimated 1.5 million adolescents in the United States rely on the ED as their usual source of healthcare, particularly youth who are of low income and

**Table 1 Consensus warning signs of suicide: IS PATH WARM?**

A person at risk for suicidal behavior most often will exhibit warning signs such as:		
I	Ideation	Expressed or communicated ideation: Threatening to hurt or kill him/herself, or talking of wanting to hurt or kill him/herself Looking for ways to kill him/herself by seeking access to firearms, available pills or other means Talking or writing about death, dying or suicide when these actions are out of the ordinary
S	Substance abuse	Increased substance (alcohol or drug) use
P	Purposelessness	No reasons for living; no sense of purpose in life
A	Anxiety	Anxiety, agitation, unable to sleep or sleeping all the time
T	Trapped	Feeling trapped – like there's no way out
H	Hopelessness	Hopelessness
W	Withdrawal	Withdrawing from friends, family and society
A	Anger	Rage, uncontrolled anger, seeking revenge
R	Recklessness	Acting reckless or engaging in risky activities, seemingly without thinking
M	Mood changes	Dramatic mood changes

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underserved [49]. A recent chart review of 25 hospital EDs participating in the Pediatric Emergency Care Applied Research Network (PECARN) Core Data Project found that depression was among the top five diagnoses for adolescents presenting to the ED [50]. Singh and colleagues [51] surveyed 100 adolescents in a pediatric ED and found a 25% rate of depression in their inner-city population. Not surprisingly, undetected suicidal symptoms in the ED are associated with morbidity, potential mortality, and increased healthcare utilization costs [52].

Screening adolescents for mental health problems in the ED has long been advocated by medical and mental health professionals [48,53\*,54,55,56\*]. The American Academy of Pediatrics [57] issued a policy statement highlighting the continuing importance of mental health issues among children and adolescents, and recommended the development and routine screening for mental health distress in the ED. In fact, beginning in 2007, the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) requires all patients in a general hospital receiving treatment for a mental or behavioral health condition to receive a suicide risk assessment. Significant work remains to ensure that these recommendations are put into practice.

### Screening measures for suicide risk

Prior to discussing the state of suicide measures, a clear definition of a suicide attempt is warranted. Suicide experts have adopted the definitions of suicidal behaviors proposed by O'Carroll and colleagues [58]. According to this nomenclature, a suicide attempt only need be associated with some intent to die; the severity of intent or act is unimportant in defining the behavior as a suicide attempt. Related to this, it is important to distinguish between self-harm and intent to die, often a critical criterion in determining eligibility for psychiatric hospitalization. Some self-induced injuries requiring medical attention in the ED may not have been committed with the intent to die and, therefore, should not be deemed suicidal.

Conversely, previous acts of self-harm detected through inquiry may not have required medical attention but may be a more potent indicator of suicide risk.

A number of screening options currently exist. We will briefly mention the most frequently used measures here, but please see Goldston [59] and Peña and Caine [60\*\*] for reviews of these and other measures. Several suicide researchers have developed comprehensive approaches to assessment [e.g. Collaborative Assessment and Management of Suicidality (CAMS) [61], Chronological Assessment of Suicide Events (CASE) [62], Suicide Attempt Self-Injury Interview (SASII) [63]]; however, these are too cumbersome to suffice as first-tier screenings in acute care settings. In the same vein, briefer measures, such as the Columbia SuicideScreen [64], Beck Scale for Suicidal Ideation [65], and Suicidal Ideation Questionnaire [66], are also well suited as second-tier follow-up screenings for those who endorse initial suicide ideation.

### Emergency department and acute care suicide screening instruments

Two measures that assess suicide risk have been developed for ED and acute care settings. The Risk of Suicide Questionnaire (RSQ) [67] shows promise for efficiently measuring suicide risk in the ED. The RSQ is a brief four-item suicide screening specifically designed for use in the pediatric ED setting. These items have good content validity and 98% sensitivity for detecting high-risk youth. Their low specificity (37%), however, requires the capability of managing numerous false positives in a high-intensity, time-limited environment. Horowitz and colleagues [67] argue that this risk is outweighed by the consequences of failing to detect truly suicidal children and adolescents. The psychometric properties of the RSQ have yet to be reported.

The second measure is the Adolescent and Child Urgent Threat Evaluation (ACUTE) [68\*\*]. The

ACUTE, however, does not include a separate suicide assessment and requires a unique and specific algorithm to facilitate disposition planning, making the instrument less feasible without adequate training.

**Challenges of screening in the emergency department and acute care settings**

Screening aims to minimize healthcare provider burden while maximizing the likelihood of identifying high-risk adolescents. Given this, assessment of suicide risk is challenging and complex, and to date, few well validated measures exist. Unfortunately, no measure can accurately predict a suicide attempt with high specificity. Many of these measures are clinically useful, but most suicide assessment systems and instruments were not designed to meet the time restraints and practical challenges of the ED setting. Outside of research, suicide assessment tools (i.e. screening tools) have been used to assess risk of patients in the mental health outpatient setting, schools (e.g. TeenScreen) [69] and sometimes primary care.

**Recommended approach to suicide assessment**

Although a comprehensive assessment of risk and protective factors provides clinical information to assist with discharge planning [70], ED physicians have little time to devote to comprehensive evaluation. Largely based on the work of Paykel *et al.* [71], we recommend the following two screening and follow-up questions. Positive answers to these questions should prompt a second-tier screen from social work, psychiatry staff, or a crisis intervention team.

- (1) In the past week including today, have you felt like life is not worth living?
- (2) In the past week including today, have you wanted to kill yourself?

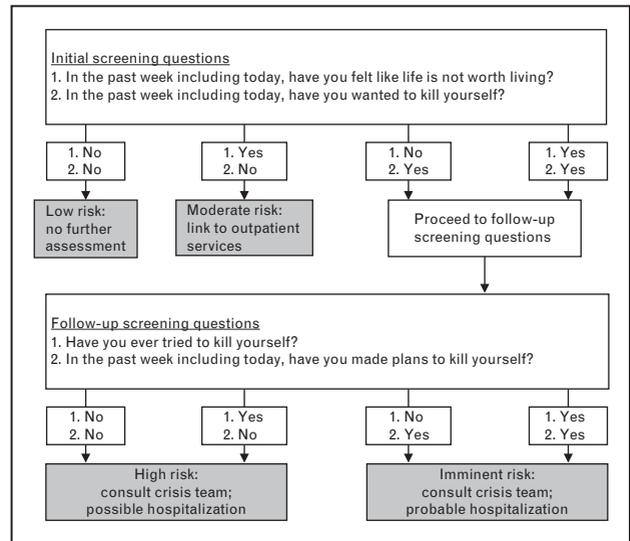
Positive endorsement of the second question leads to these follow-up questions.

- (1) Have you ever tried to kill yourself?
- (2) In the past week including today, have you made plans to kill yourself?

These questions are limited, easy to administer, and include a brief time frame. The first item queries the patient’s state of mind, and sets the stage for asking about current suicidal ideation and intent. Positive endorsement of the ideation item prompts an inquiry about a previous suicide attempt, the single best predictor of future suicidal behavior [3,10], but still requires a follow-up question regarding current plans to assess for hospitalization potential.

We are currently in the process of conducting a lengthy validation study on these suicide items in primary care to

**Figure 1 An algorithm for assessing for suicide risk in the pediatric emergency department and acute care settings**



Providers are recommended to ask the initial screening questions, then follow the prompts for risk category or need for additional inquiry below.

assess sensitivity, specificity, and predictive validity. While preliminary evidence for these items is favorable, reporting the results would be premature. We have also been using these items in our ED, and they have been well received. Many physicians and nurses report a sense of relief that patients are now being asked about suicidal thoughts and behaviors.

Often, a two-tier evaluation is recommended [72]. The four questions described above, and detailed in Fig. 1, serve as an appropriate initial assessment that meets the demands of the ED and other acute care settings. Endorsement of either initial item requires a second-tier assessment from social work, psychiatry staff, or a crisis team. Simply stating a belief that life is not worth living places one at moderate risk but rarely leads to psychiatric hospitalization. These adolescents, however, may benefit from outpatient mental health services to prevent escalation of symptoms and subsequent suicide attempts. Adolescents who divulge that they had specific plans for suicide or a suicide attempt and a desire to kill themselves within the past week should be deemed imminent risk. Most of these adolescents will require psychiatric hospitalization to reduce the threat of serious harm to themselves.

**General issues related to screening in acute settings**

Several challenges are important to consider when screening in acute care settings. For example, fear of stigma prevents many adolescents from reporting suicidal thoughts and behaviors [73] especially among black youth [74,75].

Challenges also exist at the institutional level. The ED is often a noisy, high-stimulus setting with limited privacy; a context that may discourage the disclosure of sensitive mental health matters. EDs frequently lack established systems and protocols to identify and refer pediatric patients with mental illness, thus burdening ED physicians with the responsibility of triage planning [76]. The poor conditions of the behavioral health system, particularly for low-income patients, and its poor integration with medical services, leave physicians with few referral options.

Consequently, many physicians may avoid this information for fear of being responsible for problems that the system cannot treat. Inadequate psychiatric training for pediatric healthcare providers, however, leaves physicians unsure how to broach mental illness, and may lead them to avoid those topics altogether [67,77]. Limited time and resources in the ED may discourage physicians from assessing a patient's suicide risk. Clinical decisions must often be made with fewer than 15 min of total evaluation time in the ED. Ethical and legal concerns are also of consideration, particularly when conflicts exist between professional judgment and specific policies. What documentation is required for a positive screen if screening is standard practice? What are the criteria for alerting parents? Are there state-mandated reporting requirements [60\*\*]? These are important issues that must be addressed in acute care settings. The ED and hospital leadership must problem-solve these issues and advocate, both locally and regionally, for stronger and viable collaborations between the acute medical care setting and the mental health systems.

### Patient disposition

Although clinical characteristics, proper interpretation of screening results, and an examination of risk and protective factors influence decisions to refer patients for psychiatric hospitalization, specific treatment practices of ED hospitals also influence disposition planning [78\*]. For many patients, the need for admission to a psychiatric hospital is obvious. For some, however, determining an appropriate disposition for potentially suicidal youth, particularly the decision to discharge to outpatient care, may be extremely difficult. While a lengthy discussion about the management of suicidal youth is beyond the scope of this review [3,76], some general guidelines for disposition planning include the following.

1. The patient must be medically stable.
2. The patient must not be at imminent risk for suicide.
3. A commitment must exist from the family to remove or effectively secure firearms or other lethal methods from the home.
4. A discussion about the disinhibiting effects of alcohol or drugs must take place with the patient and family.
5. The patient must have a supportive person, preferably adult, available at the home to talk to in the event that suicidal thoughts reemerge.
6. Acute precipitants to the crises must be addressed and steps are in place to begin resolving them.
7. A follow-up appointment must be scheduled as soon as possible and communicated to the family. Therefore, a working and reliable phone number for the family is required.
8. All parties must be in agreement about the treatment plan.

Ultimately, the ED physician bears the burden of responsibility to consult with necessary mental health and crisis professionals and make the appropriate discharge decisions. When considering a referral to outpatient care, it is important to note that the family's experience in the ED may impact the outpatient referral process [79,80]. Rotherham-Borus and colleagues [80] found that a good experience between families and ED staff, the establishment of realistic expectations about treatment follow-up, and a commitment from adolescents and their families to return for treatment improved initial compliance with treatment recommendations.

### Conclusion

The medical community has become the default safety net, if not provider, for psychiatric services, particularly for low-income patients. Inside this safety net, the mandate to screen and triage for this lethal disease has been supported by the American Academy of Pediatrics and the American College of Emergency Physicians, as well as encouraged by a number of other national reports and organizations (e.g. [2]). To accomplish this, hospitals need a comprehensive approach to suicide screening that includes stakeholder input, staff training, screening tools that fit into workflow, personnel to conduct second-tier screening, and in the best of circumstances, the commingling of behavioral health services within the medical setting.

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### References and recommended reading

Papers of particular interest, published within the annual period of review, have been highlighted as:

- of special interest
- of outstanding interest

Additional references related to this topic can also be found in the Current World Literature section in this issue (p. 510).

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