

A Review of Mood Disorders Among Juvenile Offenders

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Objectives: This article provides an overview of what is known about the prevalence, diagnosis, and effective treatment of mood disorders among youths, particularly among juvenile offenders, and discusses the unique problems that arise for the delivery of treatment services. The relationship between mood disorders and disruptive or delinquent behaviors as well as the particular importance of proper diagnosis and treatment of mood disorders in this population are discussed. **Methods:** A search was conducted of the MEDLINE and PsycINFO databases for articles that had been published since 1980 on mood disorders in the juvenile offender population as well as articles on adolescent mood disorders. **Results:** The studies on the prevalence of mood disorders among juvenile offenders varied significantly in the methodology used and in the rates of prevalence found, although all studies showed that this population had high rates of mood disorders. The identification and effective treatment of mood disorders is critical because these disorders are a leading cause of suicide among adolescents and because mood disorders may contribute to or exacerbate delinquent and disruptive behaviors. **Conclusions:** Juvenile detainees have a constitutional right to needed mental health treatment. More comprehensive mental health services are required to ensure that juvenile offenders with mental illness are identified and cared for appropriately. Doing so not only will alleviate painful symptoms but may also contribute significantly to improvements in psychosocial functioning, interpersonal relations, and school performance and to decreases in delinquent, disruptive, and suicidal behaviors. (*Psychiatric Services* 55:1397–1407, 2004)

There is a dearth of adequate research on the prevalence of mood disorders among juvenile offenders. Some studies vaguely identify mental health problems, making it unclear as to whether youths identified with depression, for example, meet criteria for clinical depression as defined by the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (1) or are merely struggling with a transient depressed mood in response to stressors, such as incarceration. Other re-

search limitations include small samples; the use of nonrandom, biased samples; the use of retrospective chart reviews that tend to underestimate the prevalence of internalizing disorders, such as depression or anxiety; and the use of nonstandardized assessment instruments.

Methods

To provide an overview of the research on prevalence, diagnosis, and effective treatment among adolescents, particularly among juvenile of-

fenders, we conducted a search of the MEDLINE and PsycINFO databases for articles that had been published since 1980 on mood disorders in the juvenile offender population as well as articles on adolescent mood disorders. Terms used in the search were “delinquent(s),” “juvenile offender(s),” “mood disorder(s)” “bipolar disorder,” and “depression.”

Results

Prevalence

Despite limitations of extant research, it is clear that mood disorders are relatively common among adolescents, particularly among juvenile offenders. Epidemiologic studies have found that one in 12 adolescents has a mood disorder, with 8 percent of these adolescents experiencing depression (2,3). In contrast, studies of mood disorders among juvenile offenders have found much higher prevalence rates, between 17 and 78 percent (4–10). In a study of approximately 1,550 youths committed to Virginia’s Department of Juvenile Justice, McGarvey and Waite (7) found that 38 percent of males and 30 percent of females admitted to long-term juvenile correctional facilities reported a history of medication use for a mood disorder. Otto and colleagues (8) reviewed 11 studies of mood disorders among juvenile offenders and found significant variation in reported prevalence rates that were partially related to different modes of data collection—for example, self-report, retrospective record review, and clinical interview with or without standardized assessment instruments. Studies that did not include interviews found prevalence rates between 2 and 22 percent,

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whereas studies that used clinical interviews found higher rates, between 32 and 78 percent. McManus and associates (9) studied 71 incarcerated adolescents (40 male and 31 female) who were seriously delinquent by using structured diagnostic instruments. Their study found that a major mood disorder was the primary diagnosis for 11 of those adolescents (15 percent). In a more recent study of depression among 1,024 incarcerated youths aged 11 to 18 years, Domalanta and colleagues (6) used self-administered questionnaires, including the Beck Depression Inventory, and found that 25 percent had moderate depression and 22 percent had severe depression. Only 20 percent of the youths with depression had been previously given a diagnosis and treated.

The most recent and comprehensive study used the Diagnostic Interview Schedule for Children to interview a stratified sample of 1,829 youths in juvenile detention in Cook County, Illinois, who were aged ten to 18 years (5). The study found the six-month prevalence rate for mood disorders to be 27.6 percent for females and 18.7 percent for males. For major depressive episode, the prevalence rates were 21.6 percent for females and 13 percent for males. For dysthymia, the rates were 15.8 percent for females and 12.2 percent in males. For manic episodes, the rates were 1.8 percent for females and 2.2 percent for males.

Importance of recognizing and treating mood disorders

Despite the considerable advances made in our understanding of mood disorders among adolescents, these disorders remain underdiagnosed and undertreated in this population (6,11). An estimated 70 to 80 percent of adolescents with depression do not receive treatment (6,11,12). The consequences of untreated depression and dysthymic disorder should not be underestimated. Depression takes an enormous toll on development during crucial periods of personality formation and organization and often produces impairments in psychosocial functioning and interpersonal relationships as well as declines in school performance. Even after acute

episodes have remitted, reoccurrences are common and interfere with the youths' ability to function competently across a variety of settings (13,14). Depressive episodes among youths are often precursors to bipolar disorder, continued episodes of major depression, and other affective disorders later in life (15–17). About 70 percent of clinically referred children and adolescents were found to have a recurrent major depressive disorder when they were followed up for five or more years. Bipolar disorder can be expected to develop in adolescence or the early 20s among 20 to 30 percent of persons who had depression as children (13). In a study of 28 adolescents who systematically received a diagnosis of unipolar major depression and were followed up seven years later, 69 percent had at least one major depressive episode and 19 percent had new-onset bipolar disorder (17).

The identification and effective treatment of mood disorders is critical because these disorders are a leading cause of suicide among adolescents (18,19), particularly among juvenile offenders. Rates of suicide in juvenile detention facilities were found to be four times as great as those in the general population (20). Rohde and associates (21) studied 555 juvenile offenders and found the rate of suicide attempts to be 19.4 percent, compared with only 6 percent in a control group of nonoffenders. Untreated major depressive disorder and bipolar disorder are well-known risk factors for suicide (19), especially in combination with other risk factors, such as a substance use disorder or a disruptive behavior disorder (18). Studies indicate that 75 to 100 percent of adolescents who attempt or complete suicide have psychiatric disorders, most notably mood disorders but also substance use disorders, anxiety disorders, and disruptive behavior disorders—oppositional defiant disorder, conduct disorder, and attention-deficit hyperactivity disorder (ADHD)—the same disorders common among juvenile offenders (14,16,21,22). Although completed suicides are more common among boys, attempted suicides are twice as common among girls (23).

Mental health screening instruments are being used more frequently in juvenile justice settings, especially in facilities that lack sufficient clinical staff to assess juveniles more comprehensively at the outset of their incarcerations and periodically thereafter (24). The Massachusetts Youth Screening Instrument–Second Version (MAYSI-2) is a 52-item questionnaire designed specifically as an easily administered triage instrument to assess psychological distress among juvenile offenders (25). MAYSI-2 scales measure alcohol and drug use, anger and irritability, depression and anxiety, somatic complaints, suicidal ideation, thought disturbance, and traumatic experiences. The MAYSI-2 has been shown to have good internal consistency and test-retest reliability as well as good convergent validity with the Millon Clinical Inventory and the Youth Self-Report (25).

The Brief Symptom Inventory (BSI) is another widely used screening instrument (26). Although the validity and reliability of the BSI have been established for the general population of adolescents, the instrument has not been studied in the juvenile justice population and does not assess some of the most important triage concerns in this population, such as suicide risk and alcohol and substance abuse.

Relationship between mood disorders and delinquency

Mood disorders may contribute to or exacerbate delinquent and disruptive behaviors in a variety of ways. For instance, mania may lead to risk-taking and sensation-seeking behaviors, and the hopelessness and lack of future orientation that can accompany depression may cause a juvenile who engages in these behaviors to discount future consequences. Juveniles, particularly boys, are more apt to act out their depression through disruptive and aggressive behaviors (27–29). Symptoms of conduct disorder emerge at an earlier age among boys who are depressed (30). In fact, depression frequently co-occurs with conduct disorder (4), and many aggressive youths have depressive symptoms (31). Adolescents are at greater risk of developing mood disorders if

they have poor relationships with their parents, have poor peer relations, or have been victims of abuse, all of which increase the risk of contact with the juvenile justice system (3).

Depression can impair social functioning and peer relations and distort information processing in ways that can make a juvenile more vulnerable to engaging in delinquent behavior. These youths may be more susceptible to peer pressure and more likely to make hostile attributions in social situations, to which they may respond aggressively (32).

Thus effective treatment of a juvenile's mood disorder may help protect against or diminish delinquent behavior. But it would be misguided to assume that treatment of a juvenile's mood disorder is tantamount to treating the conduct disorder or delinquent behavior; research suggests that this is not necessarily the case (32).

Mood disorders prevalent in the juvenile offender population

Depression. Major depression is more prevalent among juvenile offenders, particularly girls, than in the general adolescent population. Birmaher and associates (33) noted that prevalence studies of adolescents in the general population estimated the prevalence of major depressive disorder to be .4 to 8.3 percent. Kashani and colleagues (34) studied 100 adolescents and found the prevalence of major depressive disorder to be 18 percent among incarcerated adolescents, compared with only 4 percent among nondelinquent adolescents who were randomly selected from a family practice clinic. They also found that girls were three times as likely as boys to meet criteria for major depression.

Wasserman and colleagues (35) used the Voice Diagnostic Interview Schedule for Children-IV (DISC-IV)—a computerized diagnostic instrument that presents questions to youths with use of headphones—with 292 recently incarcerated males. They found that more than 3 percent reported a suicide attempt in the past month, and 11.7 percent met criteria for a mood disorder within the past month. An earlier version of the DISC was used to assess 118 sub-

stance abusing juvenile offenders (80 percent male) on probation and found that 9 percent met criteria for major depression, 3 percent for dysthymia, and 4 percent for mania (36).

Garland and colleagues (37) studied 478 juvenile offenders (85 percent male), including those incarcerated and in community placements. Using the DISC, they found a prevalence rate of 7 percent for mood disorders (4.7 percent for major depression, .2 percent for dysthymia, 1.5 percent for mania, and .7 percent for hypomania) in the past year.

Depression in adolescence is often characterized by depressed mood, changes in sleep and appetite, impaired cognitive processes, irritability and aggression, and suicidal ideation (38). Thought processes may be characterized by hopelessness, fatalistic or catastrophic thinking, and negative automatic thoughts (38–41). Psychotic symptoms may also occur in rare instances.

Confinement and detention may trigger symptoms of depression, but symptoms frequently predate the arrest (30). Incarceration may precipitate major depression among vulnerable individuals (34). Such situational depressions are no less serious than endogenous depressions and no less responsive to therapeutic interventions. Given the frequent co-occurrence of depression with substance use disorder, conduct disorder, and ADHD, with its attendant impulsivity and low frustration tolerance (42), adolescents who become depressed or whose depressions intensify when they are placed in correctional settings may be more prone to impulsive suicide attempts than depressed adolescents in community settings, thus making the identification and treatment of mood disorders in the incarcerated juvenile population all the more critical. Depression is the single most common mental disorder associated with suicide among adolescents, and the co-occurrence of depression with other disorders increases the risk (18,19). Adolescents with disruptive behavior disorders are at greater risk of suicide when substance abuse and a history of previous suicide attempts are present (18,19).

With small modifications of the

DSM criteria—that is, failure to gain weight rather than weight loss and irritable mood rather than depressive mood—evidence exists that these criteria can be used to diagnose major depressive disorder among adolescents (43). In addition, juveniles' self-ratings of depression correlate well with clinicians' diagnoses (43). It can be easy for staff members of the juvenile justice system to overlook or minimize significant depression among juvenile offenders, particularly because depression in adolescence is often manifested through hostility, agitation, aggression, and disruptive behaviors (43).

In a restrictive and unfamiliar environment where adolescents are removed from their families, it may be perceived as normal for a juvenile to be depressed. Social withdrawal may be seen as a choice to avoid certain peers or as a personality trait. A poor appetite and a decreased food intake may be erroneously attributed to unpalatable or unfamiliar foods and may not be accompanied by weight loss because it is not always possible to exercise and perform physical activity in such settings. Sleep disturbances may be attributed to boredom or adaptation to a noisy environment. Loss of energy can easily be attributed to boredom, defiance, or laziness. Even suicidal behavior may be interpreted as a manipulative attempt to avoid consequences and unpleasant situations. It may seem logical to expect juvenile offenders to be aggressive and to initiate aggression in an effort to impress peers. Some adolescents in juvenile justice settings have a history of chronic aggression although they do not have a mood disorder. However, for juveniles who exhibit a new onset or substantial escalation of aggression, a mood disorder should always be considered.

Dysthymic disorder. Dysthymic disorder is a more chronic depressive disorder than major depression. Although symptoms of dysthymic disorder are less intense than those of major depression, they are more persistent, producing as much, if not more, psychosocial impairment (44). To meet criteria for dysthymic disorder an adolescent must have depressed or irritable mood most days for one year

in addition to two or more of the following symptoms: sleep or appetite changes, poor concentration or difficulty making decisions, poor self-esteem, feelings of hopelessness, and low energy or fatigue (1).

About 70 percent of adolescents with dysthymic disorder also have an intermittent, superimposed major depressive disorder (32), a condition sometimes known as double depression. The first episode of major depression often follows two to three years after the onset of dysthymic disorder. Adolescents with double depression may exhibit agitation or aggression.

Bipolar disorder. Bipolar disorder also appears to be more common in the juvenile offender population than in the general adolescent population. Bipolar disorder is a significant risk factor for suicide, particularly among boys or when co-occurring with a substance use disorder (3). Given what we know about the natural course of the disorder, it can be expected that some adolescents who are classified as having major depression will be given a diagnosis of bipolar disorder in adulthood.

Geller and colleagues (45) studied 79 children with major depressive disorder and found that 32 percent later developed bipolar disorder; 80 percent were 12 years or younger at the time of onset. Bipolar disorder appears to affect both sexes equally. Youths with juvenile-onset bipolar disorder often experience the most serious form of the illness and show marked psychotic features and a poor response to pharmacologic treatment (3). Eighty-six persons with intake-episode prepubertal and early adolescent mania were followed over four years (46). After recovery from mania, 75 percent experienced relapse. Bipolar disorder is a serious and chronic disorder with significant morbidity (46). In an epidemiologic study of a community sample of 1,700 adolescents, Lewinsohn and associates (47) found high rates of comorbid disruptive behavior disorders and bipolar disorder. They found the prevalence of juvenile-onset bipolar disorder to be about 1 percent in the general population of youths. However, Lewinsohn and colleagues also iden-

tified an additional 5.7 percent who reported experiencing at least one episode of distinctly abnormal and persistent elevated or irritable mood but did not meet criteria for bipolar disorder, although they had significant impairment in their functioning. A more precise prevalence rate of bipolar disorder among juvenile offenders is unknown, partially because of the lack of easily administered, valid, reliable instruments for diagnosing bipolar disorder in this group.

Bipolar disorder can be extremely difficult to diagnose, even for experienced clinicians who regularly treat serious mental illness among youths. Adolescents with bipolar disorder often do not present with classic textbook symptoms of mania alternating with clear-cut episodes of depression and normal mood. Instead, mixed episodes—in which symptoms of depression and mania occur simultaneously—and rapid cycling may be more common among adolescents (46–50). Euphoria is seldom seen among juveniles (48–51). Adolescents with mania may have a complicated diagnostic picture, sometimes presenting with psychotic symptoms such as hallucinations and paranoid delusions, extremely labile moods with depressive and manic features, and severe abrupt and deteriorations in behavior (48,52). Irritability, aggression, and impulsivity are major features of bipolar disorder among adolescents, the same symptoms that may lead to behavior that results in contact with the legal system. As a result, bipolar disorder may be misdiagnosed as a disruptive behavior or an anxiety disorder (52). It is not unusual, particularly in juvenile populations, for manic episodes to first occur years after the initial major depressive episode (47,52). Thus symptoms should be assessed and evaluated over time, with age-appropriate assessment instruments and information from collateral informants, to ensure accurate diagnosis.

Bipolar disorder may be difficult to distinguish from other medical and psychiatric disorders, including thyroid and other endocrine disorders, neurologic disorders, substance use disorders, schizophrenia, ADHD, agitated depression, conduct disorder,

and personality disorders. A thorough psychiatric evaluation is required, including a physical examination, pertinent laboratory work, and further testing.

There is increasing evidence that bipolar disorder, mania, and ADHD may coexist, further complicating accurate diagnosis. Biederman and colleagues (53) found a 23 percent prevalence rate of bipolar disorder in their sample of 140 pediatrically and psychiatrically referred youths with ADHD, a higher rate than in the general youth population. The co-occurrence of bipolar disorder and ADHD appears to be a harbinger of a clinical picture with more severe morbidity, and perhaps mortality. Brent and colleagues (18,19) found that adolescents who completed suicide had higher rates of bipolar disorder and a higher rate of comorbid ADHD and bipolar disorder than adolescents who attempted suicide.

It is not uncommon for bipolar disorder to be diagnosed with other concurrent psychiatric disorders, such as conduct disorder and ADHD (47,48,53–55), and several studies have documented an overlap between mania and conduct disorder among children (56). These findings suggest that ADHD and mania may be variants of a unitary underlying construct (57–59). These children have symptoms comparable to the symptoms of each syndrome when diagnosed separately, although some symptoms are more extreme (59). Treatment of conduct disorders with imipramine, usually used for the treatment of mood disorder, has been found to improve the behavior and mood of some children with conduct disorder (60). These studies suggest a three-way association of a core syndrome that is variably expressed as ADHD, conduct disorder, bipolar disorder, or some combination thereof. This syndrome is characterized by affective dysregulation, aggression, inattention, hyperactivity, and impulsivity (58,59).

Treatment

Psychotherapies. A combination of psychotherapeutic modalities can be used effectively in the treatment of depressed youths, particularly cogni-

tive-behavioral therapy and interpersonal therapy (32). Clinical experience and a small number of randomized treatment studies indicate that psychotherapeutic interventions can be very useful for the acute and chronic treatment of mild to moderate depression among juveniles (32). However, it is crucial that the therapy be tailored to the juvenile's individual needs, rather than attempting to fit the youth into a therapist's theoretical orientation.

A recent study of 93 nonincarcerated adolescents with comorbid major depression and conduct disorder is the first randomized controlled trial of a psychosocial intervention, cognitive behavioral therapy (61). Recovery rates for the cognitive behavioral treatment group were 39 percent, compared with 19 percent for the life-skills tutoring control group. However, group differences in recovery rates of major depressive disorder at six- and 12-month follow-up were insignificant.

Cognitive-behavioral therapy is one of the most studied psychotherapy treatments. The emphasis of this type of therapy is on correcting negative distortions that the individual has about himself or herself, interpersonal relationships, the world, and the future, which contribute to and maintain the depression. Studies show that although cognitive-behavioral therapy is effective in the treatment of adolescent depression (62–64), relapse is high, indicating the need for continuation treatment (32,61).

Interpersonal therapy focuses on specific problem areas, particularly interpersonal difficulties and role transitions, that contribute to depression (32). The goal is to address the context, style, and effectiveness of the adolescent's interpersonal relationships and how they relate to distress, providing the adolescent with new ways of handling interpersonal relationships (65). Conflicts with parental and other authority figures, peer pressure, and the disruption or destruction of a close relationship often contribute to depression and suicide among adolescents. Mufson and colleagues (65) developed an interpersonal therapy program specifically for adolescents.

Controlled studies are necessary and ongoing, but this therapy appears to be effective in the treatment of adolescent depression (32,66–68).

Psychodynamic therapy has frequently been used in the treatment of depressed youths (32,69). However, many juvenile offenders who have a mood disorder also meet criteria for a disruptive behavior disorder, for which psychodynamic therapies are contraindicated. Successful intervention is most likely in disruptive behavioral disorders when a variety of risk domains (school failure, antisocial peers, and family dysfunction) as well as comorbidities (substance abuse, ADHD, and mood disorders) are specifically targeted for intervention (70).

Family based treatments have been shown to be among the most effective treatments for conduct disorder—for which up to 80 percent of juvenile offenders meet criteria—and have been successfully integrated into evidence-based treatments for juvenile offenders (71). Brent and colleagues (63,64) found that among adolescents, family therapy was more effective in the continuation phase of treatment of major depression than in the acute phase; in the acute phase, family treatment was less effective than cognitive-behavioral therapy. A recent randomized clinical trial for adolescent depression found that systemic-behavioral family therapy had a more positive effect on family conflict and parent-child relational problems than cognitive-behavioral therapy or nondirective supportive therapy (72).

Attachment-based family therapy also seems to be a promising treatment for adolescent depression (73). The underlying assumption of this therapy is that poor attachment, harsh criticism, and high conflict combined with low parental affective attunement inhibits children from developing the internal and interpersonal skills necessary for buffering against the stressors that contribute to the development and maintenance of depression. Among depressed adolescents who were randomly assigned to a group that was treated with attachment-based family therapy, 81 percent no longer met criteria for major depressive disorder after treat-

ment compared with 47 percent of adolescents in the control group who were on a waiting list (73). However, the study had limitations, such as a small sample (32 adolescents who were randomly assigned to 12 weeks of attachment-based family therapy or six weeks on the waiting list) and the fact that the control group was on the waiting list only half as long as the group in the treatment condition.

Incorporating appropriate psychotherapies into multisystemic therapy can be a very effective community-based treatment for juveniles who are still living in their communities or as a part of aftercare and making a transition from detention or correctional facilities (74,75). Well-designed research studies have shown multisystemic therapy to be effective in the treatment of juvenile offenders and emotionally disturbed adolescents (72–76). This therapy is an intensive family-oriented, multimodal treatment intervention that targets the youth's family, peers, school, and community networks for intervention. Follow-up care based on multisystemic therapy that assertively seeks out the youth and his family can be a cost-effective method that overcomes the stressors that can undermine treatment maintenance in the community. However, multisystemic therapy effects were found to dissipate over 12 to 16 months (77).

There is a lack of systematic research on the efficacy of psychotherapeutic approaches for youths with bipolar disorder. However, clinical consensus suggests that although appropriate pharmacologic treatment is crucial, individual and family therapies can help individuals and their families deal with the interpersonal, intrapsychic, and social difficulties that arise over the chronic course of the disorder. Psychotherapeutic interventions may be particularly useful during stable periods, when the juvenile is not in crisis and is able to mobilize his or her emotional, intellectual, and social and familial resources more effectively.

Pharmacologic treatment. Pharmacologic treatment among juvenile offenders presents many challenges. Medications are not without potential side effects, some of them quite seri-

ous. The identification and monitoring of specific target symptoms for pharmacologic intervention—for example, aggression, social withdrawal, and sleep and appetite disturbance—are often difficult to accomplish in a correctional facility. However, identification and monitoring are crucial for ensuring that juveniles do not continue to take medications unnecessarily. Medications that require regular medical monitoring, including blood tests and electrocardiograms, may present obstacles for some detention or correctional facilities.

Despite the fact that psychotropic medications are being prescribed more frequently for children (78), research on their effectiveness and safety in this population lags behind. The long-term effects of these medications on youths, including potential effects on brain development, are unknown. Fortunately, the 1997 Food and Drug Administration Modernization Act requires pharmaceutical companies to provide pediatric studies on medications that are already approved for adults but also used for children, as well as pediatric studies on medications that are being developed for adults but for which pediatric use is anticipated (77).

Before the introduction of selective serotonin reuptake inhibitors (SSRIs), tricyclic antidepressants were the most extensively studied antidepressants and the mainstay of pharmacologic treatment for major depression among adolescents. However, controlled, randomized trials did not demonstrate the efficacy of tricyclics among youths (79,80), despite robust evidence of the efficacy of these agents among adults. This difference in efficacy might be related to the fact that the norepinephrine neurotransmitter system is not yet fully developed among adolescents (81). However, there seems to be a clinical consensus that tricyclics may be effective among some adolescents who are unresponsive to newer antidepressants. Thus tricyclics continue to be widely prescribed to youths despite the lack of empirical evidence of their efficacy in this population.

Tricyclics require careful monitoring, including blood tests and electrocardiograms, because of their poten-

tial for increasing the heart rate and slowing the heart's electrical conduction system. If that level of monitoring cannot be provided in a detention facility, serious consideration should be given to using a different medication. Tricyclics are also potentially lethal in overdose, by far the greatest risk of using these agents, which should always be a consideration when treating suicidal adolescents.

The landmark study of Emslie and colleagues (82) marked a turning point in the pharmacologic treatment of clinical depression in the pediatric population. That study surveyed 96 youths and demonstrated that the short-term efficacy of fluoxetine over placebo (56 percent of youths in the fluoxetine group were rated as "much" or "very much" improved, compared with only 33 percent in the placebo group). However, complete symptom remission was rare and seen among only a third of responders. More recently, in a 32-week relapse prevention phase of a 51-week multicenter double-blind, placebo-controlled study of 40 depressed youths, relapse occurred among 34 percent of patients who continued to receive fluoxetine, compared with 34 percent of those who switched to a placebo. The incidents of adverse effects were similar (83). Although antidepressants other than fluoxetine are not approved by the Food and Drug Administration (FDA) for the treatment of depression among youths, other antidepressants—such as other SSRIs, bupropion, and venlafaxine—have become more widely used in this age group and are promising agents, although further research in the populations of children and adolescents is necessary.

After an advisory from the United Kingdom Department of Health, the FDA issued an advisory on June 19, 2003, recommending that paroxetine not be used for the treatment of pediatric major depressive disorder, so the FDA could review reports of an increased risk of suicidal ideation and behavior related to paroxetine use among youths under the age of 18 years (84). A review of multiple studies indicated that 3.2 percent of youths who were taking paroxetine had suicidal ideation and behavior,

compared with 1.5 percent who were taking a placebo (84). Additionally, data from new clinical trials with youths did not demonstrate that paroxetine was more effective than placebo for treating major depressive disorder.

On October 15, 2004, the FDA mandated the use of a "black box" warning of the risk of suicidal thoughts and behavior among children and adolescents who were treated with antidepressants. However, the association remains far from clear. In 24 studies of more than 4,000 children and adolescents that involved nine antidepressants, there were no completed suicides and there was wide variability in the types of events defined as suicidal (85). An association between the declining adolescent suicide rate and treatment with antidepressants has also been postulated (86).

Bupropion has been used successfully off-label in the pediatric population as an alternative treatment for ADHD (87). Although its effect is less pronounced than those of standard medications, bupropion may be a useful treatment for juveniles who have a substance use problem that co-occurs with depression and ADHD. In addition, some reports indicate that among adults with bipolar disorder, bupropion may be associated with a lower switch rate into mania compared with tricyclics and SSRIs, making it a more attractive medication in the treatment of bipolar depression among adults (88) and possibly also among juveniles who are at high risk of the development of bipolar disorder.

The addition of an antipsychotic medication may be necessary to treat mood disorders when psychotic features are present, such as hallucinations, delusions, and extreme ruminative guilt. Second-generation antipsychotics are better tolerated and appear to have a much lower propensity for causing tardive dyskinesia than first-generation antipsychotics, but more data will be required to confirm this finding, especially among children.

When determining the appropriate medication for the treatment of bipolar disorder and mania, it is important

to consider the pattern of the illness, whether there is mixed or rapid cycling, gender, family history, and the individual side-effect profile. Because the symptoms of depressive and bipolar-depressive episodes are similar, it is often difficult to determine whether an adolescent who is experiencing his or her first major depressive episode will ultimately go on to experience manic, hypomanic, or mixed symptoms and thus require a mood stabilizer.

Although psychopharmacological treatment appears to be necessary in the effective treatment of bipolar disorder, there is insufficient research on the effects of these medications on adolescents (89–91). The somewhat atypical presentation of juvenile-onset bipolar disorder—for example, exacerbation of disruptive behavior, low frustration tolerance, chronic rather than episodic irritability, and prolonged temper tantrums—has probably contributed to the limited research in this area (91). In 1998 Geller and colleagues (92) reported results of the first double-blind, placebo-controlled study of lithium among 25 adolescents who had bipolar I or bipolar II disorder or major depressive disorder with predictors of future bipolarity. They found that lithium was significantly better than a placebo on measurements of the Children's Global Assessment Scale (60 percent improvement for adolescents in the lithium group compared with 9.1 percent for those in the placebo group), but no differences were found in substance dependence or on the mood scale of the Schedule for Affective Disorders and Schizophrenia for School-Age Children.

Lithium and anticonvulsants, particularly valproate or divalproex sodium and carbamazepine, are the mainstays of treatment, but they are not approved by the FDA for treating bipolar disorder among persons younger than 18 years. These medications may also be useful in the treatment of impulsive, aggressive, affectively labile youths who do not meet criteria for bipolar disorder. Newer anticonvulsants, specifically lamotrigine and topiramate, may hold some promise in this difficult-to-treat population, but no placebo-controlled,

randomized trials have been done to demonstrate their efficacy among youths.

Several studies have shown that lithium is effective in treating some youths (48,91,92). In a controlled study of 25 adolescents with bipolar disorder and substance dependence (88), 46 percent of the adolescents were responsive to lithium, compared with 8.3 percent who were responsive to placebo. Among adults, lithium responsiveness is predicted by mania, a previous positive response to lithium, and infrequent episodes of mania or depression (93). In contrast, a poor response to lithium is predicted by early, especially prepubertal, or severe onset of illness, delusions, and a sequence of depression, mania, and euthymia (48,91–93). Rapid cycling and depressive symptoms during a manic episode and mixed features also appear to predict a poor response to lithium treatment. Lithium is associated with a variety of potential side effects and complications, including electrolyte imbalance, polyuria, polydipsia, sedation, low energy, memory complaints, acne, weight gain, hypothyroidism, and renal effects. Juveniles with these symptoms may benefit from treatment with divalproex sodium or a combination of mood stabilizers. The possible association between valproic acid and polycystic ovary disease that was postulated several years ago remains controversial and unproven. However, acute pancreatitis and hepatitis are rare but potentially lethal complications of valproic acid use. Both lithium and valproic acid have been associated with birth defects.

Antipsychotics are also frequently used in the short-term treatment of mania, which frequently includes psychotic symptoms (94). Recent case studies and small open trials of the second-generation antipsychotics risperidone, olanzapine, and quetiapine have produced positive results among some adolescents (95). Again, randomized, placebo-controlled studies with these agents are needed before definitive recommendations can be made about efficacy, dosage, and duration of treatment. Weight gain associated with the antipsychotics may be problematic, and these agents have also been asso-

ciated with hyperglycemia, diabetes, and hyperlipidemia.

Systems of care

Although officials in the juvenile justice system regard the care of youths with serious mental illness as one of their greatest problems (96), mood disorders are highly amenable to treatment. Many juveniles with mood disorders will experience recurrent episodes over the course of their lives; however, treatment of acute episodes and maintenance interventions can have a dramatic effect on the well-being of affected youths.

Unfortunately, the treatment of youths with mood disorders in the juvenile justice system is complicated by many factors (96,97). Successful intervention with juvenile offenders who are mentally ill requires a comprehensive array of mental health and other services that are tailored to the needs of individual youths and their families. Such services include psychiatric evaluation, treatment (not just “supportive counseling”), adequate monitoring of the effectiveness of treatment, aggressive case management (which is typically the most crucial element in a well-integrated system of care), substance abuse treatment, crisis intervention services, educational interventions and outreach, behavioral aides, mentors, specialized vocational services, after-school programming, and social competency services. Creative evidence-based treatments that integrate a variety of effective interventions—such as cognitive-behavioral therapies and the mobilization of family, community, and educational support systems—show increasing promise in this population (98).

Barriers to treatment

Targeting the multiple risk factors that often contribute to a juvenile's mood disorder requires a system of care that provides a continuum of integrated and coordinated services across the child's home, family, and school systems (74,98,99). Barriers to integrating systems of care that provide a truly comprehensive and individualized treatment plan are well recognized and include the lack of


specific programming in communities and funding limitations. A get-tough attitude toward juvenile crime has shifted the mission of the juvenile justice system away from rehabilitation and toward punishment and retribution (100). This philosophy, combined with largely successful efforts in many states to abolish state hospital care for youths, has created a population of youths with serious mental illness for whom adequate services do not exist or cannot be obtained.

Many juvenile offenders with serious mental disorders have not been responsive to standard outpatient interventions that are designed for youths with less serious mental and behavioral disorders. Juvenile offenders with serious mental illness that is inadequately treated may continue to engage in suicidal or self-injurious behavior and in illegal behaviors, such as aggression, property destruction, or drug activity, which is often viewed as evidence of recidivism. The juvenile justice system is increasingly being used as a dumping ground for youths with mental illness, many of whom are inappropriately placed in a juvenile correctional facility that is not equipped to care for their illness (96,99).


Although juveniles with mental illness need limit setting and consequences for illegal behavior, correctional facilities often are not in a position to adequately treat mental health problems. The more closely interrelated the psychiatric disorder and the behavioral disturbance that led to the involvement with the legal system, the less useful incarceration will be as a deterrent to future misbehavior. If resources for adequate mental health assessments and interventions are not available in the correctional facility, not only is the child unlikely to profit from any lesson to be learned, but the potential for dire consequences can be significant. For example, a seriously depressed adolescent with anxiety who stops attending school, begins using marijuana, and begins fighting with peers over minor provocations is at risk of incurring truancy charges, drug charges, and assault and battery charges. The juvenile's stay in a detention facility is likely to intensify his or her feelings of hopelessness and

despair, both of which are linked to suicidality.

Juvenile correctional facilities may lack the features that many adult jails have incorporated to monitor potentially suicidal individuals at all times, such as closed-circuit television monitors or observation cells with Plexiglas walls. There is also a lack of training, staffing, and funding to develop and deliver treatment and to develop programming for youths with mental health needs. Even long-term juvenile correctional centers may not have access to child psychiatrists for



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consultation and treatment. Child psychiatrists who consult to juvenile justice facilities are typically available part-time, often for only a few hours a week or month, limiting the quantity and quality of treatment that can be provided on-site to juvenile offenders with acute mental illness. Incarcerated juveniles need acute and ongoing psychiatric services. And effective and aggressive case management is essential in ensuring continuation of appropriate and truly individualized treatment after the youth is discharged into the community.

Services also need to go beyond pharmacologic treatments, which are promising, although they are typically inadequate as the sole treatment modality for adolescents who have a mood disorder.

Youths with serious mental illness who show significantly regressed or repeatedly serious suicidal behavior in correctional environments are often transferred to hospital settings. A ping-pong effect then ensues, with the juvenile being transferred back and forth between facilities because neither facility is able to meet his or her needs adequately. Few pediatric psychiatric facilities, including state hospitals, have security that is equal to the correctional environment from which the juvenile was transferred. Hospitals are also limited by myriad regulatory codes about the use of restrictive interventions. Frequently hospitals are unable to manage youths who are seriously disruptive or who have aggressive conduct disorders. Although these youths have serious mental illness, they also require firm limits and consequences for dangerously assaultive behavior. An adolescent may be transferred from a correctional environment, where confinement to a room without any stimulation for 23 out of 24 hours as a consequence for misbehavior is commonplace, to a hospital environment, where even a two-hour room restriction for seriously assaultive behavior is not allowed.

Factors to consider when deciding whether a child should be hospitalized include the availability of a safe environment (for example, whether a detention facility can provide a staff member to observe a juvenile who is depressed and suicidal), the severity of the illness (psychosis or severe neurovegetative symptoms typically indicate the need for hospitalization), the availability of adequate crisis intervention and psychiatric and psychological consultation, and the severity of additional psychiatric or medical conditions. Treatment should be provided in the least restrictive setting that is both safe and effective.

The development of special psychiatric units within juvenile correctional facilities for offenders with serious mental illness that have appropriate staffing and security could circum-

vent some of these problems. In addition, collaboration between the multiple agencies and facilities that serve these youths is crucial. Services need to be coordinated and tailored to the needs of these juveniles as well as to the agency charged with their guardianship. These juveniles often have a variety of problems and psychiatric disorders, necessitating the development of a multimodal treatment plan as well as flexibility and creativity in implementing the plan.

Finally, there is the danger that juvenile offenders with mood disorders will be abused or neglected in juvenile justice settings, because mood disorder symptoms such as irritability, hostility, and aggression are easily mistaken for delinquent or defiant behavior. Staff may respond by restraining or isolating these youths, rather than by ensuring that they receive mental health treatment.

Conclusions

Juvenile detainees have a constitutional right to needed mental health treatment (97,99). Mood disorders are relatively common among juvenile offenders and are highly treatable. Untreated, mood disorders carry the risk of significant morbidity and even mortality. Screening instruments for psychiatric symptoms, including depression and suicidal ideation, should be administered as part of the initial evaluation process and then periodically thereafter, especially when juveniles make a transition from one correctional facility to another. When screening instruments indicate the possible presence of a mood disturbance, a more thorough clinical assessment is warranted to determine the need for treatment, follow-up, and risk assessment. More comprehensive mental health services, including access to psychiatric assessment and treatment, are required to ensure that juvenile offenders with mental illness are identified and cared for appropriately. Doing so not only will alleviate painful symptoms but may also contribute significantly to improvements in psychosocial functioning, interpersonal relations, and school performance and to decreases in delinquent, disruptive, and suicidal behaviors. ♦

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