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Assessing the Potential for Violent Behavior in Children and Adolescents

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Introduction

Suicide and homicide in children and adolescents, both reasonably foreseeable and preventable events, are terrible losses for families and represent significant public health concerns. The realization that violence can occur anywhere has had a traumatizing impact on schools and communities nation- and worldwide. Violence is a dynamic and complex public health issue that affects millions of children and their families.

Suicide and aggression can occur across the entire spectrum of psychiatric disorders, which emphasizes the need for an organized, systematic assessment. These linked behaviors are best conceptualized as occurring on a final common pathway. Management of violent behavior depends on the stage of the destructive process as well as on the speed of progression. Differentiating the progressive, scalable risk factors that suicidal and homicidal phenomena have in common has important clinical consequences.

No standard of care exists for the prediction of child and adolescent suicide and homicide. However, a standard of care does exist that requires primary care physicians, nurses, physician assistants, and other medical and mental health professionals to assess risk adequately when clinically indicated. Although adequate assessment lacks definitional clarity, performing systematic violence risk assessments that inform treatment more than meets the standard of care and may improve quality of care substantially. Suicide and homicide, although not predictable on the basis of a “simply sufficient” interview, can be anticipated reasonably by assessing specific time-related factors.

Prevalence of Child and Adolescent Violence

Millions of children each year are exposed to acts of violence, and the numbers appear to be increasing. Concurrently, the number of children who have committed acts of violence also has increased.

Over the last 30 years, the incidence of adolescent suicide has increased markedly. Approximately 3 million youths were at risk for suicide in 2000, and 37% of those at risk attempted to kill themselves. Among adolescents 15 to 24 years of age, suicide is reported as the third leading cause of death in the past 20 years and has increased 100% among those ages 10 to 14 years of age. Suicidal expression at a fairly high level of intensity is surprisingly common in the general adolescent population. Studies of high school students have found that up to 60% have experienced some degree of suicidal ideation or action. An average of 12 children or adolescents in the United States die each day as a result of suicide.

According to the Centers for Disease Control and Prevention (CDC), homicide is the second leading cause of death in persons 10 to 19 years of age. The number of murders committed by children and adolescents doubled between 1984 and 1994 (approximately 27,000). (1)(2)

According to the latest available World Health Organization (WHO) data (2001), the yearly global toll from suicide (1 million) exceeded the number of deaths by homicide (520,000). WHO estimates suggest that suicide fatalities could rise to 1.5 million by 2020, with 20 times that number of failed attempts, which can result in injury, hospitalization, mental trauma to family and friends, temporary and permanent disability, premature death, and economic loss.

Like many other health problems in the world, violence is not distributed evenly among age groups. In 2000, an estimated 200,000 youth homicides occurred globally. Among the countries for which WHO data are available, youth suicide accounted for more than 15% (>150,000) of all suicides globally. In other words, an average of 1,000 children,

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adolescents, and young adults between the ages of 10 and 24 years die each day as a result of self-directed or interpersonal violence. This toll represents one youth homicide or suicide globally every 90 seconds.

Defining Violence

Researchers and clinicians vary widely in their definitions of suicidal and violent behavior. Some define the construct broadly; others use more narrow definitions restricted to intentional behaviors that lead directly to immediate death, serious self-injury, or predatory aggression. Violent behaviors fall on a continuum, from ideation to attempts to completion. In this review, actual, attempted, aborted, interrupted, or threatened behaviors intended to injure self or others are defined as violent.

Traditionally, ideation can be defined as having thoughts, wishes, or expressions of wishes to be dead or to kill oneself or another. Attempts are defined as self-inflicted, self-intentioned, or predatory behaviors intended or expected to result in death. Completions are self-inflicted or targeted death. Those having suicidal or homicidal ideations, those attempting suicide or homicide, and those completing suicide or homicide may be considered three distinct, not necessarily overlapping, groups and reflect different populations with respect to frequency, sex, age, and diagnoses. Some expectation of death and subjective lethality is presumed.

Compounding the problem is the large number of individuals who often have character or personality disorders and are chronically suicidal but characteristically not lethal. Included in this catalog of behaviors are parasuicides and gestures (behaviors intended to produce an effect on another person or in the environment, such as manipulating others, rather than to cause one's death). These behaviors often are compulsive and persistent and tend to be chronic.

Parasuicidal activity, such as wrist cutting or mild overdosing, should be considered in the context of the entire patient when trying to distinguish into which category the behavior falls. These individuals often elicit rescue attempts, but their brinkmanship actions may prove lethal because of miscalculation. Empiric studies show approximately 30 suicide attempts for every completed suicide. Although many persons who complete suicide have made previous attempts, an attempt alone is a weak predictor of suicidality in the next year.

Only 10% of suicide patients made prior attempts within 6 months of the suicide. Prior suicide attempts do not predict completed suicide within 1 year of assessment, but they do predict completed suicide within 2 to 10 years. A history of attempts must be taken seriously,

but it is important to distinguish between *acute* (precipitating) and *chronic* (predisposing) risk factors when calculating suicide or homicide risk. Certain acute risk factors may be clinically modifiable and responsive to treatment. Recognizing and aggressively treating such behavioral features may prevent violence.

The Roles of Depression and Ideation

Every aggressive child and adolescent patient presents with his or her own specific risk profile. The goal of a systematic assessment is to evaluate and anticipate violence risk. High rates of concurrent, undifferentiated, subsyndromal, characterologic, substance-related, and stress-related depressions are recognized in young persons in whom violence and suicide are leading causes of death. A monolithic depressive diagnostic risk profile for suicidality and homicidality, ignoring time-related risks, is inadequate. Spontaneous remission rates of depression of varying severity are high. Chronic depressive cases tend to be overrepresented. Different examiners, or even the same examiner on different occasions, may have different criteria for assigning a patient to a particular diagnostic category. Subsyndromal symptoms, which may impose significant morbidity that falls short of meeting full diagnostic criteria for a mood episode, may occur frequently. The value of the independent clinical diagnosis of depression is hard to determine.

Compared with the general population, which has an annual suicide rate of 0.01%, people who have depression have an annual suicide rate 10 times greater, but the rate is only 0.1% (20,000 suicides out of approximately 20 million persons who have a depressive disorder). It is striking that 99.9% of persons who are depressed on an annual basis do not commit suicide. These data raise the question of using depression as a monolithic predictor of suicide.

Suicidal ideation is another well-known traditional risk factor for suicide. Studies of high school students have found that up to 60% have experienced some degree of suicidal ideation. Collaborative studies demonstrate that the communication of suicidal ideation does not predict suicide in the first year following assessment, although it has been a significant predictor of suicide within 2 to 10 years when compared with the majority of surviving depressed patients. The rate of communicating suicidal ideation of those who committed suicide within 1 year of assessment was about 12% compared with more than a 90% rate among those who committed suicide within 2 to 5 years of follow-up. Communication of suicidal ideation seems to be more of a chronic risk factor

than an acute risk factor. Suicidal ideation itself may not be a very good acute predictor of suicide.

Does the absence of ideation imply that the child or adolescent is unlikely to attempt suicide or homicide? Although most suicide attempts are premeditated, research indicates that approximately 20% to 33% of adolescents reported that they made the attempt without any apparent ideation. Therefore, the absence of ideation may convey uniquely important clinical information when combined with other factors.

Other Potential Causes of Violence

Suicide and homicide result from a complex interplay of numerous factors. General etiologic categories include biologic, individual, clinical, interpersonal, situational, and sociocultural factors.

Offspring from families that have a history of antisocial personality disorder have been shown to be at increased genetic risk for later development of conduct disorder and aggression. As in adults, serotonin regulation has been implicated as a factor in violent behavior in adolescents. This effect has been demonstrated in studies examining levels of 5-hydroxyindoleacetic acid (a metabolite of serotonin) in the cerebrospinal fluid of children and adolescents who exhibit disruptive behavioral disorders. Conversely, gamma-aminobutyric acid may be involved in inhibiting aggression.

Neurologic findings suggest that both major and minor neurologic influences exist in violent male children. Several studies suggest that chronic lead exposure in childhood can lead to behavioral problems. The role of food additives and sugar in aggression and hyperactivity, however, is equivocal at best. It is estimated that about 1 million American adolescent boys use “black market” steroids. However, despite anecdotal reports of angry outbursts and suicidal behavior among steroid users, research findings are not clear. Adolescent alcoholics and illicit drug users present with a variety of aggressive characteristics, including increased hostility and difficulty with self-regulation and aggression.

Untoward effects of medications, including inhalers containing beta-adrenergic agents, benzodiazepines, and selective serotonin reuptake inhibitors, can induce toxic disinhibition, paradoxical excitement, and akathisia, with worsening of aggressive behavior.

A variety of sociocultural issues appear to be associated with increased violence in children and adolescents. The pervasive effects of the family environment on the development of aggression have been reported. Variables such as parental hostility, maternal age and permissiveness, and lack of parental affection can influence later

Table. Examples of Time-related Violence Risk Factors

Historical and Clinical Clusters

- Low-risk predisposing factors
 - Diagnostic history of conduct or hyperactivity disorder
 - Adverse experiences in childhood: being exposed to abuse (emotional, physical, sexual) or neglect, witnessing domestic violence, living with substance-abusing or criminal household members, having a family psychiatric history
- High-risk predisposing factors
 - Near-future (within 72 hours) plan for child or adolescent to return to the physical, situational, or interpersonal environment in which previous violent behavior or expressions originated
 - Child or adolescent is unwilling to use or parent is unlikely to support treatment and follow-up plan

Impulsivity and Cognition (Ideation) Clusters

- Early significant (precipitating) factors
 - Chemical use, abuse, or dependence on alcohol or other drugs
 - History of self-mutilation, designed to simulate suicide (despite nonlethal appearance), characterized by low expectation of lethal outcome and by low risk associated with rescue fantasy
- Late significant (precipitating) factors
 - Obsessive thoughts that interrupt the normal “train” of thinking, involve constricted “black or white” absolutist cognition, and are associated with motor restlessness, agitation, or panic.
 - A current suicide or homicide plan with definite (even if ambivalent), serious, very serious, or extreme lethality, in which death is the likely outcome regardless of the circumstances or interventions by an outside agent

antisocial behavior. Other associations include emotional, physical, and sexual abuse; parental aggression; and attitudes of rejection.

Poor economic status may predispose to aggressive behavior, as reflected in studies from urban areas. However, this association may be due to the consequences of poverty, such as poor nutrition during pregnancy and childhood, learning disabilities, and other developmental problems left untreated because of the lack of available resources. The CDC has identified some nontraditional risk factors, including drinking within 3 hours of violence, changing residences within the past 12 months, and having existing medical conditions (early-onset Huntington disease, closed head injuries).

Classifying Risk Factors

Assessing the risk of violence is complex and challenging. Short-term (24 to 48 hours) assessments of the risk of suicide and homicide are more accurate than long-term assessments in that the factors that influence violent occurrences can be specified with greater precision in the short term.

Suicidal and violent behavior may be conceptualized best as occurring on a final common pathway of increasing clinical significance. Historical and individual influences on violent behavior predominate early in the process. As it progresses, the process becomes more autonomous and intricately linked with characteristic components of significant danger and automatic cognitions. The occurrence of more severe *precipitating* components presupposes the presence of less severe *predisposing* manifestations. Differentiation of these progressive, scalable factors in suicidal and homicidal phenomena may have important clinical consequences.

Assessment of suicide and homicide risk based on the factors listed in the Table allows the clinician to focus on predictive elements empirically tested for validity and reliability. Such an evaluation is time-driven in that the accuracy of assessment attenuates with time. In addition to material gathered by history, data from the observation of children and adolescents during an examination provide information about suicidal and homicidal time-related, “dose-response” (early- and late-onset) risk factors that do not rely exclusively on patient reporting. Examples of relevant observational data include motor agitation, ruminative anxiety, and cognitive distortions with rigidity. These cardinal features contribute to narrowed and distorted thoughts and percep-

tions. The patient is unable to see things clearly and objectively, as though spellbound or transfixed. There is absolutist, “black and white” thinking, with narrowing

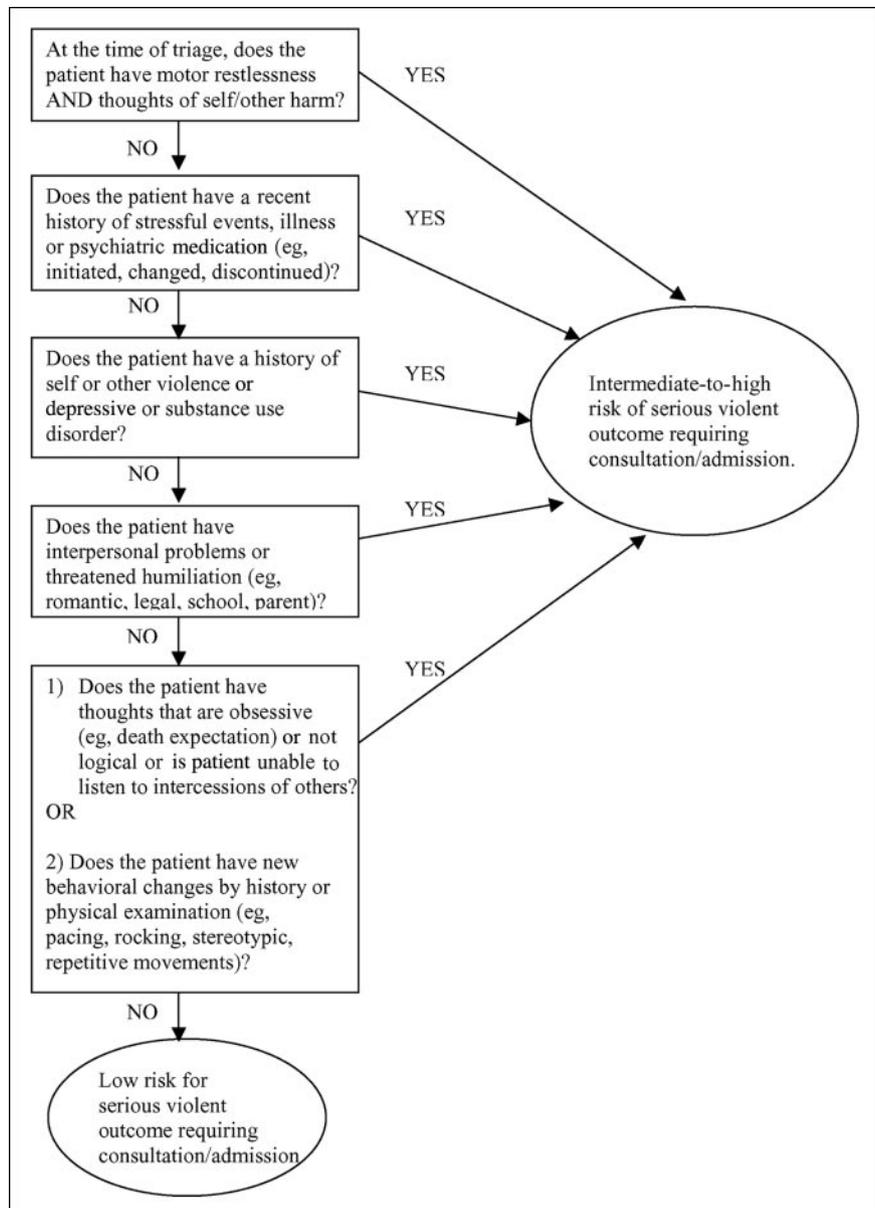


Figure. The Violence Ideation and Suicidality Treatment Algorithm (VISTA) is a theoretical guideline that is a sensitive (>80%) and specific (>98%) tool to improve the diagnostic accuracy and reliability of unstructured mental health professional judgment and eventual decision-making. The cognitive, behavioral, situational, and interpersonal factors are particularly important in the assessment. This quick reference algorithm should be useful for standardized application in identifying nonideation suicidality or homicidality in young patients, regardless of the setting or provider, with important consequences for diagnosis or treatment.

of options. The presence of this acute, often autonomous state with associated rigid, distorted thinking is a dangerous finding, even when the perceived lethality is relatively low. The term perturbation is used to convey very significant danger. Alcohol and other drugs can contribute to this transient increase in perturbation and cognitive rigidity. This state is similar clinically to observed cognitive dysfunctions of the basal ganglia.

Practical Steps in the Evaluation of the Violent Child or Adolescent

Available screening instruments are designed to assess the likelihood of suicide in children and adolescents. Previous suicide assessment research has failed to protect the pediatric population. Indeed, evidence about the value of available “screens” for identifying high-risk adolescents is under National Institutes of Mental Health review. (3) The Violence Ideation Suicidality Algorithm (Figure) has been found to be highly sensitive and specific. Its use can improve diagnostic accuracy and reliability compared with unstructured judgment of a physician or mental health professional. The specific cognitive, behavioral, situational, and interpersonal factors range in significance from $P < .001$ to $P < .01$.

The major pitfalls in the evaluation of the suicidal or homicidal child or adolescent patient are minimizing the crisis and not exercising informed medical judgment. The following practical points should guide the clinician in assessing the likelihood of violent behavior:

1. Attempts to develop models that predict suicide and homicide risk have been unsuccessful because ideation is common and the validity of the diagnosis of depression is hard to determine. Instead, conceptualize a continuum with early- and late-onset features. Empirically based checklists of risk factors that have useful statistical power can provide a systematic and objective evaluation format and minimize false-positive rates substantially.

2. Always take the suicide or homicide threat seriously. Consider any expression of suicidality or homicidality as analogous to an unexpected critical laboratory value. The patient who has acute hyperkalemia is at risk for arrhythmia until the aberration is corrected. The suicidal or homicidal patient has a similar crisis. When the acute cognitive and behavioral features are identified, a clinical state demanding intervention is present. The acute risk recedes when these precipitating risk factors are modified and treated definitively (crisis intervention, medication management, hospitalization).

3. Avoid the common errors of failing to perform and document systematic suicide and violence risk assess-

ments and of relying on suicide-homicide prevention contracts. No studies demonstrate that violence prevention contracts are effective in reducing suicide or homicide.

4. Historical and personal influences on suicidal and homicidal behavior predominate early in the violent process. Pervasive effects of the family environment, such as parental hostility, lack of parental affection, and attitudes of rejection, may predispose to aggressive and self-destructive behavior if precipitated by severe stress such as threatened or experienced humiliation at school or at home. Consider this situation analogous to the patient who has diabetes mellitus and is predisposed to ketoacidosis that can be precipitated by infectious or metabolic factors.

5. Late-onset variables, such as obsessive anxiety, motor agitation, cognitive distortions, and narrowed and distorted thoughts and perceptions, are dangerous findings. Development of these characteristics often demonstrates autonomy and conveys significant danger. The patient who has incipient ketoacidosis has a similar crisis that may cascade into extreme, autonomous metabolic risk associated with multisystem failure.

6. Do not minimize the violent risk to the child or adolescent from the untoward influence of medications, including the selective serotonin reuptake inhibitors. These agents can induce toxic disinhibition, paradoxical excitement, and akathisia, with new onset of violence or worsening of aggressive behavior.

7. Appropriate clinical testing will minimize the chance of missing additional factors that can affect behavioral disorders. For example, an adolescent who has a history of schizophrenia also can suffer toxicity from cocaine use or a metabolic disorder. Ensure adequate re-evaluation and consultation to detect subtle central nervous system disorders, infections, seizure problems, and metabolic disorders.

8. If a strong and reasonable historical basis exists for restraining a known suicidal or violence-prone patient and a current assessment is not safe or feasible, err on the safe side by managing the crisis and taking action to restrain the patient.

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