



Suicide and Suicide Attempts in Adolescents

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Suicide is the second leading cause of death for adolescents 15 to 19 years old. This report updates the previous statement of the American Academy of Pediatrics and is intended to assist pediatricians, in collaboration with other child and adolescent health care professionals, in the identification and management of the adolescent at risk for suicide. Suicide risk can only be reduced, not eliminated, and risk factors provide no more than guidance. Nonetheless, care for suicidal adolescents may be improved with the pediatrician's knowledge, skill, and comfort with the topic, as well as ready access to appropriate community resources and mental health professionals.

abstract

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INTRODUCTION

The number of adolescent deaths that result from suicide in the United States had been increasing dramatically during recent decades until 1990, when it began to decrease modestly. From 1950 to 1990, the suicide rate for adolescents 15 to 19 years old increased by 300%,¹ but from 1990 to 2013, the rate in this age group decreased by 28%.² In 2013, there were 1748 suicides among people 15 to 19 years old.² The true number of deaths from suicide actually may be higher, because some of these deaths may have been recorded as “accidental.”³ Adolescent boys 15 to 19 years old had a completed suicide rate that was 3 times greater than that of their female counterparts,² whereas the rate of suicide attempts was twice as high among girls than among boys, correlating to girls tending to choose less lethal methods.⁴ The ratio of attempted suicides to completed suicides among adolescents is estimated to be 50:1 to 100:1.⁵

Suicide affects young people from all races and socioeconomic groups, although some groups have higher rates than others. American Indian/Alaska Native males have the highest suicide rate, and black females have the lowest rate of suicide. Sexual minority youth (ie, lesbian, gay, bisexual, transgender, or questioning) have more than twice the rate of suicidal ideation.⁶ The 2013 Youth Risk Behavior Survey of students in

grades 9 through 12 in the United States indicated that during the 12 months before the survey, 39.1% of girls and 20.8% of boys felt sad or hopeless almost every day for at least 2 weeks in a row, 16.9% of girls and 10.3% of boys had planned a suicide attempt, 10.6% of girls and 5.4% of boys had attempted suicide, and 3.6% of girls and 1.8% of boys had made a suicide attempt that required medical attention.⁷

The leading methods of suicide for the 15- to 19-year age group in 2013 were suffocation (43%), discharge of firearms (42%), poisoning (6%), and falling (3%).² Particular attention should be given to access to firearms, because reducing firearm access may prevent suicides. Firearms in the home, regardless of whether they are kept unloaded or stored locked, are associated with a higher risk of completed adolescent suicide.^{8,9} However, in another study examining firearm security, each of the practices of securing the firearm (keeping it locked and unloaded) and securing the ammunition (keeping it locked and stored away from the firearm) were associated with reduced risk of youth shootings that resulted in unintentional or self-inflicted injury or death.¹⁰

Youth seem to be at much greater risk from media exposure than adults and may imitate suicidal behavior seen on television.¹¹ Media coverage of an adolescent's suicide may lead to cluster suicides, with the magnitude of additional deaths proportional to the amount, duration, and prominence of the media coverage.¹¹ A prospective study found increased suicidality with exposure to the suicide of a schoolmate.¹² Newspaper reports about suicide were associated with an increase in adolescent suicide clustering, with greater clustering associated with article front-page placement, mention of suicide or the method of suicide in the article title, and detailed description in the article text about the individual

or the suicide act.¹³ More research is needed to determine the psychological mechanisms behind suicide clustering.^{14,15} The National Institute of Mental Health suggests best practices for media and online reporting of deaths by suicide.¹⁶

ADOLESCENTS AT INCREASED RISK

Although no specific tests are capable of identifying a suicidal person, specific risk factors exist.^{11,17} The health care professional should use care in interpreting risk factors, however, because risk factors are common, whereas suicide is infrequent. Of importance, the lack of most risk factors does not make an adolescent safe from suicide. Fixed risk factors include: family history of suicide or suicide attempts; history of adoption^{18,19}; male gender; parental mental health problems; lesbian, gay, bisexual, or questioning sexual orientation; transgender identification; a history of physical or sexual abuse; and a previous suicide attempt. Personal mental health problems that predispose to suicide include sleep disturbances,²⁰ depression, bipolar disorder, substance intoxication and substance use disorders, psychosis, posttraumatic stress disorder, panic attacks, a history of aggression, impulsivity, severe anger, and pathologic Internet use (see *Internet Use* section). In particular, interview studies showed a marked higher rate of suicidal behavior with the presence of psychotic symptoms.²¹ A prospective study found a 70-fold increase of acute suicidal behavior in adolescents with psychopathology that included psychosis.²² By definition, nonsuicidal self-injury (NSSI) does not include intent to die, and risk of death is deliberately low. Nonetheless, NSSI is a risk factor for suicide attempts^{23,24} and suicidal ideation.²⁵ More than 90% of adolescent suicide victims met criteria for a psychiatric disorder

before their death. Immediate risk factors include agitation, intoxication, and a recent stressful life event. More information is available from the American Academy of Child and Adolescent Psychiatry²⁶ and Gould et al.¹¹

Social and environmental risk factors include bullying, impaired parent-child relationship, living outside of the home (homeless or in a corrections facility or group home), difficulties in school, neither working nor attending school, social isolation, and presence of stressful life events, such as legal or romantic difficulties or an argument with a parent. An unsupported social environment for lesbian, gay, bisexual, and transgender adolescents, for example, increases risk of suicide attempts.²⁷ Protective factors include religious involvement and connection between the adolescent and parents, school, and peers.²⁶

Bullying

Bullying has been defined as having 3 elements: aggressive or deliberately harmful behavior (1) between peers that is (2) repeated and over time and (3) involves an imbalance of power, for example, related to physical strength or popularity, making it difficult for the victim to defend himself or herself.²⁸ Behavior falls into 4 categories: direct-physical (eg, assault, theft), direct-verbal (eg, threats, insults, name-calling), indirect-relational (eg, social exclusion, spreading rumors), and cyberbullying.²⁹ The 2013 Youth Risk Behavior Survey of students in grades 9 through 12 in the United States indicated that during the 12 months before the survey, 23.7% of girls and 15.6% of boys were bullied on school property, 21.0% of girls and 8.5% of boys were electronically bullied, and 8.7% of girls and 5.4% of boys did not go to school 1 day in the past 30 because they felt unsafe at or to or from school.⁷ Studies have focused on 3 groups: those who were

victims, those who were bullies, and those who were both victims and bullies (bully/victims).³⁰

Reviewing 31 studies, Klomek et al²⁹ found a clear relationship between both bullying victimization and perpetration and suicidal ideation and behavior in children and adolescents. Females were at risk regardless of frequency, whereas males were at higher risk only with frequent bullying. A review by Arseneault et al³¹ cited evidence that bullying victimization is associated with severe baseline psychopathology, as well as individual characteristics and family factors, and that the psychopathology is made significantly worse by the victimization. Being the victim of school bullying or cyberbullying is associated with substantial distress, resulting in lower school performance and school attachment.³² Suicidal ideation and behavior were greater in those bullied with controlling for age, gender, race/ethnicity, and depressive symptomology.³³ Suicidal ideation and behavior were increased in victims and bullies and were highest in bully/victims.³⁴ Similar increases in suicide attempts were found comparing face-to-face bullying with cyberbullying, both for victims and bullies.³⁵

Bullying predicts future mental health problems. Bullying behavior at 8 years of age was associated with later suicide attempts and completed suicides,³⁶ although among boys, frequent perpetration and victimization was not associated with attempts and completions after controlling for conduct and depressive symptoms. Among girls, frequent victimization was associated with later suicide attempts and completions even after controlling for conduct and depressive symptoms. High school students with the highest psychiatric impairment 4 years later were those who had been identified as at-risk for

suicide *and* experiencing frequent bullying behavior. Copeland et al³⁰ found that children and adolescents involved in bullying behavior had the worst outcomes when they were both bullies and victims, leading to depression, anxiety, and suicidality (suicidality only among males) as adults. Assessment for adolescents with psychopathology, other signs of emotional distress, or unusual chronic complaints should include screening for participation in bullying as victims or bullies.

Internet Use

Pathologic Internet use correlates with suicidal ideation and NSSI.³⁷ Self-reported daily use of video games and Internet exceeding 5 hours was strongly associated with higher levels of depression and suicidality (ideation and attempts) in adolescents.³⁸ A more specific problem is that adolescents with suicidal ideation may be at particular risk for searching the Internet for information about suicide-related topics.³⁹ Suicide-related searches were found to be associated with completed suicides among young adults.⁴⁰ Prosuicide Web sites and online suicide pacts facilitate suicidal behavior, with adolescents and young adults at particular risk.³⁷

A number of factors diminish the exposure of prosuicide Web sites. Web site results from the search term, "suicide," are predominantly of institutional origin, with content largely related to research and prevention. Although there are a substantial number of sites from private senders (these sites are often antimedical, antitreatment, and pro-suicide,⁴¹ including sites that advocate suicide or describe methods in detail⁴²), suicide research and prevention sites tend to come up in searches more commonly. Clicking on links within each site keeps the reader in the site, strengthening the site's position. Methods sites and overtly prosuicide sites are

more isolated, decentralized, and unfocused; these are less prevalent among the first 100 search results, perhaps related to a recent and deliberate strategy by the internet search engines (eg, search engine optimization).⁴¹

Learning of another's suicide online may be another risk factor for youth.⁴³ Exposure to such information is through online news sites (44%), social networking sites (25%), online discussion forums (15%), and video Web sites (15%). Social networking sites have particular importance, because these may afford information on suicidal behavior of social contacts that would not otherwise be available. Fortunately, exposure to information from social networking sites does not appear related to changes in suicidal ideation, with increased exposure mitigated by greater social support. Participation in online forums, however, was associated with increases in suicidal ideation, possibly related to anonymous discussions about mental health problems. For example, suicide attempts by susceptible individuals appear to have been encouraged by such conversations.^{44,45}

INTERVIEWING THE ADOLESCENT

Primary care pediatricians should be comfortable screening patients for suicide, mood disorders, and substance abuse and dependence. Ask about emotional difficulties and use of drugs and alcohol, identify lack of developmental progress, and estimate level of distress, impairment of functioning, and level of danger to self and others. Depression screening instruments shown to be valid in adolescents include the Patient Health Questionnaire (PHQ)-9 and PHQ-2.⁴⁶ If needed, a referral should be made for appropriate mental health evaluation and treatment. In areas where the resources necessary to make a timely mental health

referral are lacking, pediatricians are encouraged to obtain extra training and become competent in providing a more in-depth assessment.

Suicidal ideation may be assessed by directly asking or screening via self-report. Self-administered scales can be useful for screening, because adolescents may disclose information about suicidality on self-report that they deny in person. Scales, however, tend to be oversensitive and underspecific and lack predictive value. Adolescents who endorse suicidality on a scale should be assessed clinically. Screening tools useable in a primary care setting have not been shown to have more than limited ability to detect suicide risk in adolescents,⁴⁷ consistent with the findings of an earlier review.⁴⁸ Instruments studied in adolescent groups with high prevalence of suicidal ideation and behavior showed sensitivity of 52% to 87% and specificity of 60% to 85%; the results are only generalizable to high-risk populations.^{49,50} Suicide screening, at least in the school setting, does not appear to cause thoughts of suicide or other psychiatric symptoms in students.^{51,52}

One approach to initiate a confidential inquiry into suicidal thoughts or concerns is to ask a general question, such as, "Have you ever thought about killing yourself or wished you were dead?" The question is best placed in the middle or toward the end of a list of questions about depressive symptoms. Regardless of the answer, the next question should be, "Have you ever done anything on purpose to hurt or kill yourself?" If the response to either question is positive, the pediatrician should obtain more detail (eg, nature of past and present thoughts and behaviors, time frame, intent, who knows and how they found out). Inquiry should include suicide plans ("If you were to kill yourself, how would you do it?"), whether there are firearms in the

home, and the response of the family. No data indicate that inquiry about suicide precipitates the behavior, even in high-risk students.⁵¹

The adolescent should be interviewed separately from the parent, because the patient may be more likely to withhold important information in the parent's presence. Information should also be sought from parents and others as appropriate. Although confidentiality is important in adolescent health care, for adolescents at risk to themselves or others, safety takes precedence over confidentiality; the adolescent should have this explained by the pediatrician so that he or she understands that at the onset. Pediatricians need to inform appropriate people, such as parent(s) and other providers, when they believe an adolescent is at risk for suicide and to share with the adolescent that there is a need to break confidentiality because of the risk of harm to the adolescent. As much as is possible, the sequence of events that preceded the threat should be determined, current problems and conflicts should be identified, and the degree of suicidal intent should be assessed. In addition, pediatricians should assess individual coping resources, accessible support systems, and attitudes of the adolescent and family toward intervention and follow-up.⁵³ Questions should also be asked to elicit known risk factors. Note that it is acceptable and, in some cases, more appropriate for the patient to be referred to a mental health specialist to access the degree of suicide intent and relevant factors such as coping mechanisms and support systems.

Care in interviewing needs to be taken, because abrupt, intrusive questions could result in a reduction of rapport and a lower likelihood of the adolescent sharing mental health concerns. This is especially true during a brief encounter for an

unrelated concern. Initial questions should be open-ended and relatively nonthreatening. Examples include "Aside from [already stated non-mental health concern], how have you been doing?" "I know that a lot of people your age have a lot going on. What kinds of things have been on your mind or stressing you lately?" "How have things been going with [school, friends, parents, sports]?" When possible, more detailed questions should then follow, particularly during routine care visits or when a mental health concern is stated or suspected.

Suicidal thoughts or comments should never be dismissed as unimportant. Statements such as, "You've come really close to killing yourself," may, if true, acknowledge the deep despair of the youth and communicate to the adolescent that the interviewer understands how serious he or she has felt about dying. Such disclosures should be met with reassurance that the patient's pleas for assistance have been heard and that help will be sought.

Serious mood disorders, such as major depressive disorder or bipolar disorder, may present in adolescents in several ways.⁵⁴ Some adolescents may come to the office with complaints similar to those of depressed adults, having symptoms, such as sad or down feelings most of the time, crying spells, guilty or worthless feelings, markedly diminished interest or pleasure in most activities, significant weight loss or weight gain or increase or decrease in appetite, insomnia or hypersomnia, fatigue or loss of energy, diminished ability to think or concentrate, and thoughts of death or suicide. The pediatrician should also look for adolescent behaviors that are characteristic of symptoms (Table 1).⁵⁴ Some adolescents may present with irritability rather than depressed mood as the main manifestation. Other adolescents present for an acute care visit

with somatic symptoms, such as abdominal pain, chest pain, headache, lethargy, weight loss, dizziness and syncope, or other nonspecific symptoms⁵⁵ Others present with behavioral problems, such as truancy, deterioration in academic performance, running away from home, defiance of authorities, self-destructive behavior, vandalism, substance use disorder, sexual acting out, and delinquency.⁵⁶ Typically, symptoms of depression, mania, or a mixed state (depression and mania coexisting or rapidly alternating) can be elicited with careful questioning but may not be immediately obvious. The American Academy of Pediatrics (AAP) provides more information about adolescent bipolar disorder and the role of the pediatrician in screening, diagnosis, and management.⁵⁷

At well-adolescent visits, adolescents who show any evidence of psychosocial or adaptive difficulties should be assessed regularly for mental health concerns and also asked about suicidal ideation, physical and sexual abuse, bullying, substance use, and sexual orientation. Depression screening is now recommended for all adolescents between the ages of 11 and 21 years of age in the third edition of *Bright Futures*.⁵⁸ The AAP developed a resource, "Addressing Mental Health Concerns in Primary Care: A Clinician's Toolkit," which is available for a fee.⁵⁹ The AAP also developed a Web site that provides resources and materials free of charge.⁶⁰ Identification and screening at acute care visits, when possible, is desirable, because mental health problems may manifest more strongly at these times.

MANAGEMENT OF THE SUICIDAL ADOLESCENT

Management depends on the degree of acute risk. Unfortunately, no one can accurately predict suicide, so

TABLE 1 Depressive Symptoms and Examples in Adolescents⁵⁴

Signs and Symptoms of Major Depressive Disorder	Signs of Depression Frequently Seen in Youth
Depressed mood most of the day	Irritable or cranky mood; preoccupation with song lyrics that suggest life is meaningless
Decreased interest/enjoyment in once-favorite activities	Loss of interest in sports, video games, and activities with friends
Significant wt loss/gain	Failure to gain wt as normally expected; anorexia or bulimia; frequent complaints of physical illness (eg, headache, stomach ache)
Insomnia or hypersomnia	Excessive late-night TV; refusal to wake for school in the morning
Psychomotor agitation/retardation	Talk of running away from home or efforts to do so
Fatigue or loss of energy	Persistent boredom
Low self-esteem; feelings of guilt	Oppositional and/or negative behavior
Decreased ability to concentrate; indecisive	Poor performance in school; frequent absences
Recurrent thoughts of death or suicidal ideation or behavior	Recurrent suicidal ideation or behavior (threats of suicide, writing about death; giving away favorite toys or belongings)

even experts can only determine who is at higher risk. Intent is a key issue in the determination of risk. Examples of adolescents at high risk include: those with a plan or recent suicide attempt with a high probability of lethality; stated current intent to kill themselves; recent suicidal ideation or behavior accompanied by current agitation or severe hopelessness; and impulsivity and profoundly dysphoric mood associated with bipolar disorder, major depression, psychosis, or a substance use disorder. An absence of factors that indicate high risk, especially in the presence of a desire to receive help and a supportive family, suggests a lower risk but not necessarily a low risk. Low risk is difficult to determine. For example, an adolescent who has taken 8 ibuprofen tablets may have thought that it was a lethal dose and may do something more lethal the next time. Alternatively, the adolescent may have known that 8 ibuprofen tablets is not lethal and took the pills as a rehearsal for a lethal attempt. In the presence of a recent suicide attempt, the lack of current suicidal ideation may also be misleading if none of the factors that led to the attempt have changed or the reasons for the attempt are not understood. The benefit of the doubt is generally

on safety in the management of the suicidal adolescent.

The term "suicide gesture" should not be used, because it implies a low risk of suicide that may not be warranted. "Suicide attempt" is a more appropriate term for any deliberately self-harmful behavior or action that could reasonably be expected to produce self-harm and is accompanied by some degree of intent or desire for death as well as thinking by the patient at the time of the behavior that the behavior had even a small possibility of resulting in death. In a less-than-forthcoming patient, intent may be inferred by the lethality of the behavior, such as ingesting a large number of pills, or by an affirmative answer to a question such as, "At the time of your action, would you have thought it okay if you had died?"

Adolescents who initially may seem at low risk, joke about suicide, or seek treatment of repeated somatic complaints may be asking for help the only way they can. Their concerns should be assessed thoroughly. Adolescents who are judged to be at low risk of suicide should still receive close follow-up, referral for a timely mental health evaluation, or both if they should have any significant degree of dysfunction or distress from emotional or behavioral symptoms.

For adolescents who seem to be at moderate or high risk of suicide or have attempted suicide, arrangements for immediate mental health professional evaluation should be made during the office visit. Options for immediate evaluation include hospitalization, transfer to an emergency department, or a same-day appointment with a mental health professional.

Intervention should be tailored to the adolescent's needs. Adolescents with a responsive and supportive family, little likelihood of acting on suicidal impulses (eg, thought of dying with no intent or plan for suicide), and someone who can take action if there is mood or behavior deterioration may require only outpatient treatment.¹⁷ In contrast, adolescents who have made previous attempts, exhibit a high degree of intent to commit suicide, show evidence of serious depression or other psychiatric illness, engage in substance use or have an active substance use disorder, have low impulse control, or have families who are unwilling to commit to counseling are at high risk and may require psychiatric hospitalization.

Although no controlled studies have been conducted to prove that admitting adolescents at high risk to a psychiatric unit saves lives,¹⁷ likely the safest course of action is hospitalization, thereby placing the adolescent in a safe and protected environment. An inpatient stay will allow time for a complete medical and psychiatric evaluation with initiation of therapy in a controlled setting as well as arrangement of appropriate mental health follow-up care.

Pediatricians can enhance continuity of care and adherence to treatment recommendations by maintaining contact with suicidal adolescents even after referrals are made. Collaborative care is encouraged, because it has been shown to result in greater reduction of depressive

symptoms in a primary care setting.⁶¹ Recommendations should include that all firearms are removed from the home, because adolescents may still find access to locked guns stored in their home, and that medications, both prescription and over-the-counter, are locked up. Vigorous treatment of the underlying psychiatric disorder is important in decreasing short-term and long-term risk of suicide. Although asking the adolescent to agree to a contract against suicide has not been proven effective in preventing suicidal behavior,¹⁷ the technique may still be helpful in assessing risk in that refusal to agree either not to harm oneself or to tell a specified person about intent to harm oneself is ominous. In addition, safety planning may help guide a patient and his or her family in what steps to take in moments of distress to ensure patient safety.

Working with a suicidal adolescent can be very difficult for those who are providing treatment. Suicide risk can only be reduced, not eliminated, and risk factors provide no more than guidance. Much of the information regarding risk factors is subjective and must be elicited from the adolescent, who may have his or her own agenda. Just as importantly, pediatricians need to be aware of their personal reactions to prevent interference in evaluation and treatment and overreaction or underreaction.

ANTIDEPRESSANT MEDICATIONS AND SUICIDE

The Food and Drug Administration (FDA) directive of October 2004 and heavy media coverage changed perceptions of antidepressant medications, and not favorably. The FDA directed pharmaceutical companies to label all antidepressant medications distributed in the United States with a "black-box warning" to alert health care providers to

an increased risk of suicidality (suicidal thinking and behavior) in children and adolescents being treated with these agents. The FDA did not prohibit the use of these medications in youth but called on clinicians to balance increased risk of suicidality with clinical need and to monitor closely "for clinical worsening, suicidality, or unusual changes in behavior."⁶² The warning particularly stressed the need for close monitoring during the first few months of treatment and after dose changes.

The warning by the FDA was prompted by a finding that in 24 clinical trials that involved more than 4400 child and adolescent patients and 9 different antidepressant medications, spontaneously reported suicidal ideation or behavior was present in 4% of subjects who were receiving medication and in just half that (2%) of subjects who were receiving a placebo. No completed suicides occurred during any of the studies. In the same studies, however, only a slight reduction of suicidality was found when subjects were asked directly at each visit about suicidal ideation and behavior, which was considered a contradictory finding. The method of asking directly does not rely on spontaneous reports and is considered to be more reliable than the spontaneous events report method used by the FDA to support the black-box warning.⁶³ In addition, a reanalysis of the data including 7 additional studies and using a more conservative model showed only a trivial 0.7% increase in the risk of suicidal ideation or behavior in those receiving antidepressant medications.⁶⁴

Subsequent studies have addressed the validity of the black-box warning and suggest that, for appropriate youth, the risk of not prescribing antidepressant medication is significantly higher than the risk of prescribing. Gibbons et al⁶⁵ conducted a reanalysis of all sponsor-conducted

randomized controlled trials of fluoxetine and venlafaxine, which included 12 adult, 4 geriatric, and 4 youth studies of fluoxetine and 21 adult trials of venlafaxine. Adult and geriatric patients treated with both medications showed decreased suicidal thoughts and behaviors, an effect mediated by the decreases of depressive symptoms with treatment. No significant treatment effect on suicidal thoughts and behaviors was found with youth treated with fluoxetine, although depressive symptoms in fluoxetine-treated patients decreased more quickly than symptoms in patients receiving placebo. There was no overall greater rate of suicidal thoughts and behaviors in the treatment groups versus the placebo groups. The finding of increased suicidal ideation and behavior in the treatment groups that formed the basis of the FDA black-box warning on antidepressant use in children and adolescents was not found in this reanalysis of the fluoxetine studies. More importantly, these reanalyses demonstrated the efficacy of fluoxetine in the treatment of depression in youth. Patients in all age and drug groups had significantly greater improvement relative to patients in placebo groups, with youth having the largest differential rate of remission over 6 weeks—46.6% of patients receiving fluoxetine versus 16.5% of those receiving placebo.⁶⁶

Suicidal ideation and behavior are common, and suicides are vastly less common, which makes it difficult to relate a change in one to a change in the other.⁶³ Examining all available observational studies, Dudley et al⁶⁷ found that recent exposure to selective serotonin reuptake inhibitor medications was rare (1.6%) for young people who died by suicide, supporting the conclusion that most of the suicide victims did not have the potential benefit of antidepressants at the time of their deaths. The study suggests that whether antidepressants increase suicidal

thoughts or behaviors in adolescents, few actual suicides are related to current use of the medications.

Several studies showed a negative correlation between antidepressant prescribing and completed adolescent suicide. The 28% decrease in completed suicides in the 10- to 19-year-old age group from 1990 to 2000 may have been at least partly a result of the increase in youth antidepressant prescribing over the same time period. Analyzing US data by examining prescribing and suicide in each of 588 2-digit zip code zones showed a significant ($P < .001$) 0.23-per-100 000 annual decrease in adolescent suicide with every 1% increase in antidepressant prescribing.⁶⁸ A second study analyzed county-level data during the period from 1996 to 1998 and found that higher selective serotonin reuptake inhibitor prescription rates significantly correlated with lower suicide rates among children and adolescents 5 to 14 years of age.⁶⁹ Using a decision analysis model, Cougnard et al⁷⁰ calculated that antidepressant treatment of children and adolescents would prevent 31.9% of suicides of depressed subjects, similar to findings in the adult (32.2%) and geriatric (32.3%) age groups.

The FDA advisory panel was aware that the black-box warning could have the unintended effect of limiting access to necessary and effective treatment⁶³ and reported that prescriptions of antidepressants for children and adolescents decreased by 19% in the third quarter of 2004 and 16% in the fourth quarter compared with the year before.⁷¹ Claims data for Tennessee Medicaid showed a 33% reduction of new users of antidepressants 21 months after the black-box warning.⁷² US national managed care data showed reduced diagnosing of pediatric depression and a 58% reduction of antidepressant prescribing compared with what was predicted by the preadvisory trend.⁷³ Decreased

antidepressant prescribing was also seen with chart review.⁷⁴ Most of the reductions in diagnosing and prescribing were related to substantial reductions by primary care providers, with these reductions persisting through 2007.⁷⁵ Studies differed as to whether there was⁷⁶ or was not^{73,74} a compensatory increase of psychotherapy treatment during the same time period.

Concern was expressed that the reduction of antidepressant prescribing may be related to the increase in US youth suicides from 2003 to 2004 after a decade of steady declines.⁷⁷ Gibbons et al⁷⁸ found that antidepressant prescribing for youth decreased by 22% in both the United States and the Netherlands the year after the black-box warnings in both countries and a reduction in prescribing was observed across all ages. From 2003 to 2004, the youth suicide rate in the United States increased by 14%; from 2003 to 2005, the youth suicide rate in the Netherlands increased by 49%. Across age groups, data showed a significant inverse correlation between prescribing and change in suicide rate. The authors suggested that the warnings could have had the unintended effect of increasing the rate of youth suicide.⁷⁸ Examining health insurance claims data for 1.1 million adolescents, 1.4 million young adults, and 5 million adults, the rate of psychotropic medication poisonings, a validate proxy for suicide attempts, was found to have increased significantly in adolescents (21.7%) and young adults (33.7%), but not in adults (5.2%), in the second year after the FDA black-box warning, corresponding with decreases in antidepressant prescribing (adolescents, -31.0%; young adults, -24.3%; adults, -14.5%).⁷⁹

Regardless of whether the use of antidepressant medications changes the risk of suicide, depression is an

important suicide risk factor, and careful monitoring of adolescents' mental health and behavioral status is critically important, particularly when initiating or changing treatment. Furthermore, despite the aforementioned new information, the FDA has not removed or changed the black-box warning; the warning should be discussed with parents or guardians and appropriately documented. The American Psychiatric Association and the American Academy of Child and Adolescent Psychiatry recommended a monitoring approach⁶³ that enlists the parents or guardians in the responsibility for monitoring and individualizing the frequency and nature of monitoring to the needs of the patient and the family. This approach potentially increases the effectiveness of monitoring and provides greater flexibility, thus reducing a barrier to prescribing. Warning signs for family members to contact the prescribing physician are listed in Table 2.⁶³

SUMMARY

1. Adolescent suicide is an important public health problem.
2. Knowledge of risk factors, particularly mood disorders, psychosis, and bullying victimization and perpetration, may assist in the identification of adolescents who are at higher risk.
3. It is important to know and use appropriate techniques for interviewing potentially suicidal adolescents.
4. Mood disorders predisposing adolescents to suicide have a variety of presentations.
5. Management options depend on the degree of suicide risk.
6. Treatment with antidepressant medication is important when indicated.

TABLE 2 Treatment With Antidepressant Medication: Warning Signs for Family Members To Contact the Physician

New or more frequent thoughts of wanting to die
Self-destructive behavior
Signs of increased anxiety/panic, agitation, aggressiveness, impulsivity, insomnia, or irritability
New or more involuntary restlessness (akathisia), such as pacing or fidgeting
Extreme degree of elation or energy
Fast, driven speech
New onset of unrealistic plans or goals

ADVICE FOR PEDIATRICIANS

1. Ask questions about mood disorders, use of drugs and alcohol, suicidal thoughts, bullying, sexual orientation, and other risk factors associated with suicide in routine history taking throughout adolescence. Know the risk factors (eg, signs and symptoms of depression) associated with adolescent suicide and screen routinely for depression. Consider using a depression screening instrument, such as the PHQ-9 or PHQ-2, at health maintenance visits from 11 to 21 years of age and as needed at acute care visits.⁴⁶
2. Educate yourself and your patients about the benefits and risks of antidepressant medications. Patients with depression should be carefully monitored, with appropriately frequent appointments and education of the family regarding warning signs for when to call you, especially after the initiation of antidepressant medication treatment and with dose changes. Recent studies suggest that, for appropriate youth, the benefits of antidepressant medications outweigh the risks.
3. Recognize the medical and psychiatric needs of the suicidal adolescent and work closely with families and health care professionals involved in the management and follow-up of youth who are at risk or have attempted suicide. Develop working relationships with emergency departments and colleagues in child and adolescent psychiatry, clinical psychology, and other mental health professions to optimally evaluate and manage the care of adolescents who are at risk for suicide. Because mental and physical health services are often provided through different systems of care, extra effort is necessary to ensure good communication, continuity, and follow-up through the medical home.
4. Because resources for adolescents and physicians vary by community, become familiar with local, state, and national resources that are concerned with treatment of psychopathology and suicide prevention in youth, including local hospitals with psychiatric units, mental health agencies, family and children's services, crisis hotlines, and crisis intervention centers. Compile the names and contact information of local mental health resources and providers and make that information available to patients/families when needed.
5. Because there is great variation among general pediatricians in training and comfort with assessing and treating patients with mental health problems, as well as in access to appropriate mental health resources, consider additional training and ongoing education in diagnosing and managing adolescent mood disorders, especially if practicing in an underserved area.

Pediatricians with fewer resources still have an important role in screening, comanaging with mental health professionals, and referring patients when necessary (as recommended in *Bright Futures, Fourth Edition*).

6. During routine evaluations and where consistent with state law, ask whether firearms are kept in the home and discuss with parents the increased risk of adolescent suicide with the presence of firearms. Specifically for adolescents at risk for suicide, advise parents to remove guns and ammunition from the house and secure supplies of prescription and over-the-counter medications.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
 FDA: Food and Drug Administration
 NSSI: nonsuicidal self-injury
 PHQ: Patient Health Questionnaire

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