

**B**ipolar disorder (also known as manic-depression) is an illness of the brain marked by extreme changes in mood, energy, and behavior. Until recently, a diagnosis of the disorder was rarely made in children because the illness looks different in children than adults. Children usually have an ongoing, continuous mood disturbance that is a mix of mania and depression. This rapid and severe cycling between moods produces chronic irritability and few clear periods of wellness between episodes.

### *A Different Presentation from Adults*

Evidence is emerging that bipolar disorder beginning in childhood or early adolescence may be a different, possibly more severe form of the illness than older-adolescent and adult-onset bipolar disorder. When the illness begins before or soon after puberty, it is often characterized by a continuous, rapid-cycling, irritable, and mixed symptom state that may co-occur with disruptive behavior disorders, especially ADHD or conduct disorder. In contrast, later adolescent- or adult-onset bipolar disorder tends to begin suddenly, often with a classic manic episode, and to have a more episodic pattern with relatively stable periods between episodes.

The mood of bipolar children is most often irritable and prone to destructive outbursts than to be elated or euphoric as in adults. These youths tend to be inflexible and oppositional and almost all experience periods of explosive rage. These tantrums last for hours at a time with holes getting kicked in walls, and parents, siblings and pets being threatened or hurt. Often bipolar children do not show this rageful side to the outside world and because parents do not wish the outside world to see the child in this light, or to learn of their lack of control over the child, the illness stays behind closed doors as the parents try desperately to find some solutions.

Beyond the oppositionality and extreme irritability, the majority of bipolar children cycle rapidly from depression to mania and back again. Some cycle over a period of days; others seem to alternate mood states several times throughout the day. Because the mood shifts are so rapid, it is easy to see how children may become trapped in the switch process between depression and mania and develop what is called a mixed state. They exhibit marked agitation, high energy, and constant restlessness. At the same time, they feel worthless and self-destructive. While mixed

states are not as common in adults unless induced by anti-depressant treatment, they are a hallmark of the ultra-rapid cycles found in childhood-onset bipolar disorder.

When depressed, bipolar children may complain of headaches, muscle aches, stomachaches or tiredness. They are frequently absent from school or perform poorly in school. They talk of running away from home and exhibit irritability, unexplained crying, social isolation, poor communication, and extreme sensitivity to rejection or failure. Other manifestations of manic and depressive states may include alcohol or substance abuse and difficulty with relationships. They also have a decreased need for sleep (not insomnia as with adults) and can actually function well on much less sleep than normal. Psychotic symptoms

### **SYMPTOMS OF BIPOLAR DISORDER**

Bipolar disorder is characterized by recurrent episodes of depression, mania, and/or mixed symptom states.

#### **MANIC SYMPTOMS INCLUDE:**

- Severe changes in mood—either extremely irritable or overly silly and elated
- Overly-inflated self-esteem; grandiosity
- Increased energy
- Decreased need for sleep—ability to go with very little or no sleep for days without tiring
- Increased talking—talks too much, too fast; changes topics too quickly; cannot be interrupted
- Distractibility—attention moves constantly from one thing to the next
- Hypersexuality—increased sexual thoughts, feelings, or behaviors; use of explicit sexual language
- Increased goal-directed activity or physical agitation
- Disregard of risk—excessive involvement in risky behaviors or activities.

#### **DEPRESSIVE SYMPTOMS INCLUDE:**

- Physical agitation or slowing
- Loss of energy
- Feelings of worthlessness or inappropriate guilt
- Difficulty concentrating
- Recurrent thoughts of death or suicide.

*From Child and Adolescent Bipolar Disorder: An Update from the National Institute of Mental Health. NIH Publication No. 00-4778. August 2000.*

are also extremely common in children and adolescents with mania, which is why they are often misdiagnosed with schizophrenia.

### *Differentiating from ADHD*

Although ADHD and bipolar disorder share several characteristics—hyperactivity, distractibility, irritability, decreased need for sleep, and temper tantrums—there are characteristic differences in the presentation of the two. In children with ADHD, from the time they start walking, they are wearing out the soles of their tennis shoes. With bipolar, the hyperactivity is much more episodic.

Another key to differentiating bipolar illness from ADHD is the child's response to medications. Children with ADHD do not respond to a mood stabilizer, but for children with true bipolar disorder, mood stabilizers are usually wonder drugs. Conversely, a stimulant, which helps patients with ADHD, pushes a bipolar child into increased symptoms of mania.

### *Differentiating from Conduct Disorder*

Conduct disorder is a complicated group of behavioral and emotional problems in youngsters. Children and adolescents with this disorder have great difficulty following rules and behaving in a socially acceptable way. Many factors may contribute to a child developing conduct disorder, including brain damage, child abuse, genetic vulnerability, school failure, and traumatic life experience.

Conduct disorder is distinguished from bipolar by a characteristic lack of guilt—children with conduct disorder will do something wrong, but have no remorse, whereas bipolar children often feel guilty, even for no reason. Children with conduct disorder also often feel paranoid, as do children with bipolar illness, but paranoia in children with conduct disorder is not evidence of psychosis because it's justified, they did something wrong, and now someone is out to get them.

### *How Bipolar Disorder Affects the Brain*

Studies have found several changes in the brains of people with bipolar disorder:

- Decreases in the number and density of glial cells in the prefrontal cortex.
- Decreases in the number of neurons in part of the hippocampus.
- Increases in the levels of some neuropeptides in the hypothalamus.

- White matter hyperintensities: small abnormal areas in the white matter of the brain (especially in the frontal lobe) as seen using magnetic resonance imaging. These abnormalities may be caused by the loss of myelin or axons.
- Decreases in the size of the cerebellum.
- Reduced activity in the prefrontal cortex during the depressive stage.

### *What Features Can Help Distinguish Bipolar Disorder from ADHD?*

Below are symptoms that can help clarify the diagnostic confusion between bipolar and ADHD disorders:

- **Destructiveness:** Children who have ADHD often break things carelessly while playing, whereas the major destructiveness of children who are bipolar is not a result of carelessness but tends to occur in anger.
- **Duration of angry outbursts:** Children who have ADHD usually calm down in 20 to 30 minutes, whereas children who are bipolar may continue to feel and act angry for up to 4 hours.
- **Trigger for tantrums:** Children who have ADHD are typically triggered by sensory and emotional overstimulation, whereas children who have bipolar disorder typically react to limit setting, such as a parental “no.”
- **Irritability:** Children who are bipolar tend to be irritable in the morning on arousal. Children with ADHD tend to arouse quickly and attain alertness within minutes, but children with mood disorders may show overly slow arousal (including several hours of irritability or dysphoria, fuzzy thinking or “cobwebs,” and physical complaints such as stomachaches and headaches) upon awakening in the morning.
- **Giftedness:** Children who are bipolar often show giftedness in certain cognitive functions, especially verbal and artistic skills.
- **Learning Disabilities:** Children with ADHD often have co-existing learning disabilities, whereas learning in children who are bipolar is more likely compromised by motivational problems.
- **Misbehavior:** If ADHD children crash into a wall, it is often due to oblivious inattentiveness. The child who is bipolar is more likely to crash into a wall with intent, for the sake of challenging its presence.

*From Popper C. Diagnosing Bipolar vs. ADHD: A Pharmacological Point of View. The Link. 13: 1996.*

## *Genetic Susceptibility*

Strong evidence exists for a genetic component in the susceptibility to develop bipolar disorder. The presence of bipolar disorder in other biologically related members of the family is an important element to be considered in formulating a bipolar diagnosis. (*See Chart: "Risk of Developing Bipolar Disorder in Relatives of Bipolar Patient".*)

Because many children meet full criteria for both disorders—ADHD and bipolar—some researchers believe the disorders can co-occur. Other researchers speculate that ADHD may be, for many, an early stage on a developmental path that culminates in full-blown bipolar disorder. Researchers have noted that mood disorders seem to be increasing in incidence among the age group, or cohort, born since 1940, with younger people being affected.

Although there is no clear explanation for this so-called cohort effect, genetic researchers have begun to explore the possibility that this increase in disease severity, coupled with a decrease in the age of onset in succeeding generations, may be due to a known inheritance pattern within families called "anticipation." An example of how anticipation works can be found in Huntington's chorea. While there are a variety of patterns within the genes, those genes that mutate and have a successively repeating number of sequences through the generations lead to a progressively earlier and more severe expression of the illness.

As molecular genetic studies progress, bipolar disorder is looking more and more like a multiple-gene disorder. It appears to be an illness with at least a single important genetic mutation, modified by other variations in the genetic makeup and greatly influenced by interactions with the environment.

### ***Risk of Developing Bipolar Disorder in Relatives of Bipolar Patient***

<u>RELATIVE</u>	<u>BIPOLAR PATIENT</u>
Identical twin	70%
Fraternal twin	15-25%
Offspring of one ill parent	15-30%
Offspring of two ill parents	50-75%
Sibling	15-25%
Second-degree relative	3-7%
General population	1%

## *Treatments*

The treatment of children and adolescents is based mainly on experience with adults, since as yet there is very limited data on the efficacy and safety of mood stabilizing medications in youth. The essential treatment in adults involves the use of appropriate doses of mood stabilizers, most typically lithium and/or valproate, which are often very effective for controlling mania and preventing recurrences of manic and depressive episodes.

### ***Finding the Right Doctor***

If possible, a board-certified child psychiatrist who has completed a specialized child psychiatry fellowship program should diagnose and treat a bipolar child. Unfortunately, there is a severe shortage of child psychiatrists, and few have extensive experience treating early-onset bipolar disorder.

Teaching hospitals affiliated with reputable medical schools are often a good place to start looking for an experienced child psychiatrist. A pediatrician is also a good source for a referral. If your community does not have a child psychiatrist with expertise in mood disorders, then look for an adult psychiatrist who has a broad background in mood disorders, and experience in treating children and adolescents.

Other specialists who may be able to help, at least with an initial evaluation, include pediatric neurologists. Neurologists have experience with the anticonvulsant medications often used for treating juvenile bipolar disorder. Pediatricians who consult with a psychopharmacologist can also provide competent care if a child psychiatrist is not available.

Some families take their child to nationally-known doctors at teaching hospitals for diagnosis and stabilization. They then turn to local professionals for medical management of their child's treatment and psychotherapy. The local professionals consult with the expert as needed.

### ***Alternative and Supplemental Treatments***

Researchers are investigating light therapy, electroconvulsant therapy, and transcranial magnetic stimulation as possible supplemental treatments for bipolar disorder. Also, nutritional supplements, such as Omega-3 oil (fish oil) are being studied. Some reports caution however, that the herb, St. John's Wort, can trigger mania and, therefore it should not be administered to children (*see "Drugs to be Avoided by Children with Bipolar Disorder".*)

## ***Mood Stabilizers and Newer Anticonvulsants***

Continuous treatment has been shown to be more effective than an on-off approach since episodes left untreated will generally worsen and become more frequent. Treatment is complicated because individuals respond differently to various medications, so a trial-and-error approach is used. The following is a brief overview of mood stabilizers and the newer anticonvulsants: (*Winter 2001*)

- **Lithium:** A salt that occurs naturally in the earth. Used for treating manic phase of bipolar disorder with a proven anti-suicidal effect. An estimated 70-80% of adult bipolar patients respond positively to lithium treatment. But patients who have four or more cycles in one year (i.e. rapid cycles) may not do as well on lithium as they do on other mood stabilizers. Since children typically have a rapid-cycling condition, there is a question about lithium's effectiveness in the pediatric population. However, despite the rapid-cycling, some children do have an excellent response to the drug or to its use in combination with another mood stabilizer.
- **Valproate** (Depakote): Anticonvulsant used for children who have rapid-cycling between mania and depression.
- **Carbamazepine** (Tegretol): Anticonvulsant with anti-manic and anti-aggressive properties, useful in treating frequent rage attacks.
- **Gabapentin** (Neurontin): Newer anticonvulsant which seems to have fewer side effects than other mood stabilizers, but doctors do not know how effective it is, and some parents report activation of manic symptoms in young children.
- **Topiramate** (Topamax): Newer anticonvulsant that may control rapid-cycling and mixed bipolar states in patients who have not responded well to valproate or carbamazepine. Unlike other mood stabilizers, it does not cause weight gain but its efficacy in children has not been established.

- **Lamotrigine** (Lamictal): Newer anticonvulsant that can cause a rare but life-threatening rash.

## ***Other Medications***

Although mood stabilizers and anticonvulsants are the mainstay of treatment, there is increasing interest in the newer antipsychotics such as risperidone (Risperdal), olanzapine (Zyprexa), and quetiapine (Seroquel) for use during manic states. These medications can be particularly beneficial when children experience delusions or hallucinations and when rapid control of mania is needed. Some of the newer antipsychotics are very effective in controlling rages and aggression.

Recently, calcium channel blockers have received attention as potential mood stabilizers. Verapamil, nimodipine, and isradipine are being investigated for the treatment of acute mania, ultra-ultra-rapid-cycling, and recurrent depression.

### ***Drugs to be Avoided by Children with Bipolar Disorder***

- **Beta Blockers** (such as *propranolol*): Can induce depression.
- **Caffeine:** Acts on certain second messenger systems that may contribute to activation and arousal.
- **Imipramine or Desipramine:** Used to treat bedwetting. Nasal spray desmopressin (DDAVP) seems to be safe.
- **Steroids, Particularly Cortisol Derivatives:** Even topical creams can induce hypomania if applied to richly vascularized areas such as the scalp, the hands, or the face.
- **St. John's Wort or Ginkgo Biloba:** Active ingredients can activate a bipolar child.
- **Sudafed (or any medication with pseudoephedrine):** Acts on noradrenergic system, increasing norepinephrine and therefore increasing arousal and anxiety states.

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