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Early Identification of Bipolar Disorder

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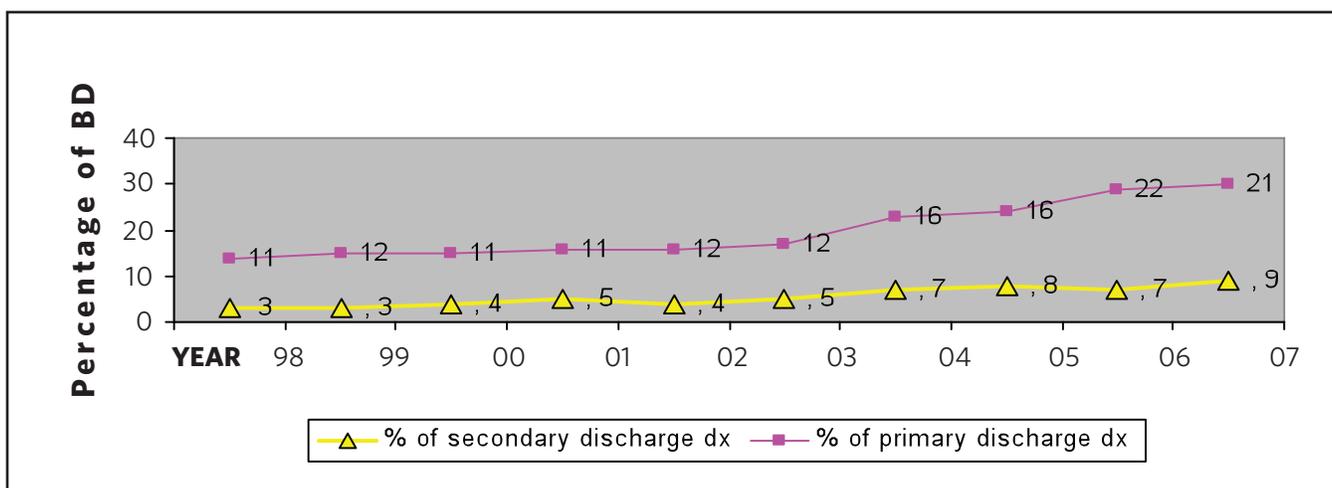
It is now widely accepted that bipolar disorder (BD) occurs in youth worldwide and the controversy has shifted now from a debate about whether it can be diagnosed in youth to how it is diagnosed and distinguished from other more commonly diagnosed childhood psychiatric disorders.¹

Pediatric BD is a familial illness and increasingly recognized as a significant public health problem that is associated with significant morbidity and mortality, including impaired family and peer relationships, poor academic performance, mixed episodes, psychosis, substance use disorders, medical problems, hospitalization, and suicide attempts and completions.¹⁻⁸ Despite these serious consequences, and that early onset BD is associated with worse prognosis, it takes 10 years on average to identify and begin treatment of this illness.⁹ Thus, early identification of BD in youth is critical. The goal of this review is to discuss the significance of early diagnosis, epidemiology, clinical picture, and assessment of BD in youth, which includes both children and adolescents.

Significance of Early Diagnosis

The accurate assessment of pediatric BD is, unfortunately, a high stakes decision. There are two kinds of diagnostic error, and both are costly. False positives are costly, labeling the youth as having BD when in fact she/he does not, because the first line treatment for BD relies on pharmacotherapy, and the agents used for the treatment of BD may not be well-tolerated and may cause adverse effects. On the other hand, false negatives — failing to diagnose a BD when the youth, in fact,

FIGURE 1: **Primary and Secondary Discharge Diagnoses of Pediatric Bipolar Disorder (BD) in Western Pennsylvania Hospitals between 1998 and 2007.**



has BD — are extremely costly. If ignored or misdiagnosed, the course of the BD is likely to be recurrent with progressively more severe and refractory episodes of impairment.¹⁰ Youth with undiagnosed BD have higher behavioral health costs than those with diagnosed BD.¹¹ Moreover, missing the diagnosis of BD in youth because of overlapping symptoms or atypical presentation may have devastating treatment consequences. For example, the depressed phase of BD is reported to be the longest and most recurrent phase of the illness in youth,¹² but antidepressant monotherapy is contraindicated in BD. Therefore, early recognition of BD in children and adolescents is of crucial importance.

Epidemiology

Pediatric BD is noted in 0.6% to 15% in clinical populations, depending on the instrument used to ascertain diagnoses, the referral source, and the clinic's specialization.⁷ Recent studies in clinical settings have shown dramatic increases in recognition and rates of pediatric BD over the past decade⁷ with a 40-fold increase in office-based visits and a five-fold increase in the primary rates of hospital discharges.¹³ Consistent with the national trend, our analysis showed

that there was a significant increase in BD diagnosis rates since 1998 and about 30% of all discharged youth in western Pennsylvania received BD diagnosis in 2007 (n=5840, 21% primary and 9% secondary BD diagnosis) (Figure 1).

Although some authors question the possibility of over-diagnosis of pediatric BD in the United States, available data suggest that the relative increase of pediatric BD diagnoses in clinical settings is due to the long neglect of the presence of this condition in childhood and adolescence. In parallel, a recent meta-analysis of epidemiology of BD in youth around the world (16,222 youth between the ages of 7 and 21 during a period from 1985 to 2007) suggested the following:¹⁴

- Prevalence of BD in youth (1.8%) is similar to the current prevalence estimates of BD in adults.
- Prevalence of BD in youth is not different in the U.S. relative to other countries (more studies in the U.S. included sub-threshold presentations).
- Prevalence of BD in youth in the community is not increasing over time, even as it is being diagnosed more commonly in clinical settings.¹⁴

Clinical Picture

Age of Onset and Gender Differences: According to the studies, BD can have onset in childhood, but the prevalence is much higher in adolescence.¹⁴ Retrospective studies in adults with BD report that 10% to 20% had onset before 10 years of age and up to 60% had onset before 20.^{15,16} BD in adults is frequently preceded by disruptive behavior, anxiety, and depressive disorders in youth^{17,18} and early onset BD is associated with a severe course of illness and poor outcome.¹⁹

Similar to adults, studies in clinical populations suggest that BD spectrum disorders in youth are equally common in males and females,²⁰ but the rates of BD-II and adolescent-onset BD are more prevalent in females, whereas BD-Not Otherwise Specified (BD-NOS) and childhood-onset BD are more prevalent in males.²⁰

Early age of onset, long duration, low socioeconomic status (SES), mixed or rapid cycling episodes, psychosis, subsyndromal symptoms, comorbid disorders, exposure to negative life events, high expressed-emotion, and family psychopathology are associated with worse course and outcome.^{1,4-6.}

Course of the Illness: Studies report that 70% to 100% of youth with BD will eventually recover (no significant symptoms for two months) from their episode. However, up to 80% will experience recurrences after recovery despite treatment.^{1,4} In addition, BD youth will be symptomatic during follow-ups, particularly with subsyndromal symptoms of depression, and will experience numerous changes in mood polarity. During adolescence, there is a drastic increment in rates of suicidal ideations/attempts and substance abuse.⁶

Etiology and Risk Factors: There is no single cause of BD in youth, and the etiology is multifactorial, with complex interaction of biological vulnerabilities and environmental influences. The prevalence of BD in first-degree relatives of BD adults is increased 8- to 10-fold relative to community samples, making BD one of the most familial psychiatric disorders.²¹

Depressed youth with psychosis, pharmacological-induced mania/hypomania, and family history of BD may be at high risk to develop BD.^{1,2}

The single best predictor of BD in youth is family history with rates up to 20%; however, offspring of BD parents are not only at high risk to develop BD, but also depression, anxiety, attention deficit hyperactivity disorder (ADHD), and behavioral problems.²¹

There are other important biological, social and/or emotional variables that can precipitate BD in youth who are genetically predisposed. For example, studies indicate that neural circuits involved in emotion processing and regulation are different in youth with BD than in their healthy peers. In addition, youth with BD may exhibit several cognitive deficits, such as attentional set-shifting, visuospatial memory, verbal memory, and executive function, and these problems may even persist between mood episodes. Furthermore, youth with BD may have impairment in accurate identification of emotions and may read fear or anger in neutral faces.²²⁻²⁴

Mood Episodes: It is very important to have a common language and use similar terms with professionals, patients, and families to describe, report, and monitor mood changes in youth. For the diagnosis of a mood episode per the Diagnostic and Statistical Manual of Mental Disorders

TABLE 1:

Symptoms of Manic Episode

Three or more of the below symptoms should be present if the mood is elevated/expansive.

Four or more of the below symptoms should be present if the mood is irritable without elevated mood.

1. Inflated self-esteem or grandiosity.
2. Decreased need for sleep: Feels rested after only few hours of sleep; does not include sleeping less at night and then feeling tired and napping during day time.
3. More talkative than usual or pressure to keep talking.
4. Flight of ideas or subjective experience that thoughts are racing.
5. Distractibility: Attention too easily drawn to unimportant or irrelevant external stimuli.
6. Increase in goal-directed activity at work, at school, or sexually, or psychomotor agitation.
7. Excessive involvement in pleasurable activities that have a high potential for painful consequences, such as engaging in unrestrained buying sprees, sexual indiscretions, or foolish business investments.

The symptoms are not present in a mixed episode or due to direct physiological effects of a substance, such as a drug of abuse, a medication, or other treatment, or a general medical condition, such as hyperthyroidism.

Mnemonic: Clinicians can use “**GRAPES(+D)**” to remember the symptoms of mania: **G** (Grandiosity), **R** (Racing thoughts), **A** (Activity level), **P** (Pressured speech), **E** (Elevated mood), **S** (Sleeping less) + **D** (Distractibility).

(DSM)-IV,²⁵ similar to adults, children and adolescents should meet the following criteria:

- **Symptom criteria:** Significant number of symptoms clustering during the same time frame.
- **Duration criteria:** The episode lasts longer than the threshold.
- **Functioning criteria:** A change or impairment in functioning during the mood episode.

For a manic episode, there should be a distinct period of abnormally and persistently elevated, expansive or irritable mood, lasting at least one week (or any duration if hospitalization is necessary). And, during this period, three or more of the manic symptoms in Table 1 have

persisted — four if the mood is irritable without elevated mood — and have been present to a significant degree, with “marked functional impairment or psychotic symptoms.”

For a hypomanic episode, the patient may have similar or more mild symptoms of a manic episode for four days, in contrast to one week in a manic episode, and have a “distinct change” from the baseline functioning, in contrast to marked functional impairment in a manic episode. Patients may also experience changes in their functioning where they like working on more projects, dislike or have difficulty finishing tasks, or take more risks.

For a major depressive episode, at least five of the symptoms noted in Table 2 (*see page 5*) occur nearly every day for at least two weeks, and one of the symptoms must be either depressed (or irritable) mood or loss of interest/pleasure, and cause functional impairment.

For a DSM-IV mixed episode, the criteria are met both for a manic episode and for a major depressive episode, both symptom and functional impairment, nearly every day during at least a one-week period. Youth tend to have more mixed episodes than adults; however, many youth with BD have symptoms of depression interspersed with manic symptoms that usually do not meet a mixed episode criteria.

Some studies document that BD youth have multiple mood cycles per day/week describing rapid mood changes within any given episode;²⁶ however, rapid cycling is not a mood episode, but an identifier in DSM to describe four or more mood episodes per year.

Bipolar Subtypes: According to the definition of DSM-IV,²⁵ there are four subtypes of BD: BD-I, BD-II, Cyclothymia, and BD-NOS.

BD-I requires presence or history of a manic (or mixed) episode with or without major depressive episode (Figure 2).

BD-II is characterized by at least one major depressive episode at least two weeks in duration with marked functional impairment, and at least one hypomanic episode of at least four days (Figure 2).

Cyclothymia is rarely diagnosed in youth and is characterized by numerous hypomanic episodes together with numerous periods of depressive mood — one year's duration in youth versus two years in adults — that do not meet all the criteria for BD or a major depressive episode.

TABLE 2:
Symptoms of Major Depressive Episode

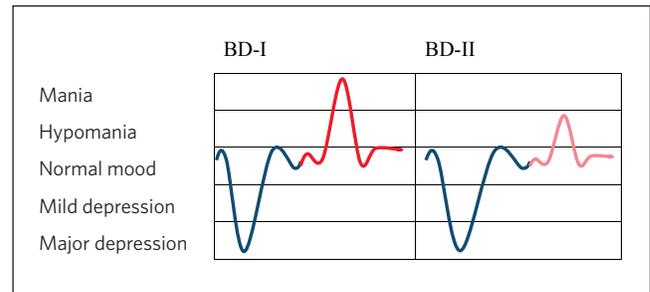
Five or more of the below symptoms should be present and include either the first or the second mood symptom.

1. Depressed or irritable mood.
2. Markedly diminished interest or pleasure in all or almost all activities: Not able to enjoy activities that were previously fun, easily bored, sits around and does not do much.
3. Significant weight loss or gain or decrease or increase in appetite. Also, consider failure to make expected gains.
4. Sleep disturbance: Trouble falling asleep, staying asleep, waking up too early, or sleeping more than usual.
5. Psychomotor retardation or agitation: Appearing to have slowed-down thinking and movements or agitation; new onset or worsening of existing restless activity, pacing, unable to stay still.
6. Fatigue or loss of energy: Frequent complaints of feeling tired or having to push hard to do usual activities.
7. Feelings of worthlessness or excessive guilt: Very self-critical, blaming self for minor transgressions.
8. Difficulty concentrating: New onset or worsening of distractibility inability to focus on challenging tasks, forgetfulness, or indecisiveness.
9. Thoughts of death or suicide, or attempting suicide.

The symptoms are not present in a mixed episode or due to the direct physiological effects of a substance, such as a drug of abuse, a medication, or other treatment, or a general medical condition, such as hypothyroidism.

Mnemonic: Clinicians can use “**SIGECAPS**” to remember the symptoms of major depression: **S** (Sleep, increased or decreased), **I** (Interest reduced/anhedonia), **G** (Guilt/worthlessness), **E** (Energy loss), **C** (Concentration difficulty), **A** (Appetite, increased or decreased), **P** (Psychomotor agitation or retardation), **S** (Suicidality).

FIGURE 2: Mood Episodes and Bipolar Disorder (BD)-I and II



BD-NOS is used when there are features of hypomanic or mixed episodes that do not meet the diagnostic criteria for any of the more specific BD subtypes. It appears that the majority of youth are diagnosed with BD-NOS because they meet the symptom criteria, but do not have the duration to be diagnosed with BD-I or II.⁴

Key Issues in Clinical Presentations

Episodicity: The DSM-IV criteria for manic, mixed, or hypomanic episode require a distinct period of abnormal mood and accompanying symptoms. Despite some controversies that persistent/unremitting presentation of mania is common in pediatric BD, recent studies suggest that BD in youth presents with high rates of remission and relapse.⁶ It is suggested to focus on determining the presence of mood episodes first and then ascertain the extent to which symptoms presented during an identifiable time frame.²⁷ It also is important to take into consideration that change or impairment in functioning accompanies the mood episodes.^{20,27}

Cardinal symptoms and irritability: In contrast to the current DSM definitions, to avoid misdiagnosing, some authors suggest that elevated mood and grandiosity must be considered as cardinal symptoms and be present to diagnose pediatric BD.²⁸ However, grandiosity and elevated mood are not required symptoms for a BD diagnosis, and some youth may meet BD criteria without them when irritability,

Subtypes of BD in youth are not stable and may change over time: In a four-year follow-up study,³ 25% percent of youth with BD-II converted to BD-I. In addition, 45% of those with BD-NOS converted to BD-I or II.

as a main mood symptom, clusters with four or more other manic symptoms to meet the diagnostic criteria.²⁰ However, irritability without elevated mood is rare²⁹ and it needs to be episodic in mania, even if the child has preexisting irritability, for example worsening of irritability during mania when there are other comorbid disorders, such as anxiety disorders or ADHD.²⁷ It is important to consider that irritability is commonly present in several psychiatric disorders with low sensitivity for BD, and some authors suggest that irritability can be considered as analogous to fever or pain, indicating “something is wrong.”³⁰

Subthreshold presentations: The main presentation of pediatric BD is subsyndromal, particularly with depressive and mixed symptomatology.^{6,31} Furthermore, subsyndromal symptoms are usually accompanied by significant psychosocial difficulties and increased risk for suicidality, legal problems, and substance abuse that indicate the need for early recognition and treatment of subsyndromal mood symptoms.^{6,31,32}

The majority of youth with BD experience severe recurrent mood episodes with mania (and depression), and symptoms that are short in duration, as in BD-NOS; however, their functional impairment may be similar to youth with BD-I. Moreover, BD-NOS may developmentally exist on a continuum with BD-I²⁰ and when strictly defined — meeting all symptom criteria, but with recurrent, shorter episodes — about 50% of youth with BD-NOS, particularly those with

family history of mania or hypomania, convert to BP-I or II during four-year follow up.³ Thus, early identification and treatment of BD-NOS is very important, not only to correctly diagnose and treat the mood episodes, but also to prevent a progression to BD-I and II.

Preadolescence and preschool presentations: Childhood-onset BD has a higher familial loading for mood disorders, a different clinical presentation — older age is associated with more severe and more classically typical (adult-like) manic and depression symptoms³³ — and a different pattern of comorbid disorders relative to adolescent-onset BD; specifically more ADHD and oppositional defiant disorder³⁴ and less conduct and substance use disorders.²¹ Clinicians should be more cautious when diagnosing BD in children younger than 6;³⁵ however, recent studies suggest that children as young as 3 to 4 years old can experience manic symptoms,³⁶ including elevated mood and grandiosity.³⁷

Bipolar depression: Depression is usually the first mood episode in pediatric BD; however, BD diagnosis cannot be made in depressed youth without a history of mania/hypomania. Depressive episodes are the most common presentation of BD in youth and adults, but it also is commonly underdiagnosed.³⁸ In addition to the different treatment interventions for bipolar and unipolar depression, bipolar depression is associated with increased risk for psychosocial impairment and suicide than unipolar depression.³⁹ Careful assessment of current and past mania/hypomania is necessary for all youth, especially those who present with depression, and early identification and treatment of bipolar depression is of vital importance.

Comorbidity: Presence of comorbid psychiatric disorders in pediatric BD is a rule rather than an exception. Approximately 17% to 60% of youth with BD have psychosis, 20% to 60% disruptive behavior disorders, 30% to 70% anxiety disorders, and 50% to 80% ADHD.²⁰ Better understanding

TABLE 3:

Variables that Increase the Risk for the Presence of Bipolar Disorder in a Child with Attention Deficit Hyperactivity Disorder (ADHD)

- The ADHD-like symptoms appeared later in life, at age 10 years old or older.
- The symptoms of ADHD-like symptoms appeared abruptly in an otherwise healthy child.
- The ADHD-like symptoms were responding to stimulants and now are not.
- The ADHD-like symptoms come and go and tend to occur with mood changes.
- A child with ADHD begins to have periods of exaggerated elation, grandiosity, depression, no need for sleep, and inappropriate sexual behaviors.
- A child with ADHD has recurrent severe mood swings, temper outbursts, or rages.
- A child with ADHD has hallucinations and/or delusions.
- A child with ADHD has a strong family history of BD in his or her family, particularly if the child is not responding to appropriate ADHD treatments.

Bipolar Disorder versus Attention Deficit Hyperactivity Disorder (ADHD)

(Reprinted from Birmaher B: *New Hope for Children and Adolescents with Bipolar Disorders*, New York: Three Rivers Press, a division of Random House, Inc., 2004, with permission.)

of how comorbid conditions develop and evolve during childhood and adolescence is very important. The presence of these disorders affects the child's response to treatment and prognosis, indicating the need to identify and treat them effectively.

Differential Diagnosis: The variability in the clinical presentation, high comorbidity, and overlap in symptom presentation, along with other psychiatric disorders, the effects of development on symptom expression, children's difficulties in verbalizing their symptoms, and the potential effects of medications on the child's mood may make the differential diagnosis of BD very difficult in youth.⁴⁰

Clinicians should have a working knowledge of normative cognitive, behavioral, and affective development and cultural norms to assess whether a certain behavior is expected or pathological during the child's present stage of development.

Usually more than one informant, clear history of a timeline of mood symptoms, and longitudinal follow-up are needed to tease out whether the symptoms of the comorbid disorder disappear or persist while the youth with BD is euthymic and whether the symptoms associated with BD worsen during the mood episode. Clinicians must be cautious about attributing symptoms to mania or hypomania, unless they show a clear temporal association with the abnormally elevated, expansive, and/or irritable mood. Furthermore, chronic symptoms such as hyperactivity, irritability, or distractibility generally should not be considered evidence of mania, unless they clearly intensify with the onset of abnormal mood (*see Table 3 for BD and ADHD*). Prolonged presentations of non-specific manic-like symptoms that do not change in overall intensity should raise the possibility of an alternative psychiatric diagnosis.⁴⁰ The first episode of mania can be manifested with severe thought disorder and hallucinations; however, schizophrenia usually has an insidious onset, and patients lack the engaging quality associated with mania. In addition, good affective contact, transient rather than persistent incoherence and poverty of content, good treatment response to mood stabilizers, and family history of BD favor a BD diagnosis.¹

Assessment

Confidentiality should be discussed at the onset. Assessment of suicidal and homicidal ideation/behaviors and self-injurious behaviors should be a part of each assessment. Contrary to popular views, youth will often be relieved, not triggered, when a caring clinician asks about suicidal thoughts.

It is important to identify the manic and depressive episodes first and evaluate their frequency, intensity, number, and duration (FIND). The goals of assessment are the following:

- Establish if the youth has manic and depressive episodes and identify mood symptoms during these episodes.
- Elicit factors that may have contributed to the initiation, exacerbation, persistence, and remittance of these problems, such as genetic, developmental, medical, and comorbid psychiatric conditions, familial and social issues.
- Identify areas of strength and social supports.
- Build trust/rapport.

Direct interviews with youth are critical because parents/teachers may not be fully aware of the youth's mood symptoms; however, parental reports are suggested as the most informative. Discrepant information between parents and their children should be resolved by asking for specific examples of that symptom in a nonjudgmental way. The screening questions used by research interviews, such as the Schedule for Affective Disorders and Schizophrenia for School Age Children, Present and Lifetime Version (KSADS-PL), and the Mania Rating Scale (MRS) derived from K-SADS-PL,⁴¹ can assist in collecting information to guide diagnosis. However, these research-based interviews require training and are time consuming. Other clinician-rated scales such as the Young Mania Rating Scale (YMRS)⁴² and the symptom checklists for BD and depressive disorders based on the DSM criteria also are useful. In addition, identification of mood symptoms and BD diagnosis can be enhanced by using parent and child self-report measures including:

- General Behavior Inventory (GBI)⁴³ for parents and adolescents
- Young Mania Rating Scale for Parents (P-YMRS)⁴⁴

- Mood Disorder Questionnaire (MDQ) for Parents and Adolescents⁴⁵
- Child Mania Rating Scale (CMRS) for Parents, Children, and Teachers⁴⁶

The above scales are useful and sensitive for screening BD, however, direct interviews that may include BD-specific tools are necessary to confirm the diagnosis. In order to optimize sensitivity and specificity of the assessments for BD diagnosis in the hospital setting, at the Western Psychiatric Institute and Clinic of UPMC, Department of Psychiatry, University of Pittsburgh School of Medicine, we administer a parent mania rating scale (CMRS-P) in the emergency room for screening purposes and then administer K-SADS to those youth with high mania scores during screening to confirm or rule out the diagnosis upon admission to the inpatient unit. Since we opened the first beds of the nation's first inpatient child and adolescent bipolar services unit (In-CABS) in October 2010, this multilayered assessment method has significantly helped to decrease false negative and false positive pediatric BD diagnosis. This method can be modified for outpatient clinics as well. Children and parents can fill out one of the BD-specific screening instruments followed by review of mania and depression symptoms with the youth/parent (screening part to increase sensitivity) and then referral to a child and adolescent psychiatrist or specialized clinic (diagnostic clarification part to increase specificity) if the youth screens in the significant range.

Other screening instruments have been used, such as the Child Behavior Checklist (CBCL).⁴⁷ However, high scores in these non-BD specific^{48,49} scales may reflect symptom severity, comorbidity, or functional impairment among BD youth, and are not useful for "ruling in" mania.⁴⁸⁻⁵⁰

Despite best efforts, some youth may need longitudinal assessments to better clarify the diagnosis. Mood timelines or diaries, and using school years, birthdays, and holidays as anchors, are helpful in the assessment and monitoring of mood symptoms/episodes. Many websites provide sample instruments for mood charting and these instruments can help children, parents, and clinicians to visualize the course of their mood and identify events that may have triggered disturbance in mood/sleep, and to examine the relationship between treatment and response. In addition, psycho-education starts with the initial assessment. Psycho-education materials can be found at several websites, including the Balanced Mind, the Depression and Bipolar Support Alliance (DBSA), and the National Institute and Mental Health (NIMH).

Other Areas for Assessment

Level of care: Many youth with BD will need a team of dedicated professionals, considering the need for frequent medication management visits and psychotherapy and school interventions. Clinicians also should evaluate the appropriate intensity and restrictiveness of care, such as specialized clinic, inpatient, or partial hospitalization. The decision for the level of care will depend on assessment of factors, such as the severity of mood symptoms, suicidal and homicidal ideations/plans, psychosis, substance dependence, agitation, compliance to treatment, parental psychopathology, and family environment.

Psychosocial functioning: Change in functioning should be assessed and measured against what would be the expected level of functioning at school, and among family and peers, for a child given his/her culture, chronological age, and intellectual capabilities.

Medical conditions: Presence of any medical conditions that may trigger/worsen mood symptoms should be assessed. No biological tests can confirm BD; however, thyroid functioning (TSH) and complete blood count, B12, folate, and iron levels can be obtained when a first mood episode is identified. Detailed organic workup may be required if a first-break psychosis is considered.

Conclusion

Despite the controversies, it is clear that BD is a worldwide problem that may manifest in children, particularly during the adolescent years; however, it is difficult to diagnose. In addition, delay in BD diagnosis in youth is associated with significant risks for morbidity and mortality. Thus, early and correct diagnosis of BD in youth is critical to ameliorate ongoing syndromal and subsyndromal symptomatology and to reduce or prevent the serious psychosocial morbidity that usually accompanies this illness. Compared to 20 years ago, we now know more about effective methods to screen and diagnose this condition in youth, and we have more research data to guide medication, as well as psychosocial interventions. Physicians providing care to youth should screen them for BD and be alert to the above reviewed symptoms and presentations suggesting its possibility. When screened in, these youth need to be evaluated for lethality, substance abuse, and other psychiatric and medical problems and referred to a child and adolescent psychiatrist for further assessment and treatment.

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Circadian Rhythms and Reward Neural Circuitry and the Relationship to Bipolar Disorder

Psychiatrist, Mary Phillips, MD, looks at links between circadian function, brain imaging, and bipolar disorder in the first of two presentations on circadian function and bipolar disorder from UPMC. Then UPMC expert in mood disorders and their treatment, Ellen Frank, PhD, explores circadian sleep alignment in the patient with bipolar disorder.

Bipolar Disorder in Children and Adolescents: Status Update

Boris Birmaher, MD, and David Axelson, MD, two specialists in child and adolescent psychiatric conditions, present on the diagnosis, prevalence, course, and consequence of pediatric bipolar disorder.

Evidence-based Approach to the Management of Dementia: How Biomarkers are Improving Our Understanding of Alzheimer's Disease

Oscar L. Lopez, MD, director, University of Pittsburgh Alzheimer's Disease Research Center, discusses dementia and evidence-based approaches to the medical management of Alzheimer's disease.

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