Behavioral and Psychiatric Disorders

PART III

Chapter 32

Psychosocial Assessment and Psychiatric Diagnostic Evaluation

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It is estimated that 20% of children living in the United States experience a mental illness in a given year; mental illness is more prevalent than leukemia, diabetes, and AIDS combined. More money is spent on mental disorders than on any other childhood illness, including asthma, trauma, and infectious diseases. Although nearly one in five youths suffers from a psychiatric disorder, 75–85% do not receive specialty mental health services; rather most services are delivered in nonspecialty sectors (primary care, schools, child welfare, juvenile justice), where mental health expertise may be limited. Untreated or inadequately treated psychiatric disorders persist over decades, become increasingly intractable to treatment, impair adherence to medical treatment regimens, and incur progressively greater social, educational, and economic consequences over time.

AIMS OF PSYCHOSOCIAL ASSESSMENT IN THE PEDIATRIC SETTING

A psychosocial assessment in the pediatric setting should determine whether there are signs and symptoms of cognitive, developmental, emotional, behavioral, or social difficulties and characterize those signs and symptoms sufficiently to determine their appropriate management. The focus of the assessment varies with the nature of the presenting problem and the clinical setting. Under emergency circumstances, the focus may be limited to an assessment of "dangerousness to self or others" for the purpose of determining the safest level of care. In routine circumstances (well-child visits), the focus may be broader, involving a screen for symptoms, distress, and functional impairment in the major psychosocial domains. The challenge for the pediatric practitioner will be to determine as accurately as possible whether the presenting signs and symptoms are likely to meet criteria for a psychiatric disorder and whether the severity and complexity of the disorder suggest referral to a mental health specialist or management in the primary care setting.

PRESENTING PROBLEMS

Infants may come to clinical attention because of problems with eating and/or sleep regulation, concerns about failure to gain weight, poor social responsiveness, limited vocalization, apathy or disinterest, and response to strangers that is excessively fearful or overly familiar. Psychiatric disorders most commonly diagnosed during this period are rumination and reactive attachment disorders.

Toddlers are assessed for concerns about sleep problems, language delay, motor hyperactivity, extreme misbehavior, extreme shyness, inflexible adherence to routines, difficulty separating from parents, struggles over toilet training, dietary issues, and testing limits. Developmental delays and more subtle physiologic, sensory, and motor processing problems can be presented as concerns. Problems with "goodness of fit" between the child's temperament and the parents' expectations can create relationship difficulties that also require assessment (see Chapter 19). Mental health disorders most commonly diagnosed during this period are developmental delays, autism spectrum disorder (ASD) and reactive attachment disorders.

Presenting problems in **preschoolers** include elimination difficulties, sibling jealousy, difficulty forming friendships, self-destructive impulsiveness, multiple fears, nightmares, refusal to follow directions, rigidity, somatization, speech that is difficult to understand, and temper tantrums. Mental health disorders most commonly diagnosed in this period are ASD, communication, oppositional, attention-deficit/hyperactivity (ADHD), anxiety (separation, selective mutism), reactive attachment, and sleep disorders.

Older children are brought to clinical attention because of concerns about angry or sad mood, bed-wetting, overactivity, impulsiveness, distractibility, learning problems, arguing, defiance, nightmares, school refusal, bullying or being bullied, worries and fears, somatization, communication problems, tics, and withdrawal or isolation. Mental health disorders most commonly diagnosed during this period are ADHD, oppositional, anxiety (phobias), elimination, somatic symptom, specific learning, and tic disorders.

Adolescents are assessed for concerns about the family situation, experimentation with sexuality and drugs, delinquency and gang involvement, friendship patterns, issues of independence, identity formation, self-esteem, and morality. Mental health disorders most often diagnosed during this period are anxiety (panic, social anxiety), depressive, bipolar, psychotic, obsessive-compulsive, impulse control, conduct, substance-related, and eating disorders.

GENERAL PRINCIPLES OF THE PSYCHOSOCIAL INTERVIEW

Psychosocial interviewing in the context of a routine pediatric visit requires adequate time and privacy. The purpose of this line of inquiry should be explained to the child and parents ("to make sure things are going OK at home, at school, and with friends"), along with the limits of confidentiality. Thereafter, the first goal of the interview is to build rapport with both the child and the parents (see Chapters 18 and 34 for further discussion of strategies for engaging families).

With the parents, this rapport is grounded in respect for the parents' knowledge of their child, their role as the central influence in their child's life, and their desire to make a better life for their child. Parents often feel anxious or guilty because they believe that problems a child is experiencing imply that their parenting skills are inadequate. Parents' experiences of their own childhood influence the meaning a parent places on a child's feelings and behavior. A good working alliance allows mutual discovery of the past as it is active in the present and permits potential distortions to be modified more readily. Developmentally appropriate overtures can facilitate rapport with the child. Examples include playing peek-a-boo with an infant, racing toy cars with a preschooler, commenting on sports with a child who is wearing a baseball cap, and discussing music with a teenager who is wearing a rock band T-shirt.

After an overture with the child, it is helpful to begin with **family-centered interviewing,** in which the parent is invited to present any psychosocial concerns (learning, feelings, behavior, peer relationships) about the child. With adolescent patients, it is important to conduct a separate interview to give the adolescent an opportunity to confirm or refute the parent's presentation and to present the problem from his or her perspective. Following the family's undirected presentation of the primary problem, it is important to shift to direct questioning to clarify the duration, frequency, and severity of symptoms, associated distress or functional impairment, and the developmental and environmental context in which the symptoms occur.

Because of the high degree of **comorbidity** of psychosocial problems in children, after eliciting the presenting problem, the pediatric practitioner should then briefly screen for problems in all the major

Table 32.1 Mental Health Action Signs

- Feeling very sad or withdrawn for more than 2 weeks
- Seriously trying to harm or kill yourself, or making plans to do so
- Sudden overwhelming fear for no reason, sometimes with a racing heart or fast breathing
- Involvement in many fights, using a weapon, or wanting to badly hurt others
- Severe out-of-control behavior that can hurt yourself or others
- Not eating, throwing up, or using laxatives to make yourself lose weight
- Intense worries or fears that get in the way of your daily activities
- Extreme difficulty in concentrating or staying still that puts you in physical danger or causes school failure
- Repeated use of drugs or alcohol
- Severe mood swings that cause problems in relationships
- Drastic changes in your behavior or personality

From The Action Signs Project. *Center for the Advancement of Children's Mental Health* at Columbia University.

developmentally appropriate categories of cognitive, developmental, emotional, behavioral, and social disturbance, including problems with mood, anxiety, attention, behavior, substance use, eating, elimination, social relatedness, language, and learning. This can be preceded by a transition statement such as, "Now I'd like to ask about some other issues that I discuss with all parents and kids. Have there been any problems with attention, learning, behavior, sad mood…" etc.

A useful guide for this area of inquiry is provided by the **11 Action Signs** (Table 32.1), designed to give frontline clinicians the tools needed to recognize early symptoms of mental disorders. *Functional impairment* can be assessed by inquiring about symptoms and function in the major life domains, including home and family, school, peers, and community. These domains are included in the **HEADSS** (Home, Education, Activities, Drugs, Sexuality, Suicide/Depression) Interview Guide, often used in the screening of adolescents (Table 32.2).

The nature and severity of the presenting problem(s) can be further characterized through a **standardized self-, parent-, or teacher-informant symptom rating scale**; Table 32.3 lists selected scales in the public domain. A rating scale is a type of measure that provides a relatively rapid assessment of a specific construct with an easily derived numerical score that is readily interpreted. The use of symptom rating scales can ensure efficient, systematic coverage of relevant symptoms, quantify symptom severity, and document a baseline against which treatment effects can be measured. Functional impairment also can be assessed with self- and other-reported rating scales.

Clinical experience and methodologic studies suggest that parents and teachers are more likely than the child to report externalizing problems (disruptive, impulsive, overactive, or antisocial behavior). Children may be more likely to report anxious or depressive feelings, including suicidal thoughts and acts, of which the parents may be unaware. Discrepancies across informants are common and can shed light on whether the symptoms are pervasive or contextual. Although concerns have been raised about children's competence as self-reporters (because of limitations in linguistic skills, self-reflection, emotional awareness, ability to monitor behavior, thoughts, and feelings, tendency toward social desirability), children and adolescents can both be reliable and valid self-reporters.

Pediatric practitioners are encouraged to become familiar with the psychometric characteristics and appropriate use of at least one **general (broad-band) psychosocial screening instrument**, such as the *Strengths and Difficulties Questionnaire* (SDQ)* or the *Pediatric Symptom Checklist* (PSC)† to identify potential mental health problems. If the clinical interview or broad-band symptom rating scale suggests difficulties in one or more specific symptom areas, the clinician can follow with a psychometrically sound, corresponding **narrow-band instrument**, such as the *Vanderbilt ADHD Diagnostic Rating Scale* or *Swanson Nolan and Pelham (SNAP)-IV-26* for attention and behavior problems; the *Center for Epidemiological Studies Depression Scale for Children* (CES-DC), *Mood and Feelings Questionnaire* (MFQ), or *Patient Health Questionnaire-9* (PHQ-9) for depression; or the *Screen for Child Anxiety Related Emotional Disorders* (SCARED) or the *Generalized Anxiety Disorder-7* (GAD-7) for anxiety.

Children and adolescents scoring above focused symptom rating scale cutpoints in most cases should undergo a mental health assessment, because scores above cutpoints are highly correlated with clinically significant psychiatric disorders. Youths scoring just below or only slightly above cutpoints may be appropriate for preventive intervention (anticipatory guidance) in the pediatric primary care setting. Youths scoring moderately above cutpoints for disorders commonly presenting in pediatric primary care (e.g., anxiety, depression, ADHD) may be appropriate for treatment in primary care. Youths scoring greatly above cutpoints for anxiety, depression, and ADHD, or youths presenting with symptoms of psychiatric disorders nearly always characterized by severity and complexity (e.g., bipolar, psychotic, obsessive-compulsive,

Table 32.2 HEADSS Screening Interview for Taking a Rapid Psychosocial History

PARENT INTERVIEW

Home
- How well does the family get along with each other?

Education
- How well does your child do in school?

Activities
- What does your child like to do?
- Does your child do anything that has you really concerned?
- How does your child get along with peers?

Drugs
- Has your child used drugs or alcohol?

Sexuality
- Are there any issues regarding sexuality or sexual activity that are of concern to you?

Suicide/Depression
- Has your child ever been treated for an emotional problem?
- Has your child ever intentionally tried to hurt him/herself or made threats to others?

ADOLESCENT INTERVIEW

Home
- How do you get along with your parents?

Education
- How do you like school and your teachers?
- How well do you do in school?

Activities
- Do you have a best friend or group of good friends?
- What do you like to do?

Drugs
- Have you used drugs or alcohol?

Sexuality
- Are there any issues regarding sexuality or sexual activity that are of concern to you?

Suicide/Depression
- Everyone feels sad or angry some of the time. How about you?
- Did you ever feel so upset that you wished you were not alive or so angry you wanted to hurt someone else badly?

HEADSS, Home, Education, Activities, Drugs, Sexuality, Suicide/Depression.
From Cohen E, MacKenzie RG, Yates GL. HEADSS, a psychosocial risk assessment instrument: implications for designing effective intervention programs for runaway youth. *J Adolesc Health.* 1991;12:539–544.

* http://www.sdqinfo.org/py/sdqinfo/b0.py.
† http://www.brightfutures.org/mentalhealth/pdf/professionals/ped_sympton_chklst.pdf.

Table 32.3 Selected List of Mental Health Rating Scales in the Public Domain

INSTRUMENTS	FOR AGES (YR)	INFORMANT: NUMBER OF ITEMS	TIME TO COMPLETE (MIN)	AVAILABLE AT
BROAD-BAND/GENERALIZED				
Pediatric Symptom Checklist (PSC)	4-18	Parent: 35, 17 Youth: 35, 17	5-10	https://www.massgeneral.org/psychiatry/treatments-and-services/pediatric-symptom-checklist
Strengths and Difficulties Questionnaire (SDQ)	4-18	Parent, Teacher, Child: 25	5	https://www.sdqinfo.org
NARROW-BAND/FOCUSED				
Anxiety				
Self-Report for Childhood Anxiety Related Emotional Disorders (SCARED)	8-18	Parent, Child: 41	5	https://www.pediatricbipolar.pitt.edu/resources/instruments
Generalized Anxiety Disorder-7 (GAD-7)	12-18	Youth: 7	1	https://www.phqscreeners.com
Attention and Behavior				
Vanderbilt ADHD Diagnostic Rating Scale	6-12	Parent: 55 Teacher: 43	10	https://www.nichq.org/resource/nichq-vanderbilt-assessment-scales
Swanson Nolan and Pelham (SNAP)-IV 26	6-18	Parent and Teacher: 26	5	http://www.shared-care.ca/files/Scoring_for_SNAP_IV_Guide_26-item.pdf
Autism				
Modified Checklist for Autism in Toddlers (M-CHAT)	16-30 mo	Parent: 23	5-10	https://mchatscreen.com
Depression				
Center for Epidemiological Studies Depression Scale for Children (CES-DC)	6-18	Child: 20	5	https://www.brightfutures.org/mentalhealth/pdf/professionals/bridges/ces_dc.pdf
Mood and Feelings Questionnaire (MFQ)	7-18	Parent: 34 Child: 33	<5	https://devepi.duhs.duke.edu/measures/the-mood-and-feelings-questionnaire-mfq/
Patient Health Questionnaire–9 (PHQ-9)	12/13+	9	<5	https://www.phqscreeners.com

ADHD, Attention-deficit/hyperactivity disorder.

posttraumatic stress, eating) may be most appropriate for treatment in specialty care.

The **safety** of the child in the context of the home and community is of paramount importance. The interview should sensitively assess whether the child has been exposed to any frightening events, including abuse, neglect, bullying, marital discord, or domestic or community violence; whether the child shows any indication of dangerousness to self or others or a severely altered mental status (psychosis, intoxication, delirium, rage, hopelessness); or whether the child (if age appropriate) has been involved in any **risky behavior**, including running away, staying out without permission, truancy, gang involvement, experimentation with substances, and unprotected sexual encounters. The interview also should assess the capacity of the parents to adequately provide for the child's physical, emotional, and social needs or whether parental capacity has been diminished by psychiatric disorder, family dysfunction, or the sequelae of disadvantaged socioeconomic status. Any indications of threats to the child's safety should be immediately followed by thorough assessment and protective action.

DIAGNOSIS

There is variability in the level of confidence pediatric practitioners perceive in diagnosing mental health problems in children and adolescents in accordance with *Diagnostic and Statistical Manual of Mental Disorders* (DSM) criteria. Pediatric practitioners who have familiarity with psychiatric diagnostic criteria may feel confident diagnosing certain disorders, particularly the more common neurodevelopmental, elimination, and eating disorders (ADHD, anxiety, autism spectrum, tics, enuresis, encopresis, anorexia). The disorders about which some pediatric practitioners might have less diagnostic confidence include the disruptive/impulse control/conduct, anxiety, depressive, bipolar, psychotic, obsessive-compulsive, trauma-related, somatic symptom, and substance-related disorders. Pediatric practitioners may prefer to use the "unspecified" diagnosis option in the context of diagnostic uncertainty until clarification is achieved, often through consultation with or referral to a mental health clinician.

While focusing on the specific psychiatric manifestations and their appropriate treatment, the practitioner must also take into consideration secondary etiologies (systemic illnesses, substance and medication use [Tables 32.4 and 32.5]) producing psychiatric symptoms. Disease-specific therapy combined with psychopharmacology is often necessary when a systemic disorder is identified.

PSYCHIATRIC DIAGNOSTIC EVALUATION

The objectives of the psychiatric diagnostic evaluation of the child and adolescent, generally conducted by a behavioral health specialist, are to determine whether **psychopathology or developmental risk** is present and if so, to establish an explanatory formulation and a differential diagnosis, and to determine whether treatment is indicated and, if so, to develop a treatment plan and facilitate the parents' and child's involvement in the plan. The aims of the diagnostic evaluation are to clarify the reasons for the referral, to obtain an accurate accounting of the child's developmental functioning and the nature and extent of the child's psychosocial difficulties, functional impairment, and subjective distress, and to identify potential individual, family, or environmental factors that might account for, influence, or ameliorate these difficulties. The issues relevant to diagnosis and treatment planning can span genetic, constitutional, and temperamental factors, individual psychodynamics, cognitive, language, and social skills, family patterns of interaction and child-rearing practices, and community, school, and socioeconomic influences.

Table 32.4 Medical (Secondary) and Psychiatric (Primary) Causes of Psychosis and/or Depression

CATEGORY	DISORDERS
Psychiatric	Schizophrenia Schizoaffective Schizophreniform Brief psychotic Major depression Bipolar Postpartum
Head trauma	Traumatic brain injury Subdural hematoma
Infectious	Viral infections/encephalitides (HIV infection/encephalopathy, herpes encephalitis, cytomegalovirus, Epstein-Barr virus, COVID-19) Lyme disease Cerebral malaria Endocarditis Neurosyphilis Whipple disease
Inflammatory	Autoimmune encephalitis: NMDAR, limbic, others (see Table 32.5) Systemic lupus erythematosus Sjögren syndrome Hashimoto encephalopathy (steroid-responsive encephalopathy associated with autoimmune thyroiditis [SREAT]) Sydenham chorea Sarcoidosis Celiac disease
Neoplastic	Primary or secondary cerebral neoplasm Paraneoplastic encephalitis: ovarian teratoma-associated autoimmune encephalitis Systemic neoplasm Pheochromocytoma
Endocrine or acquired metabolic	Hepatic encephalopathy Uremic encephalopathy Hypo/hyperparathyroidism Hypo/hyperthyroidism Addison disease Cushing disease Vitamin deficiency: vitamin B_{12}, folate, niacin, vitamin C, thiamine Gastric bypass–associated nutritional deficiencies Hypoglycemia Hyponatremia
Vascular	Cerebral autosomal dominant arteriopathy with subcortical infarcts and leukoencephalopathy (CADASIL) Other vasculitis syndromes Stroke
Degenerative	Idiopathic basal ganglia calcifications, Fahr disease Neuroacanthocytosis Neurodegeneration with brain iron accumulation (NBIA) Tuberous sclerosis Huntington disease Corticobasal ganglionic degeneration Multisystem atrophy, striatonigral degeneration, olivopontocerebellar atrophy
Demyelinating, dysmyelinating	Multiple sclerosis Acute disseminated encephalomyelitis Adrenoleukodystrophy Metachromatic leukodystrophy
Inherited metabolic	Wilson disease Posterior horn syndrome Tay-Sachs disease (adult onset) Neuronal ceroid lipofuscinosis Niemann-Pick disease type C Acute intermittent porphyria Mitochondrial encephalopathy, lactic acidosis, and stroke-like episodes (MELAS)
Inherited metabolic (cont'd)	Mitochondrial neurogastrointestinal encephalopathy (MNGIE) Cerebrotendinous xanthomatosis Homocystinuria Ornithine transcarbamylase deficiency Phenylketonuria
Syndromes	Williams Prader-Willi Marfan Fragile X Deletion 22q11.2 Rapid-onset obesity with hypothalamic dysfunction, hypoventilation, autonomic dysregulation (ROHHAD) Klinefelter
Epilepsy	Ictal Interictal Postictal Postepilepsy surgery Lafora progressive myoclonic epilepsy Complex partial (temporal lobe)
Substance induced (medications)	Analgesics Acyclovir Androgens (anabolic steroids) Antiarrhythmics Anticonvulsants Anticholinergics Antihypertensives Antineoplastic agents β-Blocking agents Cefepime Clarithromycin Cyclosporine Dextromethorphan Dopamine agonists Ketamine Fluoroquinolones Metronidazole Sulfamethoxazole-trimethoprim Oral contraceptives Sedatives/hypnotics Selective serotonin reuptake inhibitors (SSRIs) (serotonin syndrome) Steroids
Substance induced	Alcohol Amphetamines Cocaine LSD Marijuana and synthetic cannabinoids Methylenedioxymethamphetamine (MDMA, Ecstasy) Phencyclidine Mescaline Psilocybins (mushrooms)
Drug withdrawal syndromes	Alcohol Barbiturates Benzodiazepines Amphetamines SSRIs
Toxins	Heavy metals: lead, mercury, arsenic Carbon monoxide Inhalants Organophosphates St. John's wort
Other	Normal-pressure hydrocephalus Ionizing radiation Decompression sickness Narcolepsy

From Byrne R, Elsner G, Beattie A. Emotional and behavioral symptoms. In Kliegman RM, Toth H, Bordini BJ, Basel D (eds): *Nelson Pediatric Symptom-Based Diagnosis: Common Diseases and their Mimics*, 2nd ed. Philadelphia: Elsevier, 2023. Table 31.4, p. 514–515.

Table 32.5 Antigenic Targets in Autoimmune Encephalitis with Associated Psychiatric Features

COMMONLY TARGETED ANTIGENS	ANTIGEN DESCRIPTION OR EPITOPE	MAIN ENCEPHALOPATHY SYNDROME AND PSYCHIATRIC FEATURES	OTHER ASSOCIATED NEUROLOGIC DISORDERS	MAIN PSYCHIATRIC FEATURES
NMDAR	Ligand-gated ion channel	Encephalopathy (frequently extralimbic manifestation)	Post–herpes simplex encephalitis relapse with chorea; pediatric dyskinetic encephalitis lethargica; idiopathic epilepsy; immunotherapy-responsive dementia	Anxiety, agitation, bizarre behavior, catatonia, delusional or paranoid thoughts, and visual or auditory hallucinations; also movement disorder, seizures, autonomic instability
LGI1	VGKC-associated and AMPAR-associated secreted molecule	Limbic encephalitis with or without faciobrachial dystonic seizures; prominent hyponatremia	Morvan syndrome, neuromyotonia, epilepsy, REM sleep behavior disorder; rarely isolated movement disorder (parkinsonism, dystonia, chorea)	Confusion, hallucinations, depression
CASPR2	VGKC-associated adhesion molecule	Morvan syndrome: peripheral nerve hyperexcitability, autonomic instability, encephalopathy	Limbic encephalitis, neuromyotonia, epilepsy; rarely isolated movement disorder (chorea, myoclonus)	Confusion, hallucinations, agitation, delusions
AMPAR	Ligand-gated ion channel	Limbic encephalitis	NA	Personality change, psychosis, apathy, agitation, confabulation
$GABA_AR$	Ligand-gated ion channel	Limbic encephalitis with refractory seizures	Varied presentations	Confusion, anxiety, affective changes (including depression), hallucinations, catatonia
$GABA_BR$	Ligand-gated ion channel	Limbic encephalitis with refractory status epilepticus	Opsoclonus-myoclonus; cerebellar ataxia; PERM	Psychosis, agitation, catatonia
Hu	Intracellular RNA-binding protein	Limbic encephalitis or limbic encephalomyelitis occurring with small cell lung cancer	Painful sensory neuropathy; cerebellar ataxia	Confusion, depression, less commonly hallucinations
Ma2	Intracellular protein involved in mRNA processing or biogenesis	Limbic encephalitis occurring with testicular germ cell tumors; REM sleep disorder is common; frequent short-term memory problems	Visual dysfunction, gait disturbance, hypokinesia	Confusion and anxiety, including obsessions and compulsions
D2R	Metabotropic receptor	So-called basal ganglia encephalitis with prominent movement disorder (i.e., dystonia, parkinsonism, chorea, tics)	Sydenham chorea, PANDAS	Agitation, depression, psychosis, emotional lability
DPPX	Auxiliary subunit of Kv4.2 potassium channels	Limbic encephalitis with enteropathy	PERM	Amnesia, delirium, psychosis, depression
MGluR5	Metabotropic glutamate receptor	So-called Ophelia syndrome: limbic encephalitis in association with Hodgkin lymphoma	Paraneoplastic limbic encephalitis without lymphoma, or nonparaneoplastic limbic encephalitis; immunotherapy-responsive prosopagnosia	Depression, anxiety, delusions, visual and auditory hallucinations, personality change, anterograde amnesia
GFAP	Intracellular (cytosolic) glial intermediate filament protein	Corticosteroid-responsive meningoencephalitis or encephalitis, with or without myelitis; presents with subacute onset of memory loss and confusion	NA	Occurred in 29% in one study but not described in detail; psychosis and behavioral changes reported

AMPAR, α-Amino-3-hydroxy-5-methyl-4-isoxazolepropionic acid receptor; CASPR2, contactin-associated protein-like 2; D2R, dopamine receptor D2; DPPX, dipeptidyl-peptidase-like protein-6; $GABA_AR$, γ-aminobutyric acid type A receptor; $GABA_BR$, γ-aminobutyric acid type B receptor; GFAP, glial fibrillary acidic protein; LGI1, leucine-rich glioma-inactivated 1; MGluR5, metabotropic glutamate receptor 5; NA, not applicable; NMDAR, N-methyl-D-aspartate receptor; PANDAS, pediatric autoimmune neuropsychiatric disorders associated with streptococcal infections; PERM, progressive encephalomyelitis with rigidity and myoclonus; REM, rapid eye movement; VGKC, voltage-gated potassium channel.

Modified from Pollak TA, Lennox BR, Muller S, et al. Autoimmune psychosis: an international consensus on an approach to the diagnosis and management of psychosis of suspected autoimmune origin. *Lancet Psychiatry.* 2020;7(1):93–108.

The focus of the evaluation is developmental; it seeks to describe the child's functioning in various realms and to assess the child's adaptation in these areas relative to that expected for the child's age and phase of development. The developmental perspective extends beyond current difficulties to vulnerabilities that can affect future development and as such are important targets for preventive intervention. Vulnerabilities may include **subthreshold or subsyndromal difficulties** that, especially when manifold, often are accompanied by significant distress or impairment and as such are important as potential harbingers of future problems.

Throughout the assessment, the clinician focuses on identifying a realistic balance of vulnerabilities and strengths in the child, in the parents, and in the parent–child interactions. From this strength-based approach, over time a hopeful family narrative is co-constructed to frame the child's current developmental progress and predict the child's ongoing progress within the scope of current risk and protective factors.

As described earlier a **psychiatric** assessment conducted by a pediatric primary care practitioner generally will be a brief **psychosocial** assessment focused on obtaining sufficient information to triage the case to the appropriate level of care. A brief assessment can comprise both administration of a focused (narrow-band) symptom rating scale to assess symptom severity and a focused clinical interview. The focused clinical interview can comprise four dimensions: **history** (onset, duration, response to prior treatment, family history), **severity** (as derived from the focused rating scale and verbal query about the degree of distress and/or impairment associated with the symptom[s]), **complexity** (brief review of psychiatric comorbidities and medical or social complexities), and **safety** (ascertainment of imminent and substantial risk of harm). With this information, the pediatrician can provisionally diagnose the case and triage the case to primary care (for preventive intervention or treatment of mild to moderate presentations of common disorders [e.g., ADHD, anxiety, depression]), or to specialty behavioral healthcare (for severe presentations of these disorders or for other psychiatric disorders nearly always characterized by severity and complexity).

In the specialty care setting, although the scope of the evaluation will vary with the clinical setting (e.g., emergency room vs medical floor vs psychiatric clinic), a **comprehensive psychiatric diagnostic evaluation** typically has 12 major components:

- Presenting problem(s) and the context in which they occur
- Review of psychiatric symptoms
- History of psychiatric treatment
- Medical history
- Developmental history
- Educational history
- Family history
- Mental status examination
- Biopsychosocial clinical formulation
- *DSM, Fifth Edition* (DSM-5) diagnosis
- Risk assessment
- Treatment plan

For infants and young children, the presenting problem and historical information is derived from parents and other informants. As children mature, they become increasingly important contributors to the information base, and they become the primary source of information in later adolescence. Information relevant to formulation and differential diagnosis is derived in multiple ways, including directive and nondirective questioning, interactive play, and observation of the child alone and together with the caregiver(s).

The **explication of the presenting problem(s)** includes information about onset, duration, frequency, setting, and severity of symptoms, associated distress and/or functional impairment, and predisposing, precipitating, perpetuating, and ameliorating contextual factors. The **symptom review** assesses potential comorbidity in the major domains of child and adolescent psychopathology. The **history of psychiatric treatment** includes gathering information about prior emergency mental health assessments, psychiatric hospitalizations, day treatment, psychotherapy, pharmacotherapy, and nontraditional treatments.

The **medical history** includes information about the source of primary care, the frequency of health supervision, past and current medical illnesses and treatments, and the youth and family's history of adherence to medical treatment. A systematic review of organ or functional systems facilitates the identification of abnormalities that require investigation or monitoring by the pediatric practitioner, as well as the identification of cautionary factors related to the prescription of psychotropic medication. The **developmental history** includes information about the circumstances of conception, pregnancy, or adoption, pre-, peri-, or postnatal insults, attachment and temperament, cognitive, motor, linguistic, emotional, social, and moral development, health habits, sexuality, substance use (as age appropriate), coping and defensive structure, future orientation, and perceived strengths. The **educational history** includes schools attended, typical grades, attendance, behavior, classroom accommodations, special education services, disciplinary actions, social relationships, extracurricular activities, and barriers to learning. The **family history** assesses family composition, sociodemographic and neighborhood characteristics, domiciliary arrangements, parenting capacities, family function, medical/psychiatric histories of family members, and cultural/religious affiliations.

The **mental status examination** assesses appearance, relatedness, cognition, communication, mood, affective expression, behavior, memory, orientation, and perception.

The comprehensive psychiatric evaluation culminates in a biopsychosocial formulation, diagnosis, and risk assessment. The **biopsychosocial formulation** is derived from an assessment of *vulnerabilities* and *strengths* in the biologic, psychologic, and social domains and serves to identify targets for intervention and treatment. In the *biologic* domain, major vulnerabilities include a family history of psychiatric disorder as well as a personal history of pre-, peri-, or postnatal insults, cognitive or linguistic impairments, chronic physical illness, and a difficult temperament. In the *psychologic* domain, major vulnerabilities include failure to achieve developmental tasks, unresolved unconscious conflicts, and maladaptive coping and defensive styles. In the *social* domain, major vulnerabilities include parental incapacity, unskilled parenting, family dysfunction, social isolation, inadequate school setting, absence of supportive community structures, and sociodemographic disadvantage. Major strengths include cognitive and linguistic capability, physical health and vigor, stable, moderate temperamental characteristics, and stable supportive parenting, family, peer, and community structures. The biopsychosocial formulation can be organized to reflect *predisposing*, *precipitating*, *perpetuating*, and *protective (ameliorating) factors (the "4 Ps")* influencing the development of the observed psychopathology.

The **diagnosis** is made in accordance with the nomenclature in DSM-5. This nomenclature categorizes cross-sectional phenomenology into discrete clinical syndromes and seeks to improve diagnostic accuracy at the expense of theories of causation. By DSM-5 convention, if diagnostic criteria are met, the diagnosis is given (except where hierarchical rules apply); consequently, psychiatric comorbidity is a common occurrence. The **risk assessment** includes a careful assessment of risk status, including suicidality, homicidality, assaultiveness, self-injuriousness, acute mental status changes, and involvement in risky behavior or situations.

The comprehensive psychiatric diagnostic evaluation culminates in a **treatment plan** that brings the broad array of targeted interventions to the service of the child. Diagnoses drive the choice of evidence-based psychotherapeutic and psychopharmacologic treatments. The formulation drives the selection of interventions targeted at biologic, psychologic, and social vulnerabilities and strengths. Many of these treatments and interventions are described in the succeeding chapters.

SPECIAL CONSIDERATIONS IN THE DIAGNOSTIC EVALUATION OF INFANTS AND YOUNG CHILDREN

Evaluation of infants and young children with challenging behaviors includes the domains of physiology, temperament, language and motor development, affective behavior, social behavior, and communication. Although much of the information in these domains will be derived from parent report, much also can be gleaned from nonverbal behavior and observation of the parent–child interaction. Observations should include predominant affective tone of parent and child (positive, negative, apathetic), involvement in the situation (curiosity, disinterest), social responsiveness (mutuality of gaze, auditory responsiveness), and reactions to transitions (including separation).

A screen for maternal depression* is critical at this stage, as is an assessment of the mother's (or other caregiver's) ability to respond rapidly on a contingent basis to the child's expressed needs, regulate the child's rapid shifts of emotion and behavior, and provide a stimulus shelter to prevent the child from being overwhelmed.

Standardized screening instruments (Ages and Stages Questionnaires, Brief Infant-Toddler Social & Emotional Assessment, Early Childhood Screening Assessment, Modified Checklist for Autism in Toddlers, Parents' Evaluation of Developmental Status, and Survey of Well-being of Young Children) designed for this age-group can be helpful in systematizing the evaluation. In addition, the Infant, Toddler and Preschool Mental Status Exam (ITP-MSE) is a reference tool that describes how traditional categories of the mental status examination can be adapted to observations of young children. Additional categories, including sensory and state regulation, have been added that reflect important areas of development in young children.

Diagnostic systems that are more age appropriate than DSM-5 have been developed for infants and young children. These systems include the *Research Diagnostic Criteria–Preschool Age* (RDC-PA) and *Zero to Three Diagnostic Classification of Mental Health and Developmental Disorders of Infancy and Early Childhood-Revised* (DC: 0-3R). The DC: 0-3R includes a relationship classification that assesses the range of interactional adaptation in each parent–child relationship and regulation disorders of sensory processing that identify a range of constitutionally and maturationally based sensory reactivity patterns, motor patterns, and behavior patterns that together can dysregulate a child internally and impact the child's interactions with caregivers.

Visit Elsevier eBooks+ at eBooks.Health.Elsevier.com for Bibliography.

*See http://www.medicalhomeportal.org/clinical-practice/screening-and-prevention/maternal-depression for several examples.

Chapter 33
Psychopharmacology

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Psychopharmacology is the first-line treatment for several child and adolescent mental health disorders (e.g., attention-deficit/hyperactivity [ADHD], schizophrenia spectrum, and bipolar disorders) and is used adjunctively with psychosocial treatments for other disorders (or comorbid conditions), including anxiety, depressive, autism spectrum, trauma-related, and obsessive-compulsive disorders. Before prescribing a psychotropic medication, primary care practitioners (PCPs) should review full prescribing information for each medication (in package inserts or at reliable websites such as the National Institutes of Health *DailyMed**) to obtain complete and up-to-date information about indications, contraindications, warnings, interactions, and precautions.

*https://dailymed.nlm.nih.gov/dailymed/index.cfm.

It is helpful for PCPs to be guided by principles for effective use of psychotropic medications in their medication assessment and management (Table 33.1). These principles involve a series of interconnected steps, including conducting a focused behavioral health assessment, **establishing target symptom(s)** and appropriate level of care, deciding on a medication and a monitoring plan, obtaining treatment assent/consent, and implementing treatment. In following this approach, PCPs are well positioned to provide safe and effective first-line psychopharmacology for common mental health conditions (e.g., ADHD, anxiety, depression) with moderate symptom presentations. Severe/complex presentations likely are better served through consultation with and/or referral to a behavioral health specialist.

Questions remain about the quality of the evidence supporting the use of many psychotropic medications in children and adolescents. In general, cognitive, emotional, and behavioral symptoms are targets for medication treatment when (1) there is no or insufficient response to available evidence-based psychosocial interventions, (2) the patient's symptoms are severe and the patient is experiencing significant distress or functional impairment, and/or (3) the patient's symptoms convey significant risk of harm. Common target symptoms include agitation, aggression, anxiety, depression, mania, hyperactivity, inattention, impulsivity, obsessions, compulsions, and psychosis (Table 33.2). All these symptoms can be quantitatively measured with standardized rating scales to establish baseline symptom severity and facilitate "treating to target."

STIMULANTS AND OTHER ADHD MEDICATIONS

Stimulants are sympathomimetic drugs that act both in the central nervous system (CNS) and peripherally by enhancing dopaminergic and noradrenergic transmission (Table 33.3). Strong evidence (approximate effect size 1.00, large) exists for the effectiveness of these medications for the treatment of ADHD (Chapter 50); stimulants also are effective for the management of aggression. In some cases, stimulants have been used as monotherapy for fatigue or malaise associated with chronic physical illnesses.

No major differences in efficacy or tolerability have been found between different classes of stimulants, and no consistent patient profile identifies those who will respond preferentially to one class over another. The most common (generally dose-dependent) side effects of stimulants include headache, stomachache, appetite suppression, weight loss, blood pressure (BP) and heart rate increases, and delayed sleep onset. Less common side effects include irritability (more prominent in younger children), aggression, social withdrawal, and rarely, hallucinations (visual or tactile).

Stimulants have been associated with elevations in mean BP (<5 mm Hg) and pulse (<10 beats/min); a subset of individuals (5–10%) may have greater increases. The rate of sudden death in pediatric patients taking stimulants is comparable to children in the general population; the hazard ratio for serious cardiovascular (CV) events is 0.75 (although up to a twofold increase in risk could not be ruled out). Moreover, a case series analysis of children with a CV incident and treatment with methylphenidate demonstrated an increased risk of arrhythmia (incidence rate ratio, 1.61) that was highest in the presence of congenital heart disease. The U.S. Food and Drug Administration (FDA) recommends that stimulants should be avoided in the presence of structural cardiac abnormalities (e.g., postoperative tetralogy of Fallot, coronary artery abnormalities, subaortic stenosis, hypertrophic cardiomyopathy) and patient symptoms (syncope, palpitations, arrhythmias) or family history (e.g., unexplained sudden death) suggestive of CV disease. In these circumstances, cardiology consultation is recommended before prescribing. Routine electrocardiograms (ECGs) are not recommended in the absence of cardiac risk factors.

The α-adrenergic agents **clonidine** and **guanfacine** are presynaptic adrenergic agonists that appear to stimulate inhibitory presynaptic autoreceptors in the CNS (see Table 33.3). The extended release formulations of both agents have FDA approval for ADHD. The extended-release formulation of guanfacine has strong evidence (approximate effect size 0.80, large) for the monotherapy of ADHD. Extended-release guanfacine also has moderate evidence for effective treatment

Table 33.1 Principles for Effective Use of Psychotropic Medications

- Identify potential target symptoms using broad mental health screening instruments (e.g., Pediatric Symptom Checklist [PSC-17])
- Conduct focused behavioral health (BH) assessment to establish target symptoms and appropriate level of care
  - Focused symptom rating scales, e.g.,
    - Patient Health Questionnaire-9 (PHQ-9)
    - Mood and Feelings Questionnaire (MFQ)
    - Screen for Child Anxiety Related Disorders (SCARED)
    - Generalized Anxiety Disorder-7 (GAD-7)
    - Vanderbilt ADHD Diagnostic Rating Scales
    - Swanson Nolan and Pelham-IV-26 (SNAP-IV-26)
  - Focused clinical interview to determine symptom history, severity (from focused rating scale score), complexity (psychiatric comorbidities, medical or psychosocial complexity), and safety (imminent risk of substantial harm)
    - If insufficient information is available to render a precise diagnosis for a symptom cluster, consider applying Unspecified Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) psychiatric diagnosis
  - Rule out alternative explanations (medical, medication, substance, or developmental "masqueraders") for target symptoms (may require specialty referral)
- Establish appropriate level of care based upon findings from focused BH assessment
  - Subclinical to mild presentation: triage to brief preventive intervention (e.g., anticipatory guidance)
  - Moderate presentation: triage to primary care for basic psychopharmacology and/or brief psychosocial intervention
  - Severe presentation: triage to specialty behavioral healthcare for comprehensive diagnostic evaluation, advanced psychopharmacology, and/or specialized psychotherapy
- Rule out relative or absolute contraindications to medication use, e.g.,
  - Medical conditions
  - Drug interactions
  - Inability to monitor (e.g., unreliable parent/guardian, patient residing out of town)
  - Concern about drug diversion in the context of substance abuse or antisocial behavior
- Counsel about factors potentially contributing to symptom presentation or affecting response to medication
  - Inadequate nutrition, physical activity, sleep, recreation, stress management; substance use
- Consider response to previous medication trials
  - Favorable and adverse effects
- Develop comprehensive treatment plan as indicated
  - Psychotherapy and/or medication
  - Home and/or school interventions
- Obtain informed consent from parent/guardian and assent from patient
  - Nature of the condition needing treatment
  - Nature and purpose of proposed treatment and the probability that it will succeed
  - Risks and benefits of the proposed treatment
  - Alternatives to the proposed treatment, and their attendant risks and benefits
  - Prognosis with and without the proposed treatment
- Select evidence-based medication and prescribe an adequate dose for an adequate duration; whenever possible, U.S. Food and Drug Administration (FDA)-approved medications for the given indication should be prioritized
  - Titrate to effective tolerated dose within established dosage range
  - Consider the period of time needed for each medication to achieve maximum effect
  - "Start low, go slow"
- Explain details of medication management
  - Name of medication
  - When to administer
  - Who should administer (e.g., parent, older teen)
  - How to administer (e.g., with food, swallowed whole)
  - Time to onset
  - Duration of action
  - How to store medication
  - Review of side effects and what to do if each should occur
  - How response to medication will be monitored (e.g., focused symptom rating scales, height/weight, pulse/blood pressure, side effect checks)
  - Special safety instructions (e.g., suicidal thoughts, severe agitation)
  - What the next step will be if medication is ineffective or not tolerated
  - How long medication likely will need to be taken if effective
  - Consider providing parent with standardized Medication Guide, such as those found at https://dailymed.nlm.nih.gov/dailymed/index.cfm
- Monitor medication compliance and physical/laboratory parameters as indicated
- Monitor response to treatment
  - Periodic readministration of focused symptom rating scale(s); adjust dose as indicated to achieve remission
- Taper and discontinue ineffective medication before substituting alternative medication, or have clear rationale for using medication combinations
- Plan for medication discontinuation after symptom-free and high-functioning interval

of ADHD with comorbid oppositional defiant disorder (ODD), favorably affecting both symptom clusters, as well as for the treatment of agitation in autism.

Sedation, somnolence, headache, abdominal pain, hypotension, bradycardia, cardiac conduction abnormalities, dry mouth, depression, and confusion are potential side effects of clonidine and guanfacine. Abrupt withdrawal can result in rebound hypertension; overdose can result in bradycardia and hypotension leading to hospitalization or death.

Atomoxetine is a selective inhibitor of presynaptic norepinephrine reuptake that increases dopamine and norepinephrine in the prefrontal cortex (see Table 33.3). It is less effective for the treatment of ADHD (approximate effect size 0.60, medium) than stimulants, but atomoxetine has a longer duration of action (approximately 24 hours). Atomoxetine can have an onset of action within 1-2 weeks of starting treatment, but there is an incrementally increasing response for up to 4-6 weeks or longer. Common side effects include nausea, headache, abdominal pain, insomnia, somnolence, erectile dysfunction, irritability, fatigue,

Table 33.2 Target Symptom Approach to Psychopharmacologic Management

TARGET SYMPTOM	MEDICATION CONSIDERATIONS
Aggression	Stimulant α-Agonist Antipsychotic (only if aggression is severe or dangerous)
Agitation	Antipsychotic (only if agitation is severe or dangerous) Anxiolytic
Anxiety	Antidepressant Anxiolytic (only for acute situational anxiety)
Depression	Antidepressant
Hyperactivity, inattention, impulsivity	Stimulant α-Agonist Selective norepinephrine reuptake inhibitor
Mania	Antipsychotic Lithium
Obsessions, compulsions	Antidepressant
Psychosis	Antipsychotic
Tics	α-Agonist Antipsychotic (only if tics are severe/disabling)

Adapted from Shaw RJ, DeMaso DR. *Clinical Manual of Pediatric Consultation-Liaison Psychiatry*. Washington, DC: American Psychiatric Press, 2020: 443.

decreased appetite, weight loss, and dizziness, along with nonclinical increases in heart rate and BP. Potential serious neuropsychiatric reactions include psychosis, mania, panic attacks, aggressive behavior, depression, seizures, and suicidal thinking. Atomoxetine carries an FDA warning regarding the risk of suicidal thinking and the need to monitor this closely. Atomoxetine also has been associated with rare hepatotoxicity and should be discontinued in patients with jaundice or laboratory evidence of liver injury, and should not be restarted. Because of the risk of sudden death, atomoxetine generally should be avoided in youth with known serious structural cardiac abnormalities, cardiomyopathy, heart rhythm abnormalities, or other serious cardiac problems.

Viloxazine is a second selective norepinephrine reuptake inhibitor that was approved for ADHD by the FDA in 2021. It has once daily dosing, reaches steady state by day 2, and has a similar side effect profile to atomoxetine (including FDA warnings on suicidality and increases in heart rate and blood pressure).

ANTIDEPRESSANTS

Antidepressant drugs act on presynaptic and postsynaptic receptors affecting the release and reuptake of brain neurotransmitters, including norepinephrine, serotonin, and dopamine (Table 33.4). There is moderate evidence for the effectiveness of antidepressant medications in the treatment of anxiety and obsessive-compulsive disorders (approximate effect size 0.70, medium) and weaker evidence for the treatment of depressive disorders (approximate effect size 0.30, small). Suicidal thoughts have been reported during treatment with all antidepressants. The overall risk difference of suicidal thoughts/behaviors across randomized controlled trials (RCTs) of all antidepressants and all indications has been reported as 0.7%, corresponding to a *number needed to harm* of 143. All antidepressants carry an FDA warning for suicidality; careful monitoring is recommended during the initial stages of treatment and following dose adjustments.

The **selective serotonin reuptake inhibitor (SSRI)** fluoxetine outperforms all other antidepressants (both SSRI and non-SSRI) studied and is the only SSRI separating from placebo in studies of depressed *preadolescents*. Side effects to SSRIs generally manifest in the first few weeks of treatment, and many will resolve with time. More common side effects include nausea, irritability, insomnia, appetite changes, weight loss/gain, headaches, dry mouth, dizziness, bruxism, diaphoresis, tremors, akathisia, and restlessness. A small proportion of youth taking SSRIs, particularly younger children, develop **behavioral activation** (motor or mental restlessness, increased impulsivity, disinhibited behavior, talkativeness, insomnia) that can be confused with mania, but the activation symptoms typically resolve when the dose is decreased or the medication discontinued. Because the likelihood of activation events has been associated with higher antidepressant plasma levels, slow up-titration and close monitoring (particularly in younger children) is warranted and underscores the importance of educating parents/guardians and patients in advance about this potential side effect.

Sexual side effects are common, including decreased libido, anorgasmia, and erectile dysfunction. There is an increased risk of bleeding, especially when used with aspirin or nonsteroidal antiinflammatory drugs (NSAIDs).

SSRIs can be associated with abnormal heart rhythms, and citalopram causes dose-dependent QT interval prolongation, contraindicating doses >40 mg/day. Patients with diabetes may experience hypoglycemia during SSRI treatment and hyperglycemia on discontinuation. **Discontinuation symptoms** (e.g., dysphoric mood, irritability, agitation, dizziness, sensory disturbances, anxiety, confusion, headache, lethargy, emotional lability, insomnia, hypomania) are common with short-acting SSRIs (sertraline, citalopram, escitalopram), leading to a recommendation for divided doses if these medications are used at higher doses and graduated reduction if discontinued.

Serotonin syndrome results from excessive agonism of the CNS and peripheral nervous system serotonergic receptors and can be caused by prescribing multiple serotonergic medications concomitantly (Chapter 94). Symptoms can arise within 24-48 hours and are characterized by *mental status changes* (confusion, agitation, anxiety), *neuromuscular hyperactivity* (tremors, clonus, hyperreflexia, muscle rigidity), and *autonomic hyperactivity* (hypertension, tachycardia, arrhythmias, tachypnea, diaphoresis, shivering, vomiting, diarrhea). Advanced symptoms include fever, seizures, arrhythmias, and unconsciousness, which can lead to fatalities. Treatment is hospital based and includes discontinuation of all serotonergic agents and supportive care with continuous cardiac monitoring. Monoamine oxidase inhibitors (MAOIs) play a role in most cases of serotonin syndrome and should be avoided in combination with any other serotonergic drug, including another MAOI. Moreover, caution should be exercised when combining two or more non-MAOI serotonergic drugs, including antidepressants, opioids and other pain medications, stimulants, cough/cold/allergy medications, and other over-the-counter products. Caution entails starting the second non-MAOI serotonergic drug at a low dose, increasing the dose slowly, and monitoring for symptoms, especially in the first 24-48 hours after dosage changes. Adolescents should be informed that certain recreational drugs (e.g., dextromethorphan, "ecstasy") are highly serotonergic and can cause serious interactions with antidepressants.

The **non-SSRI antidepressants** include duloxetine, venlafaxine, bupropion, and mirtazapine (see Table 33.4). These medications all lack rigorous evidence to support their effectiveness in children and adolescents and as such should not be considered first-line options.

Duloxetine and venlafaxine are **serotonin-norepinephrine reuptake inhibitors (SNRIs)**. *Duloxetine* has FDA approval for treatment of generalized anxiety disorder in children and adolescents but typically is not as effective for anxiety as the SSRIs. Studies of duloxetine for depression in youth have been negative. There is some evidence in adults that duloxetine can be useful for fibromyalgia and chronic musculoskeletal pain, an effect that has also been observed in children and adolescents. Common side effects of duloxetine include nausea, diarrhea, decreased weight, and dizziness. Increases in heart rate and BP have been noted; BP should be monitored at each visit and with each dosage change. In addition, there have been reports of hepatic failure, sometimes fatal; duloxetine should be discontinued and not resumed in patients who develop jaundice or other evidence of liver dysfunction. Duloxetine also has been associated with severe skin reactions (erythema multiforme and Stevens-Johnson syndrome).

Table 33.3 Select Medications for Attention-Deficit/Hyperactivity Disorder Symptoms

GENERIC [BRAND] (HOW SUPPLIED) DURATION OF ACTION	FDA APPROVED (AGE RANGE IN YEARS)	TARGET SYMPTOMS	SUGGESTED DAILY STARTING DOSE (MG)	USUAL DAILY THERAPEUTIC DOSAGE RANGE (MG)*
Methylphenidate [Concerta] (18, 27, 36, 54 mg caps) 12 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	18	Age 6-12: 18-54; Age >12: 18-72
Dexmethylphenidate [Focalin XR]† (5, 10, 15, 20 mg caps) 10-12 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	5	5-30
Serdexmethylphenidate/ dexmethylphenidate [Azstarys]† (26.1 mg/5.2 mg, 39.2 mg/7.8 mg, 52.3 mg/10.4 mg) 12 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	26.1 /5.2	26.1 /5.2-52.3/10.4
Methylphenidate suspension, extended release [Quillivant XR] (25 mg/5 mL) 12 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	10	10-60
Dextroamphetamine/ amphetamine [Adderall XR]† (5, 10, 15, 20, 25, 30 mg caps) 12 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	2.5-5	5-30
Lisdexamfetamine [Vyvanse]† (10, 20, 30, 40, 50, 60, 70 mg caps; 10, 20, 30, 40, 50, 60 mg chewable tabs) 12-14 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	10	10-70
Amphetamine suspension extended release [Dyanavel XR] (2.5/mL) 13 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	2.5-5	2.5-20
Methylphenidate [Metadate CD]† (10, 20, 30, 40, 60 mg caps) 8 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	10	10-60
Methylphenidate [Ritalin LA]† (10, 20, 30, 40 mg caps) 8 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	10	10-60
Dextroamphetamine [Dexedrine Spansule]† (5, 10, 15 mg spansules) 6-8 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	5	5-40
Dexmethylphenidate [Focalin] (2.5, 5, 10 mg tabs) 4-5 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	2.5-5	5-20
Methylphenidate [Ritalin] (5, 10, 20 mg tabs) 4 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	2.5-5	5-60
Methylphenidate [Methylin] (5 mg/5 mL, 10 mg/5 mL) 4 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	2.5-5	5-60
Dextroamphetamine/ amphetamine [Adderall] (5, 10, 15, 20, 30 mg tabs) 4-5 hr	ADHD (3+)	Inattention Hyperactivity Impulsivity	Age 3-5: 2.5 Age ≥6: 5	Age 6-12: 5-30; Age >12: 5-40

Continued

Table 33.3 Select Medications for Attention-Deficit/Hyperactivity Disorder Symptoms—cont'd

GENERIC [BRAND] (HOW SUPPLIED) DURATION OF ACTION	FDA APPROVED (AGE RANGE IN YEARS)	TARGET SYMPTOMS	SUGGESTED DAILY STARTING DOSE (MG)	USUAL DAILY THERAPEUTIC DOSAGE RANGE (MG)*
Dextroamphetamine [Dexedrine] (5, 10, 15, mg caps) 4 hr	ADHD (3+)	Inattention Hyperactivity Impulsivity	Age 3-5: 2.5 Age ≥6: 5	5-40
Atomoxetine [Strattera]† (10, 18, 25, 40, 60, 80, 100 mg caps) 24 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	<70 kg: 0.5 mg/kg/day >70 kg: 40	<70 kg: 0.5-1.2 mg/kg/day >70 kg: 40-100
Viloxazine [Qelbree]† (100, 150, 200 mg ER caps) 24 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	Age 6-11: 100 Age ≥12: 200	Age 6-11: 100-400 Age ≥11: 200-400
Clonidine [Kapvay] (0.1 mg tabs) 12 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	0.05	25-40kg: 0.05-0.2 41-45kg: 0.05-0.3 >45kg: 0.05-0.4
Guanfacine [Intuniv] (1, 2, 3, 4 mg tabs) 24 hr	ADHD (6+)	Inattention Hyperactivity Impulsivity	1	25-40kg: 1-2 41-45kg: 1-3 >45kg: 1-4
Clonidine [Catapres] (0.1, 0.2, 0.3 mg tabs) 4 hr	None	Inattention Hyperactivity Impulsivity	0.05	25-40 kg: 0.05-0.2 41-45 kg: 0.05-0.3 >45 kg: 0.05-0.4
Guanfacine [Tenex] (1, 2 mg tabs) 6 hr	None	Inattention Hyperactivity Impulsivity	0.5	25-40 kg: 0.5-2 mg 41-45 kg: 0.5-3 mg >45 kg: 0.5-4 mg

*Doses shown in table may exceed maximum recommended dose for some children.
†Capsule contents may be sprinkled on soft food.
ADHD, Attention-deficit/hyperactivity disorder; FDA, U.S. Food and Drug Administration.

Bupropion, a **norepinephrine-dopamine reuptake inhibitor (NDRI)**, appears to have an indirect mixed-agonist effect on norepinephrine and dopamine transmission. No rigorous studies of bupropion for anxiety or depression have been conducted with children or adolescents, although some evidence suggests that bupropion may be effective for smoking cessation and ADHD in youth. Common side effects include irritability, nausea, anorexia, headache, and insomnia. Dose-related seizures (0.1% risk at 300 mg/day and 0.4% risk at 400 mg/day) have occurred with bupropion, so it is contraindicated in those with epilepsy, eating disorders, or at risk for seizures.

Venlafaxine has only negative trials for the treatment of depression in children and adolescents but does have some favorable evidence for the treatment of anxiety. Side effects are similar to SSRIs, including hypertension, irritability, insomnia, headaches, anorexia, nervousness, and dizziness, and dropout rates are high in clinical trials of venlafaxine. BP should be monitored at each visit and with each dosage change. Discontinuation symptoms are more pronounced with venlafaxine than the other non-SSRI antidepressants. In addition, suicidal thinking and agitation may be more common with venlafaxine than with other antidepressants, requiring close monitoring. In light of the substantial adverse effects, venlafaxine likely should be considered to be a third-line medication.

Mirtazapine is both a noradrenergic and a specific serotonergic antidepressant. Mirtazapine has only negative trials for the treatment of depression in youth and has no rigorous evidence of effectiveness for any other child or adolescent psychiatric disorder. Mirtazapine is associated with a risk for substantial weight gain and, more rarely, hypotension, elevated liver enzymes, agranulocytosis, and QT prolongation. Although its sedating properties have led to its adjunctive use for insomnia in adults with depressive/anxiety disorders, there is no evidence for use of mirtazapine in childhood sleep disorders.

The **tricyclic antidepressants (TCAs)** have mixed mechanisms of action; for example, clomipramine is primarily serotonergic, and imipramine is both noradrenergic and serotonergic. With the advent of the SSRIs, the lack of efficacy studies, particularly in depression, and more serious side effects, the use of TCAs in children and adolescents has substantially declined. *Clomipramine* has been used in the treatment of obsessive-compulsive disorder (see Table 33.4). TCAs also have been used for neuropathic pain. TCAs cause both blood pressure and heart rate increases and are class I antiarrhythmics with quinidine-like properties that are potentially fatal in overdose. Anticholinergic symptoms (e.g., dry mouth, blurred vision, constipation) are the most common side effects.

Anxiolytic agents, including lorazepam, clonazepam, and hydroxyzine, have been effectively used for the *short-term* relief of the symptoms of *acute* anxiety (see Table 33.4). They are less effective as chronic (>4 months) anxiolytic medications, particularly when used as monotherapy. Chronic use carries a significant risk of physical and psychologic dependence.

ANTIPSYCHOTICS

Based on their mechanism of action, antipsychotic medications can be divided into first-generation (blocking dopamine D_2 receptors) and second-generation (mixed dopaminergic and serotonergic antagonists) agents (Table 33.5).

The **second-generation antipsychotics (SGAs)** have relatively strong antagonistic interactions with 5-HT_2 receptors and perhaps more variable activity at central adrenergic, cholinergic, and histaminic sites, which might account for the varying side effects, particularly metabolic, noted among these agents. The SGAs have moderate evidence for the treatment of agitation in autism and for the treatment of schizophrenia, bipolar disorder, and aggression. Haloperidol is a

Table 33.4 Select Medications for Depression and Anxiety in Children and Adolescents

GENERIC [BRAND] (HOW SUPPLIED)	FDA APPROVED (AGE RANGE IN YEARS)	TARGET SYMPTOMS	SUGGESTED DAILY STARTING DOSE (MG)	USUAL DAILY THERAPEUTIC DOSAGE RANGE (MG)*
Citalopram [Celexa] (10, 20, 40 mg tabs)	None	Depression Anxiety Obsessions Compulsions	Age 6-12: 10 Age 13-17: 20	10-40
Escitalopram [Lexapro] (5, 10, 20 mg tabs)	Depression (12-17) Anxiety (7-17)	Depression Anxiety Obsessions Compulsions	10	5-20
Fluoxetine [Prozac] (10, 20, 40, 60 mg tabs)	Depression (8-17) OCD (7-17)	Depression Anxiety Obsessions Compulsions	Age 6-12: 10 Age 13-17: 20	Depression: 10-20 Anxiety, OCD: 10-60
Sertraline [Zoloft] (25, 50, 100 mg tabs)	OCD (6-17)	Depression Anxiety Obsessions Compulsions	Age 6-12: 12.5-25 Age 13-17: 25-50	25-200
Duloxetine [Cymbalta] (20, 30, 60 mg tabs)	Anxiety (7-17)	Depression Anxiety	30	30-60
Venlafaxine [Effexor XR] (37.5, 75, 150 mg caps)	None	Depression Anxiety	37.5	37.5-225
Bupropion [Wellbutrin XL] (150, 300 mg tabs)	None	Depression	150	150-300
Mirtazapine [Remeron] (15, 30, 45 mg tabs)	None	Depression	7.5	7.5-45
Clomipramine [Anafranil] (25, 50, 75 mg caps)	OCD (10-17)	Obsessions Compulsions	25	25-200
Lorazepam [Ativan] (0.5, 1, 2 mg tabs)	None	Acute anxiety	0.5	0.5-2
Clonazepam [Klonopin] (0.5, 1, 2 mg tabs)	None	Panic	0.5	0.5-1
Hydroxyzine [Vistaril] (25, 50 mg caps)	Anxiety	Acute anxiety	Age <12: 12.5-25 Age >12: 25-50	Age <12: 25-50 Age >12: 50-100

*Doses shown in table may exceed maximum recommended dose for some children.

high-potency **first-generation antipsychotic** that is most commonly used in treatment of agitation and schizophrenia.

The antipsychotic agents have significant side effects, including sedation, extrapyramidal symptoms, hyperprolactinemia, anticholinergic, seizures, orthostasis, CV effects, weight gain, hyperlipidemia, metabolic syndrome, glucose abnormalities, hematologic effects (e.g., leukopenia, neutropenia), and elevated liver transaminases (Table 33.6). They have an FDA warning for increased risk of diabetes. Youth appear to be more sensitive to sedation, extrapyramidal side effects (except akathisia), withdrawal dyskinesia, prolactin abnormalities, weight gain, hepatotoxicity, and metabolic abnormalities. The development of diabetes or tardive dyskinesia appears less prevalent than in adults, although this may be a function of short follow-up periods because these side effects may not emerge until adulthood.

The management of adverse effects should be proactive with baseline assessment and ongoing monitoring (Table 33.7). Abnormal movements (dystonia, akathisia, tardive dyskinesia) need periodic assessment using a standardized instrument such as the *Abnormal Involuntary Movement Scale* (AIMS). The need for antiparkinsonian agents may be a consideration, particularly for patients at risk for acute dystonia or who have a previous history of dystonic reactions. CV effects include prolongation of the QTc interval, tachycardia, orthostatic hypertension, and pericarditis. In patients with a personal or family history of cardiac abnormalities, including syncope, palpitations, arrhythmias, or sudden unexplained death, a baseline ECG with subsequent monitoring should be considered, along with cardiology consultation before prescribing. Alternative pharmacology should be considered if the resting heart rate exceeds 130 beats/min, or the PR, QRS, and QTc exceed 200, 120, and 460 msec, respectively.

The **cytochrome P450 (CYP)** enzymes metabolize the antipsychotics and as such necessitate that the PCP and psychiatrist are alert for potential drug-drug interactions that may impact the serum levels of all patient medications. CYP3A4 is mainly relevant to lurasidone, quetiapine, olanzapine, and haloperidol, whereas CYP2D6 predominately clears aripiprazole and risperidone. Asenapine is metabolized by CYP1A2 as well as direct glucuronidation by UGT1A4. Because <10% of paliperidone undergoes CYP first-pass metabolism, there is a lower likelihood of drug-drug interactions.

Primary prevention strategies to manage weight and metabolic dysfunction include educating the youth and family about healthy lifestyle behaviors and selecting an agent that has the lowest likelihood of impacting metabolic status. Secondary strategies would include intensifying healthy lifestyle instructions, consideration of switching agents, and a weight loss treatment program. Consideration

Table 33.5 Select Medications for Psychosis, Mania, Irritability, Agitation, Aggression, and Tourette Disorder in Children and Adolescents

GENERIC (BRAND)	FDA APPROVED (AGE RANGE IN YEARS)	TARGET SYMPTOMS	SUGGESTED DAILY STARTING DOSE	USUAL DAILY THERAPEUTIC DOSAGE RANGE (MG)*
Aripiprazole [Abilify]	Bipolar (10-17) Schizophrenia (13-17) Irritability in autism (6-17) Tourette (6-17)	Mania Psychosis Irritability Aggression Agitation Vocal/motor tics	Bipolar, schizophrenia: 2 Autism: 2 Tourette: 2	Bipolar, schizophrenia: 10-30 Autism: 5-15 Tourette: 5-20
Olanzapine [Zyprexa] Available in dissolvable and IM prep	Bipolar (13-17) Schizophrenia (13-17)	Mania Psychosis Agitation	2.5	2.5-20
Quetiapine [Seroquel]	Bipolar (10-17) Schizophrenia (13-17)	Mania Psychosis Agitation	25 mg bid	Bipolar: 400-600 Schizophrenia: 400-800
Risperidone [Risperdal] Available in liquid and dissolvable prep	Bipolar (10-17) Schizophrenia (13-17) Irritability in autism (5-17)	Mania Psychosis Irritability Aggression Agitation	Bipolar, schizophrenia: 0.5 Autism: <20 kg: 0.25 ≥20 kg: 0.5	Bipolar, schizophrenia: 1-6 Autism: 0.5-3
Paliperidone [Invega] Available in IM prep	Schizophrenia (12-17)	Psychosis	3	<51 kg: 3-6 ≥51 kg: 3-12
Lurasidone [Latuda]	Schizophrenia (13-17) Depressive episodes with Bipolar (13-17)	Psychosis	Schizophrenia: 40 Bipolar: 20	Schizophrenia: 40-80 Bipolar: 20-80
Asenapine [Saphris]	Bipolar (10-17)	Mania Psychosis	2.5 twice daily	5-20
Haloperidol [Haldol] Available in liquid and IM prep	Psychosis Severe behavioral disorders Agitation (3-17) Tourette disorder	Mania Psychosis Irritability Aggression Agitation Vocal/motor tics	0.05 mg/kg/day	0.05-0.15 mg/kg/day
Lithium carbonate Available in liquid prep	Bipolar (12-17)	Mania	Acute mania: 1800 mg/day Target level: 1.0-1.5 mEq/L	Long-term control: 900-1200 mg/day Target level: 0.6-1.2 mEq/L

*Doses shown in table may exceed maximum recommended dose for some children.

of weight management interventions and increased monitoring of blood glucose and lipid levels should be implemented if weight gain exceeds the 90th percentile of body mass index (BMI) for age, or a change of 5 BMI units in youth who were obese at the initiation of treatment. Tertiary strategies, where diabetes, hypertension, obesity, or another metabolic abnormality has occurred, require more intensive weight reduction interventions, changing medication, and consultation with a medical subspecialist. Metformin has been found to be an effective treatment for antipsychotic-induced weight gain in children with autism spectrum disorder. Extrapyramidal adverse effects are generally dose- and titration rate–dependent and may respond to dose or titration rate reductions. More disabling effects may benefit from adjunctive treatment (e.g., anticholinergics, antihistamines).

Neuroleptic malignant syndrome is a rare, potentially fatal reaction that can occur during antipsychotic therapy (see Chapter 94). The syndrome generally manifests with fever, muscle rigidity, autonomic instability, and delirium. It is associated with elevated serum creatine phosphokinase levels, a metabolic acidosis, and high end-tidal CO_2 excretion. It has been estimated to occur in 0.2–1% of patients treated with dopamine-blocking agents. Malnutrition and dehydration in the context of an organic brain syndrome and simultaneous treatment with lithium and antipsychotic agents (particularly haloperidol) can increase the risk. Mortality rates may be as high as 20–30% as a result of dehydration, aspiration, kidney failure, and respiratory collapse. Differential diagnosis of neuroleptic malignant syndrome includes infections, heat stroke, malignant hyperthermia, lethal catatonia, agitated delirium, thyrotoxicosis, serotonin syndrome, drug withdrawal, and anticholinergic or amphetamine, ecstasy, and salicylate toxicity.

MOOD STABILIZERS

Because of their limited evidence of effectiveness and concerns about safety, mood-stabilizing medications (see Table 33.5) have limited use in the treatment of child and adolescent psychiatric disorders. For the treatment of bipolar mania in adolescents, antipsychotics are considered first-line therapy.

Of the mood stabilizers, **lithium** alone has rigorous support for the treatment of bipolar mania. Lithium's mechanism of action is not well understood; proposed theories relate to neurotransmission, endocrine effects, circadian rhythm, and cellular processes. Common side effects include polyuria and polydipsia, hypothyroidism,

Table 33.6 Relative Side Effects for Select Antipsychotic Medications

ADVERSE EFFECT	ARIPIPRAZOLE [ABILIFY]	OLANZAPINE [ZYPREXA]	QUETIAPINE [SEROQUEL]	RISPERIDONE [RISPERDAL]	PALIPERIDONE [INVEGA]	LURASIDONE [LATUDA]	HALOPERIDOL [HALDOL]
Akathisia	++	++	+	++	++	++	+++
Parkinsonism	+	++	+	++	++	++	+++
Dystonia	+	+	+	++	++	++	+++
Tardive dyskinesia	+	+	+	++	++	++	+++
Hyperprolactinemia	+	++	+	+++	+++	+	+++
Anticholinergic	+	++	+/++	++	+	+	+
Seizures	+	++	++	+	+	+	+
Orthostasis	+	++	++	++	++	+	+
QT interval	+	++	+	+	+	+	++
Weight gain	+	+++	++	++	++	+	+
Hyperlipidemia	+	+++	++	+++	++	++	+
Glucose abnormalities	+	+++	++	++	+	+	+
Sedation	+	++	++	+	+	++	+

+= Seldom; ++ = sometimes; +++ = often.
Adapted from Keepers GA, Fochtmann LJ, Anzia JM, et al. The American Psychiatric Association Practice Guideline for the Treatment of Patients With Schizophrenia. *Am J Psychiatry*. 2020;177(9):868–872.

Table 33.7 Metabolic Monitoring Parameters Based on ADA/APA Consensus Guidelines

	BASELINE	WEEK 4	WEEK 8	WEEK 12	EVERY 3 MO THEREAFTER	ANNUALLY
Medical history*	X			X		X
Body mass index	X	X	X	X	X	X
Waist circumference	X			X		X
Blood pressure	X			X		X
Fasting glucose and Hemoglobin A_{1c}	X			X		X
Fasting lipid panel	X			X		X

*Personal/family history of obesity, hypertension, and cardiovascular disease.
From American Diabetes Association. American Psychiatric Association; American Association of Clinical Endocrinologists; North American Association for the Study of Obesity. Consensus development conference on antipsychotic drugs and obesity and diabetes. *Diabetes Care*. 2004;27(2):596–601.

hyperparathyroidism, weight gain, nausea, abdominal pain, diarrhea, acne, and CNS symptoms (sedation, tremor, somnolence, memory impairment). Periodic monitoring of lithium levels along with thyroid and renal function is needed. Lithium serum levels of 0.8-1.2 mEq/L are targeted for acute episodes, and levels of 0.6-0.9 mEq/L are targeted for maintenance therapy. Acute overdose (level >1.5 mEq/L) manifests with neurologic symptoms (e.g., tremor, ataxia, nystagmus, hyperreflexia, myoclonus, slurred speech, delirium, coma, seizures) and altered renal function. Toxicity is enhanced when dehydrated or with drugs that affect renal function, such as NSAIDs or angiotensin-converting enzyme (ACE) inhibitors. Neuroleptic malignant syndrome has been reported in patients concurrently taking antipsychotic drugs and lithium.

MEDICATION USE IN PHYSICAL ILLNESS

There are special considerations in the use of psychotropic medications with physically ill children. Between 80% and 95% of most psychotropic medications are protein bound; the exceptions are lithium (0%), methylphenidate (10–30%), and venlafaxine (25–30%). As a result, psychotropic levels may be directly affected because albumin binding is reduced in many physical illnesses. Metabolism is primarily through the liver and gastrointestinal (GI) tract, with excretion via the kidney. Therefore dosages may need to be adjusted in children with hepatic or renal impairment.

Hepatic Disease

In general, it is necessary to use lower doses of medications for patients with hepatic disease. Initial dosing of medications should

be reduced, and titration should proceed slowly. In acute hepatitis, there is generally no need to modify dosing because metabolism is only minimally altered. In chronic hepatitis and cirrhosis, hepatocytes are destroyed, and doses may need to be modified.

In steady-state situations, changes in protein binding can result in elevated unbound medication, resulting in increased drug action even in the presence of normal serum drug concentrations. Albumin and α_1 glycoproteins produced in the liver may be reduced with infectious and inflammatory hepatic disease, whereas surgery, trauma, and cirrhosis may result in elevated protein levels. Because it is often difficult to predict changes in protein binding, it is important to maintain attention to the clinical effects of psychotropic medications and not rely exclusively on serum drug concentrations.

Medications with high baseline rates of liver clearance (e.g., haloperidol, sertraline, venlafaxine) are significantly affected by hepatic disease. For drugs that have significant hepatic metabolism, intravenous (IV) administration may be preferred because parenteral administration avoids first-pass liver metabolic effects, and the dosing and action of parenteral medications are similar to those in patients with normal hepatic function.

Gastrointestinal Disease

GI disease primary affects drug absorption. Examples that impact absorption include conditions affecting GI motility, surgical alterations of the GI tract, short bowel syndrome, or celiac disease. Any condition that diverts blood away from the GI tract (e.g., congestive heart failure, shock) may also reduce absorption.

Psychotropic medications have the potential to cause GI side effects. Medications with anticholinergic side effects can slow GI motility, affecting absorption and causing constipation. SSRIs increase gastric motility and can cause diarrhea. SSRIs can increase the risk of GI bleeding, especially when administered with NSAIDs. Extended-release or controlled-release preparations of medications can reduce GI side effects, particularly where gastric distress is related to rapid increases in plasma drug concentrations. Using extended-release medication preparations may reduce these side effects.

Renal Disease

In general, initial dosages of medication should be reduced or dosing intervals lengthened in renal failure. The rule of two thirds is that dosages should be reduced by one third of the normal dosage for a patient with renal insufficiency. However, most psychotropic medications, with the exceptions of lithium and gabapentin, do not require significant dosing adjustments in kidney failure. It is important to monitor serum concentrations in renal insufficiency, particularly for medications with a narrow therapeutic index. Cyclosporine can elevate serum lithium levels by decreasing lithium excretion. Although TCAs have been largely supplanted by SSRIs, patients with kidney failure and those on dialysis appear to be more sensitive to their side effects, possibly because of the accumulation of hydroxylated tricyclic metabolites.

Because most psychotropic medications are highly protein bound, they are not significantly cleared by dialysis. Lithium is essentially completely removed by dialysis, and the common practice is to administer lithium after dialysis. Patients on dialysis often have significant fluid shifts and are at risk for dehydration, with neuroleptic malignant syndrome more likely in these situations.

Cardiac Disease

Antipsychotics, TCAs, and citalopram (>40 mg/day) can lead to prolongation of the QTc interval, with increased risk of ventricular tachycardia and ventricular fibrillation, particularly in patients with structural heart disease. Patients with a baseline QTc interval of >440 msec should be particularly considered at risk. The normal QTc value in children is 400 msec (±25-30 msec). A QTc value that exceeds 2 standard deviations (SDs; >450-460 msec) is considered too long and may be associated with increased mortality. An increase in the QTc from a baseline of >60 msec is also associated with increased mortality.

There is increased risk of morbidity and mortality in patients with preexisting cardiac conduction problems. Patients with Wolff-Parkinson-White syndrome who have a short PR interval (<0.12 sec) and widened QRS interval associated with paroxysmal tachycardia are at high risk for life-threatening ventricular tachycardia that may be exacerbated by the use of antipsychotics, TCAs, and citalopram.

Respiratory Disease

Anxiolytic agents can increase the risk of respiratory suppression in patients with pulmonary disease. SSRIs are the first-line medications to consider in treating disabling anxiety. Possible airway compromise caused by acute laryngospasm should be considered when dopamine-blocking antipsychotic agents are used.

Neurologic Disease

Psychotropic medications can be used safely with epilepsy following consideration of potential interactions among the medication, the seizure disorder, and the anticonvulsant. Any behavioral toxicity of anticonvulsants used either alone or in combination should be considered before proceeding with psychotropic treatment. Simplification of combination anticonvulsant therapy or a change to another agent can result in a reduction of behavioral or emotional symptoms and obviate the need for psychotropic intervention. Clomipramine and bupropion possess significant seizure-inducing properties and should be avoided when the risk of seizures is present.

Principles for Psychotropic Prescribing in Primary Care

In the context of a severe and prolonged shortage of child and adolescent psychiatrists (CAPs), PCPs are increasingly managing behavioral health conditions in primary care. The principles for effective use of psychotropic medications outlined in the beginning of this chapter can be used by PCPs to guide their medication assessment and management (see Table 33.1). This approach emphasizes **baseline assessment with standardized symptom rating scales** to identify target symptoms and their level of severity, **prioritizing FDA-approved medications** for the target symptom and patient age range, adherence to recommendations regarding therapeutic dosage ranges, using a **follow-up symptom rating scale assessment** to monitor medication response, continuing the medication trial for sufficient duration, and switching to an alternative FDA-approved medication if the first medication trial is ineffective.

PCPs can access support for psychotropic prescribing through the development of collaborative relationships with CAPs who can provide timely consultation for questions/advice; interim management until stable; and ongoing care for patients with severe, complex, unsafe, or treatment-refractory conditions. Ideally, consultation with a CAP should occur if one is considering using psychotropic medications with very young children, multiple psychotropic medications, medication doses outside of therapeutic range, or non–FDA-approved medications.

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Chapter 34

Psychotherapy

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PSYCHOTHERAPY

Psychotherapy is the first-line treatment for many child and adolescent psychiatric disorders (e.g., posttraumatic stress disorder [PTSD], depression, anxiety, behavior, substance-related) because for these disorders, psychotherapy produces outcomes greater than or equal to pharmacotherapy, with less risk of harm. Even with disorders (e.g., schizophrenia, bipolar disorder, attention-deficit/hyperactivity disorder [ADHD]) for which medication is typically the first-line treatment, adjunctive psychotherapy can convey additional benefit.

Psychotherapy is moderately effective in reducing psychiatric symptomatology and achieving remission of illness. In a 2017 multilevel meta-analysis of almost 500 randomized trials over 5 decades, there was a 63% probability that a youth receiving psychotherapy fared better than a youth in a control condition. Effects varied across multiple moderators. The mean posttreatment and follow-up effect sizes were highest for anxiety, followed by behavior/conduct, ADHD, and depression, and lowest for multiple concurrent comorbidities. Effect sizes varied according to outcome measure informant, with youth and parents generally reporting larger effects than teachers.

A variety of psychotherapeutic modalities have been developed, with varying levels of effectiveness (Table 34.1). Differences between therapeutic approaches may be less pronounced in practice than in theory. The quality of the therapist-patient alliance is consistently one of the most important predictors of treatment outcome. A positive working relationship, expecting change to occur, facing problems assertively, increasing mastery, and attributing change to the participation in the therapy have all been associated with effective therapy, irrespective of the specific psychotherapeutic modality.

All psychotherapy interventions involve a series of interconnected steps, including performing an assessment, constructing working diagnoses and an explanatory formulation, deciding on treatment and a monitoring plan, obtaining treatment assent/consent, implementing treatment, terminating treatment, and following for symptom recurrence. Psychotherapists ideally develop a treatment plan by combining evidence-based therapies with clinical judgment and patient/family preference to collaboratively arrive at a specific intervention plan for the individual patient.

Behavior Therapy

Behavior therapy is based on both classic (Pavlovian) and operant (Skinnerian) conditioning. Both approaches address the **antecedent stimuli** and **consequent outcomes** of problematic thoughts or behaviors. The treatment begins with a behavioral assessment along with a functional analysis of the setting, immediately preceding events, and real-world outcomes of the behavior to identify the settings in which the behavior occurs and/or the reason the child engages in the behavior. Often the function of problematic behavior is to **gain access to attention** or a **tangible item** the child wants or to **avoid a task or stressful situation.** The goal is to teach the child a more adaptive response using tools such as positive and negative reinforcement; social and tangible rewards; response cost/consequences; shaping, modeling, and prompting; systematic desensitization; and aversive conditioning.

Behavior therapy has shown particular effectiveness with oppositional behavior, obsessive-compulsive, autism spectrum disorder, and substance use disorders, and ADHD.

Cognitive-Behavioral Therapy

Cognitive-behavioral therapy (CBT) is based on social and cognitive learning theories and extends behavior therapy to address the influence of cognitive processes on behavior. CBT is a short-term, problem- and goal-oriented treatment centered on correcting problematic patterns in thinking and behavior that lead to emotional difficulties and functional impairments. The CBT therapist seeks to help the patient identify and change cognitive distortions (e.g., learned helplessness, irrational fears); identify and incrementally approach aversive situations; and identify and practice distress-reducing behavior. **Self-monitoring** (daily thought records), **self-instruction** (brief sentences asserting thoughts that are comforting and adaptive), and **self-reinforcement** (rewarding oneself for adaptive behaviors) are key tools used to facilitate achievement of the CBT goals.

CBT has good-quality evidence for the treatment of anxiety, obsessive-compulsive disorder (OCD), behavior disorders, substance abuse, and insomnia, and fair evidence for the treatment of depression. For many childhood psychiatric disorders, CBT alone provides outcomes comparable to psychotropic medication alone, and the combination of both may convey additional benefit in symptom and harm reduction. Modified versions of CBT have shown applicability to the treatment of other disorders.

Trauma-Focused Cognitive-Behavioral Therapy

Trauma-focused cognitive-behavioral therapy (TF-CBT) is designed to process and master the psychologic, behavioral, and physiologic consequences of a specific traumatic experience. It involves a combination of education about the broad effects of trauma exposure; teaching effective relaxation, affective modulation, and cognitive coping and processing skills; creating a trauma narrative to foster understanding; mastering trauma reminders; enhancing future safety and development; and teaching parents how to support youth with trauma exposure. TF-CBT is considered the first-line treatment for PTSD.

Dialectical Behavioral Therapy

Dialectical behavioral therapy (DBT) is a modality targeted at emotional and behavioral dysregulation by synthesizing or integrating the seemingly opposite strategies of acceptance and change. *Dialectic conflicts* (wanting to die vs wanting to live) often exist in the same patient. **The four skills modules—*mindfulness* (the practice of being fully aware and present in the moment), *distress tolerance* (how to tolerate emotional pain), *interpersonal effectiveness* (how to maintain self-respect and effective communication in relationships with others), and *emotion regulation* (how to manage complex emotions)—are balanced in terms of acceptance and change.** The treatment targets, in order of priority within a given session, are life-threatening behaviors, such as suicidal and self-injurious behaviors or communications; therapy-interfering behaviors, such as coming late to sessions, canceling appointments, and being uncollaborative in working toward treatment goals; quality-of-life behaviors, including relationship and occupational problems and financial crises; and skills acquisition to help patients achieve their goals. DBT has good-quality evidence for self-injurious thoughts and behaviors and has shown promise for the treatment of bipolar disorder and other manifestations of emotional-behavioral dysregulation.

Interpersonal Psychotherapy

Interpersonal psychotherapy (IPT) focuses on resolving interpersonal difficulties that lead to psychologic distress and maladaptive behaviors. Patients are viewed as having strengths and vulnerabilities that determine the manner in which they cope with or respond to an interpersonal crisis (stressor). The main goals of IPT include expanding social support, decreasing interpersonal stress, enhancing the processing of emotions, and improving social functioning within significant relationships. The interpersonal inventory, a detailed review of the patient's significant relationships, both current and past, with their emotional valence, leads to a formulation linking the interpersonal situations to the emotional/behavior symptoms. Various techniques (linking emotions/behaviors to interpersonal events, communication and problem-solving training, perspective-taking, role adaptation) are utilized to resolve interpersonal difficulties. IPT is a well-established treatment for adolescent depression.

Table 34.1 Effective Psychotherapies for Specific Behavioral Health Disorders

DISORDER	WELL-ESTABLISHED*	PROBABLY EFFICACIOUS†
Anorexia	Family therapy: behavioral	Family therapy: systemic Individual psychodynamic psychotherapy
Anxiety, children under 8	Family-based CBT	Group parent CBT ± group child CBT
Anxiety	CBT ± parent component ± medication	Family psychoeducation Parent/child CBT Relaxation, assertiveness training
Attention-deficit/hyperactivity	BPT Behavioral classroom management Behavioral peer interventions Organization (executive function) training	Combined training interventions
Autism	Individual, comprehensive ABA Teacher-implemented focused ABA + DSP	Individual, focused (communication) ABA ± DSP Focused DSP parent training
Behavior, child	Group BPT Individual BPT with child component	Modifications of Group BPT‡ Individual BPT alone or with other modifications Self-directed parent behavior therapy Group child behavior therapy ± teacher training Individual child behavior therapy ± parent component Group/individual child-centered play therapy
Behavior, adolescent	Behavioral therapy + CBT + family therapy	CBT
Bipolar	Family skill building + psychoeducation	DBT
Depression, child	None	None
Depression, adolescent	Individual/group CBT Individual IPT	Group IPT
Obsessive-compulsive	Family-focused CBT	Individual CBT
Posttraumatic stress	Individual/group trauma-focused CBT ± parent component	Group CBT + parent component EMDR
Substance use	Individual/group/family CBT ± MET Family-based treatment, ecologic ± CBT ± MET	Family-based treatment, behavioral Motivational interviewing/MET Family-based treatment, ecologic + contingency management Family-based treatment, behavioral, ecologic, contingency management + MET MET + CBT + contingency management
Self-injurious thoughts and behaviors	DBT-adolescents (deliberate self-harm, suicidal ideation)	DBT—adolescents (nonsuicidal self-injury, suicide attempt) Individual/family CBT (suicide attempt) Family therapy (suicide attempt) Interpersonal therapy—adolescents (suicidal ideation) Individual psychodynamic therapy (deliberate self-harm) Parent training (self-injurious thoughts and behaviors (suicidal and nonsuicidal)

*Two or more consistent randomized controlled trials demonstrating superiority of treatment over control groups; conducted by independent investigators working at different research settings.
†Same as in the previous footnote, but lacking independent investigator criterion.
‡Modifications of Group Behavioral Parent Training that are probably efficacious include adding child components or family problem-solving strategies
CBT, Cognitive-behavioral therapy; BPT, behavioral parent training; ABA, applied behavioral analysis; DSP, developmental social-pragmatic; DBT, dialectical behavioral therapy; IPT, interpersonal psychotherapy; EMDR, eye movement desensitization and reprocessing; MET, motivational enhancement treatment.
Adapted from Society of Clinical Child and Adolescent Psychology. Concerns, symptoms and disorders. https://effectivechildtherapy.org/concerns-symptoms-disorders/. Accessed July 13, 2021.
Criteria derived from Southam-Gerow MA, Prinstein MJ. Evidence base updates: The evolution of the evaluation of psychological treatments for children and adolescents. *J Clin Child Adol Psychol*. 2014;43(1):1–6.

Psychodynamic Psychotherapy

At the core of psychodynamic psychotherapy lies a dynamic interaction between different dimensions of the mind, conscious and unconscious. This approach is based on the belief that much of one's mental activity occurs outside one's awareness. The patient is often unaware of internal conflicts because threatening or painful emotions, impulses, and memories are repressed to avoid experiencing psychologic pain. Behavior is then controlled by what the patient does not know about himself or herself. Therapy objectives are to increase self-understanding and acceptance of painful conflicting feelings, and to develop realistic relationships between self and others. A fundamental difference of this modality is its nondirective approach to allow a patient's characteristic patterns of thinking and behavior to emerge over time. The relationship between the patient and the therapist can play a key role in identifying these patterns, as they are recapitulated in the therapeutic environment. The therapist can then analyze and interpret the manifest pattern so that self-understanding and a corrective emotional experience can be fostered.

Psychodynamic psychotherapy has shown applicability for the treatment of self-injurious thoughts and behaviors as well as anxiety,

depression, and maladaptive aspects of personality. Brief, time-limited psychodynamic psychotherapy can be appropriate for youth who are in acute situational distress. Long-term therapy can be appropriate when the biologic or social factors destabilizing the child's adaptation and development are chronic, or the psychologic difficulties are complex, or if entrenched conflicts and developmental interferences are present.

Supportive Psychotherapy

Supportive psychotherapy aims to minimize levels of emotional distress through the provision of individual and contextual support. The goal is to reduce symptoms, and treatment is focused on the "here and now." The therapist is active and helpful in providing the patient with symptomatic relief by helping the patient to contain and manage anxiety, sadness, and anger. The therapist provides support and encouragement ("coaching") to bolster a patient's existing coping mechanisms, facilitates problem solving, and provides social and instrumental support for ameliorating or lessening contextual precipitants. CBT-informed techniques are often combined with supportive psychotherapy. Probably the most common psychotherapy employed by therapists, supportive psychotherapy has shown comparable results to CBT in a number of research studies, particularly those targeting depression.

Family Therapy

The core premise in family therapy is that **dysfunctional family** interaction patterns precipitate and/or perpetuate an individual's emotional or behavioral difficulties. Family dysfunction can take a variety of forms, including enmeshment, disengagement, role-reversal or confusion, and maladaptive communication patterns. Family therapy begins with an assessment of the family system, including observing patterns of interaction; assessing family beliefs and the meanings attached to behaviors; defining social and cultural contexts; exploring the presenting problem in the context of individual and family development; assessing the family's style of dealing with problems; and identifying family strengths and weaknesses.

Family therapy techniques are drawn from two major theoretical models: structural and behavioral. **Structural family therapy** develops structures believed to foster well-functioning families, including clear and flexible boundaries between individuals, well-defined roles, and an appropriate balance between closeness and independence. **Behavioral family therapy** focuses on behavioral sequences that occur in daily life and attempts to interrupt unhelpful behavioral patterns and strengthen positive behavioral patterns through effective communication and problem solving.

Family therapy has shown established applicability in anorexia nervosa, behavior problems, and substance use and may be a promising treatment for depression and bipolar disorder.

Parenting Interventions

See Chapters 20 and 42 for more details.

Parenting interventions seek to improve both the parent–child relationship and parenting skills using the principles of behavior therapy previously described. These interventions can be provided in individual or group therapy formats. Core relationship recommendations include spending quality time with the child to foster a strong parent–child bond, increasing positive verbal interaction, showing physical affection, and engaging in child-directed play. Core parenting skills include increasing reinforcement of positive behaviors; decreasing reinforcement of negative behaviors; ignoring merely annoying behaviors; applying logical consequences for dangerous/destructive behaviors; and making parental responses predictable, contingent, and immediate. Parenting interventions have shown applicability for behavior disorders and ADHD.

Common Elements of Evidence-Based Psychotherapies

A major challenge for the practitioner is selecting the "right intervention" for the "right person" in the "right setting," and delivering the intervention in the "right way" (to meet the needs of patients and families). This challenge has led to an interest in identifying **common practice elements** across efficacious evidence-based therapies that could be "matched" in a flexible way to patients of a certain age, gender, and race/ethnicity who have certain psychiatric disorders. Table 34.2 provides the major practice elements for three of the most common child and adolescent psychiatric disorders: anxiety, depression, and disruptive behaviors. These practice elements, when made available to patients with psychiatric disorders in a system of care, are estimated to be relevant to approximately two thirds of the patients. Six of the practice elements—psychoeducation of the parent, problem-solving skills, relaxation skills, self-monitoring, cognitive/coping skills, and psychoeducation of the child—are applicable to all three disorders and as such could be considered "**core competencies**" for both mental health specialists as well as primary care practitioners (PCPs) interested in delivering brief psychotherapeutic interventions in the context of anticipatory guidance (see Discussion of Common Factors in Chapter 18).

Psychoeducation is the education of the parent and child about the cause, course, prognosis, and treatment of the disorder. Problem solving includes techniques, discussions, or activities designed to bring about solutions to targeted problems, with the intention of imparting skills for how to approach and solve future problems in a similar manner. Relaxation includes techniques designed to create and maintain the physiologic relaxation response. Self-monitoring is the repeated measurement of a target emotional or behavioral metric by the child or parent to establish goals for treatment and monitor progress toward mastery. Cognitive/coping skills consist of techniques designed to alter interpretations of events through examination of the child's reported thoughts, accompanied by exercises designed to test the validity of the reported thoughts.

Modular Therapy Packages

Of considerable importance to day-to-day clinical work is the manner in which common therapy practice elements are selected, sequenced, repeated, or selectively applied. This **coordination of psychotherapeutic elements** is particularly relevant for patients presenting with multiple concurrent psychiatric disorders whose primary concern may shift between sessions. The *Modular Approach to Therapy for Children* (MATCH) is a multi-disorder intervention system that incorporates treatment procedures (practice elements) and treatment logic (coordination) corresponding to efficacious interventions for childhood anxiety, depression, traumatic stress, and behavior problems, with modifications to allow the system to operate as a single protocol. Compared with standard manualized treatments for individual disorders and with usual care, the modular package outperformed both comparators on multiple clinical and service outcome measures when assessed over a 2-year period, although additional, independently derived evidence is needed to determine the conditions under which it is most effective and categorize this treatment approach as well established.

Treatment Engagement Interventions

Treatment engagement is conceptualized as a multidimensional construct targeting cognitive, attendance, and adherence domains. Research has identified several key factors addressing these domains that are associated with treatment engagement: accessibility promotion, psychoeducation about services, appointment reminders, assessment of treatment barriers, patient assessment, setting of positive expectations, modeling, homework assignments, rapport building, cultural acknowledgement, and goal setting (Table 34.3). To promote treatment engagement, the first 10 of these factors can be addressed by the PCP and the medical home team as soon as a mental health problem is identified that would benefit from treatment (see Chapter 18 for further discussion).

Psychotherapy in the Medical Home

Recognizing that up to one half of visits to PCPs involve a mental health problem and that an estimated one fifth of pediatric patients have a functionally impairing psychiatric disorder, in the context of limited access to specialty mental health services in community or hospital settings a number of models have been developed to deliver

Table 34.2 Practice Elements in Interventions for Three Common Child and Adolescent Psychiatric Disorders

	ANXIETY DISORDERS	DEPRESSION	DISRUPTIVE BEHAVIOR
Directed play			X
Limit setting			X
Time-out			X
Cost response			X
Activity scheduling		X	
Maintenance		X	X
Skill building		X	
Social skills training		X	X
Therapist praise/rewards			X
Natural and logical consequences	X		X
Communication skills	X		X
Assertiveness training	X		
Parent monitoring	X		X
Modeling	X		
Ignoring	X		X
Parent praise	X		X
Problem solving	X	X	X
Parent coping	X		X
Psychoeducation, parent	X	X	X
Relaxation	X	X	X
Tangible rewards	X		X
Self-monitoring	X	X	X
Cognitive/coping	X	X	X
Psychoeducation, child	X	X	X
Exposure	X		

Adapted from Chorpita BF, Daleiden EL, Weisz JR. Identifying and selecting the common elements of evidence based interventions: a distillation and matching model. *Ment Health Serv Res.* 2005;7(1):5–20.

psychotherapy in primary care. Two prominent models, both originally developed for adult populations, are collaborative care and primary care behavioral health.

Collaborative care, which spans a spectrum ranging from coordinated to co-located to integrated, provides mental healthcare for patients through a collaboration between mental health specialists and PCPs. In integrated collaborative care, patients' mental health problems are managed in the medical home setting by an interdisciplinary care team of PCPs, mental health clinicians, and care coordinators supported by a consulting psychiatrist. The PCP is the "team captain"; the mental health clinician maintains a population registry, provides brief, focused psychosocial interventions, and monitors treatment response; the care coordinator facilitates external referrals; and the consulting psychiatrist provides input regarding evidence-based psychiatric diagnosis and treatment. The four critical elements of integrated collaborative care are that it is team-driven, population-focused, measurement-guided, and evidence-based. These elements guide a treatment approach in which the patient perceives a seamless integration of medical and mental healthcare.

In children and adolescents, randomized controlled trials (RCTs) have shown that integrated collaborative care for child behavior problems, adolescent depression, and adolescent substance use is associated with more favorable treatment adherence, symptom reduction, disorder remission, and consumer satisfaction outcomes than usual care, with or without specialty referral. In a meta-analysis of collaborative care RCTs, larger effects were observed for treatment trials targeting diagnoses and elevated symptoms relative to prevention trials and for mental health diagnoses relative to substance-related diagnosis, as well as for integrated models relative to other types of collaborative mental healthcare.

Primary care behavioral health employs a mental health clinician (psychologist, social worker, mental health counselor) in the primary care setting to provide focused assessment of patients with mental health, health behavior, and substance use problems, and short-term therapy as well as health/mental health promotion and prevention interventions. Mental health clinicians typically collaborate with PCPs to develop treatment plans, monitor patient progress, and flexibly provide care to meet patients' changing needs. The model uses a "wide net" approach aimed at serving the entire primary care population, with emphasis on brief, focused interventions.

The results of **brief interventions**, particularly applicable to the fast-paced medical home setting, are encouraging. Interventions lasting only one session, particularly those utilizing CBT techniques, can be effective for mild presentations of multiple child psychiatric disorders, particularly anxiety and behavior problems in children (vs adolescents). These interventions can greatly expand capacity to

Table 34.3 Selected Psychotherapy Engagement Elements

ELEMENT	DEFINITION
Accessibility promotion	Any strategy used to make services convenient and accessible to proactively encourage and increase participation in treatment; e.g., hiring a co-located therapist or referring to a local community-based therapist with whom the practice has an ongoing collaborative relationship
Psychoeducation about services	Provision of information about services or the service delivery system; e.g., type of therapy being recommended, information about the therapist, session frequency and duration
Appointment reminders	Providing information about the day, time, and location of the therapy office for the initial appointment via mail, text, phone, email, etc., to increase session attendance
Assessment of treatment barriers	Discussion to elicit and identify barriers that hinder participation in treatment; e.g., transportation, scheduling, childcare, previous experiences with therapy, stigma
Assessment	Measurement of the patient's strengths/needs through a variety of methods; e.g., mental health screening instruments, interviews, recorded reviews during which the referring practitioner can motivate treatment engagement
Modeling	Demonstration of a desired behavior to promote imitation and performance of that behavior by client
Expectation setting	Instillation of hope regarding the efficacy of therapy and the patient's ability to participate successfully in treatment
Homework assignment	Therapeutic tasks given to the patient to complete outside the therapy session to reinforce or facilitate knowledge or skills that are consistent with the treatment plan
Goal setting	Selection of a therapeutic goal for the purpose of making a plan to achieve that goal
Rapport building	Strategies used to strengthen the relationship between therapist and patient
Cultural acknowledgment	Exploration of an individual's culture; e.g., race/ethnicity, age, sexual orientation, gender identity

Adapted from Lindsey MA, Brandt NE, Becker KD, et al. Identifying the common elements of treatment engagement interventions in children's mental health services. *Clin Child Fam Psychol Rev.* 2014;17(3):283–298; Becker KD, Lee BR, Daleiden EL, Lindsey M, Brandt NE, Chorpita BF. The common elements of engagement in children's mental health services: which elements for which outcomes?. *J Clin Child Adolesc Psychol.* 2015;44(1):30–43; and Becker KD, Boustani M, Gellatly R, Chorpita BF. Forty Years of Engagement Research in Children's Mental Health Services: Multidimensional Measurement and Practice Elements. *J Clin Child Adolesc Psychol.* 2018;47(1):1–23.

provide mental health support to those patients with emerging mild mental health problems, with the goal of preventing escalation into full-blown psychiatric disorders if problems are left untreated.

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Chapter 35

Somatic Symptom and Related Disorders

David R. DeMaso

Medically unexplained physical symptoms are common in children and adolescents. Although frequently chronic and disabling, these symptoms do not often result in referrals for mental health assessment and treatment (see Chapter 212). The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) somatic symptom and related disorders (SSRDs) are those conditions in which the physical symptoms are unexplained or for which the patient's response to the underlying medical condition is disproportionate and debilitating.

The SSRDs include somatic symptom disorder (Table 35.1), conversion disorder (Table 35.2), factitious disorders (Table 35.3), illness anxiety disorder (Table 35.4), and other specified/unspecified somatic symptom disorders (Table 35.5), as well as psychologic factors affecting other medical conditions (Table 35.6). With the exception of illness anxiety disorder (with high level of anxiety about health in the absence of significant somatic symptoms) and psychologic factors affecting other medical conditions (with psychologic and/or behavioral factors adversely affect a pediatric condition), SSRDs are classified on the basis of physical symptoms associated with clinically significant distress and impairment, with or without the presence of a diagnosed medical condition.

Most patients with SSRDs are seen by primary care practitioners or by pediatric subspecialists, who may make specialty-specific diagnoses such as visceral hyperalgesia, chronic fatigue syndrome, psychogenic syncope, or noncardiac chest pain. Even within psychiatry, SSRDs are variously referred to as functional or psychosomatic disorders or as medically unexplained symptoms. The nosologic heterogeneity across the pediatric subspecialties contributes to the varying diagnostic labels. There is a significant overlap in the symptoms and presentation of patients with somatic symptoms who have received different diagnoses from different specialties. Moreover, SSRDs share similarities

Table 35.1 DSM-5 Diagnostic Criteria for Somatic Symptom Disorder

A. One or more somatic symptoms that are distressing or result in significant disruption of daily life.
B. Excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns, as manifested by at least one of the following:
   1. Disproportionate and persistent thoughts about the seriousness of one's symptoms.
   2. Persistent high level of anxiety about health and symptoms.
   3. Excessive time and energy devoted to these symptoms or health concerns.
C. Although any one somatic symptom may not be continuously present, the state of being symptomatic is persistent (typically >6 mo).

Specify if:

With predominant pain (previously known as "pain disorder" in DSM IV-TR): for individuals whose somatic symptoms predominantly involve pain.

Persistent: A persistent course is characterized by severe symptoms, marked impairment, and long duration (>6 mo).

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p 311. Copyright 2013. American Psychiatric Association.

Table 35.2 DSM-5 Diagnostic Criteria for Conversion Disorder or Functional Neurologic Symptom Disorder

A. One or more symptoms of altered voluntary motor or sensory function.
B. Clinical findings provide evidence of incompatibility between the symptom and recognized neurologic or medical conditions.
C. The symptom is not better explained by another medical or mental disorder.
D. The symptom causes clinically significant distress or impairment in social, occupational, or other important areas of functioning or warrants medical evaluation.

Specify symptom type: weakness or paralysis, abnormal movements, swallowing symptoms, speech symptom, attacks/seizures, anesthesia/sensory loss, special sensory symptom (e.g., visual, olfactory, hearing), or mixed symptoms.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p 318. Copyright 2013. American Psychiatric Association.

Table 35.3 DSM-5 Diagnostic Criteria for Factitious Disorders

FACTITIOUS DISORDER IMPOSED ON SELF

A. Falsification of physical or psychologic signs or symptoms, or induction of injury or disease, associated with identified deception.
B. The individual presents himself or herself to others as ill, impaired, or injured.
C. The deceptive behavior is evident even in the absence of obvious external rewards.
D. The behavior is not better explained by another mental disorder, such as delusional disorder or another psychotic disorder.

Specify if: single episode or recurrent episodes.

FACTITIOUS DISORDER IMPOSED ON ANOTHER (PREVIOUSLY "FACTITIOUS DISORDER BY PROXY")

A. Falsification of physical or psychologic signs or symptoms, or induction of injury or disease, in another, associated with identified deception.
B. The individual presents another individual (victim) to others as ill, impaired, or injured.
C. The deceptive behavior is evident even in the absence of obvious external rewards.
D. The behavior is not better explained by another mental disorder, such as delusional disorder or another psychotic disorder.

Note: The perpetrator, not the victim, receives this diagnosis.

Specify if: single episode or recurrent episodes.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p 324. Copyright 2013. American Psychiatric Association.

Table 35.4 DSM-5 Diagnostic Criteria for Illness Anxiety Disorder

A. Preoccupation with having or acquiring a serious illness.
B. Somatic symptoms are not present, or, if present, are only mild in intensity. If another medical condition is present or there is a high risk for developing a medical condition (e.g., strong family history is present), the preoccupation is clearly excessive or disproportionate.
C. There is a high level of anxiety about health, and the individual is easily alarmed about personal health status.
D. The individual performs excessive health-related behaviors (e.g., repeatedly checks his or her body for signs of illness) or exhibits maladaptive avoidance (e.g., avoids doctor appointments and hospitals).
E. Illness preoccupation has been present for at least 6 months, but the specific illness that is feared may change over that time.
F. The illness-related preoccupation is not better explained by another mental disorder.

Specify whether: care-seeking type or care-avoidant type.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p 315. Copyright 2013. American Psychiatric Association.

Table 35.5 DSM-5 Diagnostic Criteria for Other Specified/Unspecified Somatic Symptom and Related Disorders

OTHER SPECIFIED

This category applies to presentations in which symptoms characteristic of a somatic symptom and related disorder that cause clinically significant distress or impairment in social, occupational, or other important areas of functioning predominate but do not meet full criteria for any of the disorders in the *somatic symptom and related disorders diagnostic class.*

Examples of presentations that can be specified using the "other specified" designation include the following:

1. Brief somatic symptom disorder: duration of symptoms is <6 mo.
2. Brief illness anxiety disorder: duration of symptoms is <6 mo.
3. Illness anxiety disorder without excessive health-related behaviors: Criterion D for illness anxiety disorder is not met (see Table 35.4).
4. Pseudocyesis: a false belief of being pregnant that is associated with objective signs and reported symptoms of pregnancy.

UNSPECIFIED

This category applies to presentations in which symptoms characteristic of a somatic symptom and related disorder that cause clinically significant distress or impairment in functioning predominate but do not meet criteria for any of the other disorders in the *somatic symptom and related disorders* diagnostic class.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p 327. Copyright 2013. American Psychiatric Association.

in etiology, pathophysiology, neurobiology, psychologic mechanisms, patient characteristics, and management and treatment response, which is indicative of a single spectrum of somatic disorders.

It is helpful for all healthcare providers to avoid the dichotomy of approaching illness using a medical model in which diseases are considered physically or psychologically based. In contrast, a developmental biopsychosocial continuum of disease better characterizes these illnesses as occurring across a spectrum ranging from a predominantly biologic to a predominantly psychosocial etiology. Indeed, there is a neurobiologic component to the related **functional neurologic disorders**, especially related to pain symptoms (see Chapters 212 and 389).

SOMATIZATION

The term *somatization* is defined as a pattern of seeking medical help for physical symptoms that cannot be fully explained by pathophysiologic mechanisms but are nevertheless attributed to physical disease by the sufferer. It has been described as the propensity to express psychologic distress through somatic complaints. It is thought to occur universally in young children (but occurs in every age group) who have not yet developed the cognitive and a linguistic skill needed to comprehend and communicate their feelings.

Between 10% and 30% of children worldwide experience physical symptoms that are seemingly unexplained by a physical illness, with recurrent somatic complaints generally falling into cardiovascular, gastrointestinal, pain, and pseudoneurologic symptom clusters (Chapter 212). The prevalence of somatization is roughly equal among school-age males and females with a rise in adolescence, at which point somatic complaints in females are five times greater than those in males. Youth with a history of somatization are more likely to experience emotional/behavioral difficulties, be absent from school, and perform poorly academically. There are high rates of anxiety and depressive disorders in youth with SSRDs. Youth with conversion disorder, specifically

Table 35.6 DSM-5 Diagnostic Criteria for Psychologic Factors Affecting Other Medical Conditions

A. A medical symptom or condition (other than a mental disorder) is present.
B. Psychologic or behavioral factors adversely affect the medical condition in one of the following ways:
   1. The factors have influenced the course of the medical condition, as shown by a close temporal association between the psychologic factors and the development or exacerbation of, or delayed recovery from, the medical condition.
   2. The factors interfere with the treatment of the medical condition (e.g., poor adherence).
   3. The factors constitute additional well-established health risks for the individual.
   4. The factors influence the underlying pathophysiology, precipitating or exacerbating symptoms or necessitating medical attention.
C. The psychologic and behavioral factors in Criterion B are not better explained by another mental disorder (e.g., panic disorder, major depressive disorder, posttraumatic stress disorder).

Specify if: mild, moderate, severe, or extreme.

nonepileptic seizures, have increased rates of comorbid psychopathology including internalizing disorders and posttraumatic stress disorders. Somatization is common in cultures that accept physical illness but not psychologic symptoms as a reason for disability.

RISK FACTORS FOR SOMATIZATION

Genetic and biologic factors, stressful life events, personality traits and coping styles, cognitive and learning difficulties, learned complaints, family factors, and sociocultural background are potential risk factors that have been associated with pediatric somatization.

Genetic and Biologic Factors

Somatization clusters in families with increased rates in first-degree relatives of patients with SSRDs. The concordance rates for somatization approximate 29% in monozygotic twin studies. Genetic factors have been hypothesized to contribute to the development of personality traits that may predispose to somatization when combined with environmental factors. Neuroimaging studies have found neuronal areas (premotor and supplementary motor cortexes, the middle frontal gyrus, the anterior cingulate cortex, the insula, and the posterior cingulate cortex) to differ between patients with SSRDs.

Stressful Life Events

Stressful life events, including childhood trauma, physical/sexual abuse, bullying, and exposure to natural disasters have all been associated with somatization. Youth with SSRDs have shown high rates of comorbid anxiety, suicidal histories, family psychiatric histories, bullying, learning difficulties, and significant life events.

Personality Traits and Coping Styles

Somatization has been postulated to occur in patients who are unable to verbalize emotional distress and instead use physical symptoms as a means of expression. Physical symptoms have been called a form of body language for children who have difficulty expressing emotions verbally. Examples include individuals who have difficulties with disclosing traumatic events and high-achieving children who cannot admit they are under too much pressure. *Alexithymia* has been used to describe individuals with somatic concerns who do not have a verbal vocabulary to describe their feelings. Somatic complaints have also been linked to *somatosensory amplification,* which is the tendency to experience normal somatic sensations as "intense, noxious and disturbing." When present, patients are hypervigilant to their own bodily sensations, overreact to these sensations, and interpret them as indicating physical illness.

Cognitive and Learning Difficulties

Children with difficulties learning and using academic skills, particularly in the context of high parental expectations, are associated with increased rates of somatization. Compared with unaffected siblings, youth with "functional" neurologic disorders have been found to score lower on tests of full-scale IQ, vocabulary level, and mathematics as well as to have more learning difficulties. Between 40% and 60% of patients with psychogenic nonepileptic seizures are reported to have learning and subtle language problems.

Learned Complaints

In operant conditioning learning, attention and sympathy from others and/or decrease in responsibilities *(secondary gain)* can reinforce somatic complaints. If somatic symptoms are reinforced (i.e., increased parental attention and/or avoidance of unpleasant school pressures) early in the course of an SSRD the likelihood increases that the somatic complaints will become more ingrained and less amenable to change. Social learning theory suggests that somatic symptoms may be a result of "modeling" or "observational learning" within the family. Family members with similar physical complaints *(symptom model)* are commonly found in SSRDs.

Family Factors

In family systems theory, somatization can serve the function of drawing attention away from other areas of tension with a family. It has been suggested that children in families with significant conflict may develop somatic complaints as a mechanism to avoid any emotional expression that may exacerbate family conflict.

Sociocultural Background

SSRDs have been reported to be more common in rural areas and among individuals of lower socioeconomic status. Spells or visions are common aspects of culturally sanctioned religious and healing rituals, and falling down with loss or alteration in consciousness is a feature in a variety of culture-specific syndromes.

ASSESSMENT

The diagnosis of SSRD must be based on the presence of somatic symptoms that are distressing and/or result in significant impairment of daily life. These somatic symptoms must be accompanied by excessive thoughts, feelings, and behaviors related to these symptoms and/or associated health concerns. SSRDs are not diagnoses of exclusion; the mere absence of a medical explanation is insufficient to make the diagnosis.

The assessment of suspected SSRDs should include an assessment of biologic, psychologic, social, and developmental realms, both separately and in relation to each other. A collaborative healthcare approach between pediatric practitioners and mental health clinicians is indicated to ensure that all realms are considered in the assessment of medically unexplained physical symptoms (Table 35.7)

Medical Assessment

A comprehensive medical workup to rule out serious physical illness is necessary, but must be carefully balanced with efforts to avoid unnecessary and potentially harmful tests and procedures. Certain medical conditions are notoriously overlooked and should be carefully considered as part of the diagnostic workup for problematic somatic symptoms (Table 35.8).

The presence of a medical condition does not exclude the possibility of somatization playing an important role in the presentation. Somatic symptoms early in a disease course that can be directly attributed to a specific physical illness (e.g., acute respiratory illness) may evolve into psychologically based symptoms, particularly in situations where the patient may experience benefit from adopting the sick role. Symptoms may not follow known physiologic principles or anatomic patterns and may respond to suggestion or placebo. Physical findings may occur secondary to the effects of the SSRD, especially when chronic or severe (e.g., deconditioning, disuse atrophy from prolonged immobilization, nutritional deficiency, gastroparesis and constipation from chronic poor oral intake).

Table 35.7 Key Elements to Consider in the Psychiatric Assessment of Somatic Symptoms and Related Disorders in Children and Adolescents

MEDICAL FINDINGS SUGGESTIVE OF SSRDS
- Absence of findings despite thorough medical workup
  - Lack of electrical evidence on video-electroencephalographic monitoring
- Inconsistent findings on examination
  - Sensory changes inconsistent with anatomic distribution (e.g., splitting at the midline, loss of sensation of entire face but not scalp, discrepancy between pain and temperature sensation, absence of Romberg sign)
  - Absence of functional impairment despite claims of profound weakness (e.g., impairment of fine motor function on testing, yet able to dress and undress)
  - Face-hand test (deflecting falling arm from face)
  - Hoover sign (patient pushes down with "paretic" leg when attempting to raise unaffected leg and fails to press down with unaffected leg when raising "paretic" leg)
  - Astasia-abasia (staggering gait, momentarily balancing, but never actually falling)
  - Dragging a "weak" leg as though it were a totally lifeless object instead of circumduction of the leg
  - Psychogenic deafness responding to unexpected words or noises
  - Tunnel vision
  - Movement disorder with normal concurrent electroencephalogram
  - Symptoms suggestive of conversion seizures (see Table 634.3).
  - Increased symptoms in the presence of family or medical staff
  - Periods of normal function when distracted
- Temporal relationship between onset of symptom and psychosocial stressor

PSYCHIATRIC FINDINGS SUGGESTIVE OF SSRDS
- Excessive thoughts, feelings, or behaviors related to the somatic symptoms or associated health concerns
- Co-occurring psychiatric disorder
- Learning difficulties and academic failure
- Stressful life events (including childhood trauma and bullying)
- Symptom model(s)

FAMILY BELIEFS REGARDING SOMATIC SYMPTOMS
- Belief in a single undiagnosed primary medical cause
  - Investment in further medical workup
  - Fear about serious medical illness
- Belief in the role of environmental triggers
- Belief in the role of psychologic factors
- Beliefs regarding symptom management
  - Awareness of nonpharmacologic approaches
  - Belief that the child should rest and be excused from usual responsibilities

FAMILY MEDICAL HISTORY
- Family history of unexplained somatic symptoms
- Pattern of reinforcement of illness behavior in the family

IMPACT OF SOMATIC SYMPTOMS
- Emotional (e.g., depression/anxiety vs la belle indifférence)
- Family (e.g., disruption of work schedule, impact on marital relationship, impact on distraction from family conflict)
- Social and peer relationships
- Academic (e.g., absenteeism, placement in home teaching)

REINFORCEMENT OF SOMATIC SYMPTOMS
- Reinforcement by parents
  - Medical journals and diaries of symptoms kept by parents
  - Parent home from work
- Increased attention from family/friends
- Increased attention from medical providers
- Avoidance of school, social, or athletic stressor

SSRD, Somatic symptoms and related disorder.
From Shaw RJ, DeMaso DR. *Clinical Manual of Pediatric Consultation-Liaison Psychiatry.* American Psychiatric Press; 2020:250–252.

Table 35.8 Selected Medical Conditions to Consider in the Differential Diagnosis of Youth Presenting with Disabling Somatic Symptoms

AIDS	Hyperparathyroidism
Acquired myopathies	Hyperthyroidism
Acute intermittent porphyria	Juvenile idiopathic arthritis
Angina	Lyme disease
Autoinflammatory (recurrent fever) syndromes	Migraine headaches
Basal ganglia disease	Mitochondrial disorders
Brain tumors	Multiple sclerosis
Cardiac arrhythmias	Myasthenia gravis
Chronic systemic infections	Narcolepsy
Ehlers-Danlos syndrome	Optic neuritis
Fabry disease	Periodic paralysis
Gaucher disease	Postural orthostatic hypertension syndrome
Guillain-Barré syndrome	Polymyositis
Hereditary neuropathies	Seizure disorders
Hereditary angioedema	Small fiber neuropathy
	Superior mesenteric artery syndrome
	Systemic lupus erythematosus

Modified from Shaw RJ, DeMaso DR. *Clinical Manual of Pediatric Consultation-Liaison Psychiatry.* American Psychiatric Press; 2020:248.

Psychosocial Assessment

If somatization is suspected, a mental health consultation should be included early in the diagnostic workup. This can be a difficult step for many families given their belief that there is a medical cause for their child's problem. A common response is for the family to react adversely and think that their child's symptoms are not being taken seriously. It is helpful for the pediatric practitioner to frame the consultation as a routine part of the medical workup as well as an opportunity to assess the level of stress connected with the current physical symptoms. The practitioner can communicate that the mental health consultation will be used to gain a more complete understanding of the origins of their child's distress, what perpetuates it, and which treatments are likely to be most effective.

The mental health assessment should include a careful assessment of psychosocial stressors, comorbid depression or anxiety disorders, individual and family histories of somatization, the presence of a model of illness behavior, and evidence of secondary gain resulting from the symptoms. The assessment should provide the pediatric practitioner(s) with a biopsychosocial explanation of the child's symptoms (diagnosis and formulation), which will inform the development of a comprehensive biopsychosocial management plan.

Differential Diagnoses

The primary differential diagnosis is between an SSRD and a physical illness. *Importantly, however, these disorders are not mutually exclusive and often coexist.* Depressive and anxiety disorders frequently include the presence of physical symptoms, which tend to remit with treatment of the primary depressive or anxiety symptoms, and which appear distinct from physical complaints seen in SSRDs. Distinguishing features of other physical complaint disorders are noted in Table 35.9. Chronic pain syndromes may be caused by fibromyalgia and small fiber autonomic neuropathy and complex regional pain syndrome (see Chapter 211).

MANAGEMENT

Effective management of SSRDs begins with the development of a positive working relationship between the patient, family, pediatric practitioner, and mental health clinician based on a shared understanding of the diagnosis, formulation, and a management plan that generally incorporates a number of different treatment modalities.

The *formulation of the problem is the crucial first step.* Patients and their families routinely present with the belief that their symptoms are caused by a medical illness alone. This view needs to be reframed from this narrow medical model view to a comprehensive biopsychosocial understanding. With the completion of medical and psychosocial assessments, a joint meeting of the pediatric practitioner(s) and

Table 35.9 Features of Conditions Characterized by Patient's Physical Complaints

	ILLNESS ANXIETY DISORDER	SOMATIC SYMPTOM DISORDER	CONVERSION DISORDER FUNCTIONAL NEUROLOGIC DISORDER
Presenting complaint	Primary concern is the development of a serious illness—does not require specific symptoms	Primary concern is a specific symptom; generally presents with a more specific physical complaint There are no objective physical findings other than those related to deconditioning	Presents with new-onset neurologic or physical symptom; patient may or may not be concerned about this new symptom
Medical correlation to complaint	Generally present with more vague complaints than a specific symptom; not usually explained by medical workup In the presence of a known disease, the complaint does not correlate to the natural history of the disorder in severity, duration, or dysfunction	Patient can have a medical explanation for their symptom; however, the worry about the seriousness of the symptom is disproportionate or excessive	Physical and neurologic findings do not correlate with patient's presentation Neurologic manifestations involve aspects of CNS where voluntary control is exercised
Course of disease	Often associated with other anxiety disorders; can be chronic	Chronic; rarely remits	Generally acute onset; can recur with same or different presenting symptom(s)

CNS, Central nervous system
Modified from Byrne R, Elsner G, Beattie A. Emotional and behavioral symptoms. In: Kliegman RM, Toth H, Bordini BJ, Basel D, eds. *Nelson Pediatric Symptom-Based Diagnosis: Common Diseases and their Mimics*. 2nd ed. Elsevier; 2023:Table 31.14, p. 530.

mental health clinician (as well as any involved pediatric specialists) should be arranged to reach and ensure a consensus on the diagnosis and treatment plan and facilitate adequate and consistent communication among all providers.

The next step is an "informing conference or meeting" that includes both the managing pediatric practitioner and the family. It is important in this meeting that this practitioner present the medical and psychosocial findings together to the patient and the family in a supportive and nonjudgmental manner. If patients and their families believe that the practitioner understands and empathizes with the degree of distress the somatic symptoms have produced, then they are more likely to be active participants in treatment. Depending on the comfort and expertise of the pediatric practitioner and the severity of the SSRD, the mental health clinician may or may not elect to attend this meeting.

After complete medical investigations yield no unifying results, labeling the symptoms as "psychiatric" may be problematic because it can shift the search for the cause onto family functioning, resulting in children and parents feeling blamed for the symptoms. The goal is to avoid such labeling and instead help the family move toward an understanding of the *mind-body connection and to shift their approach from searching for the cause of the symptoms to increasing child functioning*. Providing mind-body examples, such as facial flushing when embarrassed, hand shaking when frightened, or phantom limb pain, will help the patient and family understand how the brain may produce physical symptoms.

Treatment

With child and family acceptance of a biopsychosocial understanding, an integrated medical and psychosocial treatment approach focused on the development and implementation a treatment plan to improve the patient's functioning, and not a continued search for a cause of the presenting symptoms, can be implemented. It is helpful to establish realistic goals that emphasize improvements in *functioning* rather than the illusion that the symptoms can be completely removed. Those patients with mild-moderate presentations can be treated effectively in the primary or specialty pediatric care setting with appropriate mental health follow-up, whereas those with severe presentations and high complexity are better managed in the psychiatry specialty care setting.

Role of the Pediatric Practitioner

The pediatric practitioner serves an important role in providing ongoing monitoring and treatment for possible physical illness in addition to the recommended mental health interventions. Frequent, brief, and ongoing pediatric visits can be scheduled as a means of helping avoid unnecessary medical investigations and procedures. This arrangement permits the patient to receive attention from their pediatric practitioner without having to develop somatic symptoms. Furthermore it may reassure the family that the team is continuing to monitor for symptoms that would require further evaluation and helps ensure that any further medical evaluation is directed by a clinician knowledgeable about the previous symptoms and evaluations. It is generally more helpful for the practitioner to attend to a patient's *anxiety* in relation to their physical symptoms rather than the symptoms themselves. This approach has been shown to reduce overall healthcare utilization and to improve patient satisfaction.

Using Rehabilitation Approach

A rehabilitative approach *acknowledges* the reality of the symptoms, *emphasizes* the necessary involvement of mind and body in the recovery process, and *shifts the focus* from "cure" to "return to normal functioning" while allowing youth to "save face" through the promotion of physical recovery as the primary goal. A rehabilitative approach includes the use of intensive physical and occupational therapy that emphasizes the recovery of function. This approach can be combined with a behavioral modification program, with incentives for improvements in functioning, while removing secondary gain for illness behavior.

In severely disabled patients, it may be preferable to recommend admission to an inpatient medical-psychiatric treatment program that specializes in SSRDs. Another useful option to consider is that of day treatment or partial hospitalization programs. Multidisciplinary inpatient rehabilitation programs have much to offer these patients because they are designed to support both physical and psychologic recovery. Families are generally reassured that multidisciplinary staff can continue to monitor physical symptoms, thus ensuring that any missed diagnoses will be recognized quickly.

Youth with a high level of impairment often miss a significant amount of school. Communication with the school is often crucial in coordinating a successful reintegration. In addition to discussions with the school guidance counselor and/or nurse, a letter for the school providing education and recommended approaches for the patient's symptoms can be beneficial. These interventions can be formalized by having the school work with the family to develop either a 504 plan for accommodations needed in regular education settings, or an individualized educational plan (IEP) if the child needs special education services. Ongoing communication between the school and the pediatric practitioner for monitoring of further symptoms is recommended.

Psychotherapy and Psychopharmacology

Meta-analyses have shown that psychologic treatments improve symptom load, disability, and school attendance in youth suffering from various somatic symptoms including functional abdominal symptoms, fatigue, tension-type headache, and musculoskeletal pain. **Cognitive-behavioral therapy** (CBT) interventions modify symptom experience and restore central nervous system abnormalities associated with functional impairment. CBT techniques (e.g., relaxation training, biofeedback, hypnosis) can be used to teach patients the control they can have over certain physiologic processes, such as autonomic system activity. Cognitive restructuring is effective in addressing and altering dysfunctional thoughts regarding symptoms and their implications for functioning. Treatments that encourage active coping strategies and emotional expression and modulation are helpful in reducing symptoms and improving functioning. Modifying parental response patterns that are overprotective and potentially reinforcing (e.g., allowing the child to sleep late or to stay home from school in response to symptoms) help to decrease disability.

Psychopharmacologic treatment may be considered when psychiatric comorbidities are present, specifically, depressive and anxiety disorders. A combination of pharmacotherapy, physical therapy, and psychologic interventions in multicomponent management programs has been shown to be effective.

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Chapter 36

Rumination and Pica

Chase B. Samsel, Heather J. Walter, and David R. DeMaso

36.1 Rumination Disorder

Chase B. Samsel, Heather J. Walter, and David R. DeMaso

Rumination disorder is the repeated regurgitation of food, in which the regurgitated food may be rechewed, reswallowed, or spit out, for a period of at least 1 month following a period of normal functioning. Regurgitation is typically frequent and daily; it does not occur during sleep. It is not caused by an associated gastrointestinal illness or other medical conditions (e.g., gastroesophageal reflux, pyloric stenosis). It does not occur exclusively during the course of anorexia nervosa, bulimia nervosa, binge-eating disorder, or avoidant/restrictive food intake disorder. If the symptoms occur in the context of an intellectual or other neurodevelopmental disorder, the symptoms must be sufficiently severe to warrant additional clinical attention.

Weight loss and failure to make expected weight are common features in infants with rumination disorder. Infants may display a characteristic position of straining and arching the back with the head held back while making sucking movements with their tongue. In infants and older individuals with intellectual disability, the rumination behavior may appear to have a self-soothing or self-stimulating function. Malnutrition may occur in older children and adults, particularly when the regurgitation is associated with restricted food intake (which may be designed to avoid regurgitation in front of others). They may attempt to hide the regurgitation behavior or avoid eating among others.

EPIDEMIOLOGY

Originally thought of as a disorder predominantly seen in infants and those with intellectual disability, rumination disorder has also been recognized in healthy individuals across the life span and can be overlooked in adolescents. In otherwise healthy children, rumination disorder typically appears in the first year of life, generally between ages 3 and 12 months. The disorder can have an episodic course or can occur continuously until treatment is initiated. In infants the disorder frequently remits spontaneously but can be protracted with problematic and even life-threatening malnutrition. Additional complications related to the secondary effects of malnutrition include growth delay and negative effects on development and learning potential.

ETIOLOGY AND DIFFERENTIAL DIAGNOSIS

Risk factors for rumination disorder in infants and young children include a disturbed relationship with primary caregivers, lack of an appropriately stimulating environment, neglect, stressful life situations, learned behavior reinforced by pleasurable sensations, distraction from negative emotions, and inadvertent reinforcement (attention) from primary caregivers. Risk factors for rumination disorder in adolescents include similar early childhood factors along with female gender and comorbid anxiety and depression. The differential diagnosis includes congenital gastrointestinal system anomalies, pyloric stenosis, Sandifer syndrome, gastroparesis, hiatal hernia, increased intracranial pressure, diencephalic tumors, adrenal insufficiency, and inborn errors of metabolism. Older children and adults with anorexia nervosa or bulimia nervosa may also engage in regurgitation because of concerns about weight gain. The diagnosis of rumination disorder is appropriate only when the severity of the disturbance exceeds that routinely associated with a concurrent physical illness or mental disorder.

TREATMENT

The first step in treatment begins with a behavioral analysis to determine whether the disorder serves a self-stimulation purpose and/or is socially motivated. The behavior may begin as self-stimulation, but it subsequently becomes reinforced and maintained by the social attention given to the behavior. The central focus of behavioral treatment is to reinforce correct eating behavior while minimizing attention to rumination. Diaphragmatic breathing and postprandial gum chewing, when used as a competing response, have been shown to be helpful. Aversive conditioning techniques (e.g., withdrawal of positive attention, introducing bitter/sour flavors when regurgitating) are considered when a child's health is jeopardized but can be more reasonable and useful in adolescents. Additional techniques shown to be useful in adolescents include reswallowing all regurgitation, use of paradoxical intention, and guided progressive food trials.

Successful behavioral treatment requires the child's primary caregivers to be involved in the intervention. The caretakers need education and counseling on responding adaptively to the child's behavior as well as altering any maladaptive responses. No current evidence supports a psychopharmacologic intervention for rumination disorder. In more severe or intractable cases (e.g., severe dehydration, malnutrition), an intensive integrated medical-behavioral treatment program on a medical or medical-psychiatric unit may be necessary.

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36.2 Pica

Chase B. Samsel, Heather J. Walter, and David R. DeMaso

Pica involves the persistent eating of nonnutritive, nonfood substances (e.g., paper, soap, plaster, charcoal, clay, wool, ashes, paint, earth) over a period of at least 1 month. The eating behavior is inappropriate to the developmental level (e.g., the normal mouthing and tasting of objects in infants and toddlers), and therefore a minimum age of 2 years is suggested. The eating behavior is not part of a culturally supported or socially normative practice. A diagnosis of pica may be assigned in the presence of any other feeding and eating disorder.

EPIDEMIOLOGY

Pica can occur throughout life but occurs most frequently in childhood. It is more common in those with intellectual disability and autism spectrum disorders, and to a lesser degree in obsessive-compulsive and schizophrenic disorders. The prevalence of pica is unclear, although it appears to increase with the severity of an intellectual disability. It usually remits in childhood but can continue into adolescence and adulthood. **Geophagia** (eating earth) is associated with pregnancy and is not seen as abnormal in some cultures (e.g., rural or preindustrial societies in parts of Africa and India). Children with pica are at increased risk for lead poisoning, iron-deficiency anemia, mechanical bowel problems, intestinal obstruction, intestinal perforations, dental injury, and parasitic infections. Pica can be fatal based on substances ingested.

ETIOLOGY AND DIFFERENTIAL DIAGNOSIS

Numerous etiologies have been proposed but not proved, ranging from psychosocial causes to physical ones. They include nutritional deficiencies (e.g., iron, zinc, calcium), low socioeconomic factors (e.g., lead paint exposure), child abuse and neglect, family disorganization (e.g., poor supervision), mental disorder, learned behavior, underlying (but undetermined) biochemical disorder, and cultural and familial factors. The differential diagnosis includes anorexia nervosa, factitious disorder, and nonsuicidal self-injury. A separate diagnosis of pica should be made only if the eating behavior is sufficiently severe enough to warrant additional clinical attention.

TREATMENT

Combined behavioral, social, and medical approaches are generally indicated for pica. Assessment for neglect and family supervision combined with psychiatric assessment for concurrent mental disorders and developmental delay are important in developing an effective intervention strategy for pica. Behavioral interventions, particularly applied behavioral analysis in patients with intellectual disability or autism spectrum disorders, are increasingly found to be helpful. The sequelae related to an ingested item can require specific treatment (e.g., lead toxicity, iron-deficiency anemia, parasitic infestation). Ingestion of hair can require medical or surgical intervention for a gastric bezoar.

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Chapter 37 Motor Disorders and Habits

Jung Won Kim, Heather J. Walter, and David R. DeMaso

Motor disorders are interrelated sets of psychiatric symptoms characterized by abnormal motor movements and associated phenomena. In the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5), they include tic, stereotypic movement, and developmental coordination disorders. **Tic disorders** (Tourette, persistent motor or vocal tic, provisional tic, other specified/unspecified tic) and **stereotypic movement disorders** (SMDs) are addressed in this chapter. **Habits** present as repetitive and often problematic motor behaviors (e.g., thumb sucking, nail biting, teeth grinding). When the problems cause significant distress or impairment they are discussed as **body-focused repetitive behavior disorder** in the Obsessive Compulsive and Related Disorders section of DSM-5.

37.1 Tic Disorders

Jung Won Kim, Heather J. Walter, and David R. DeMaso

Tourette disorder (TD), **persistent (chronic) motor or vocal tic disorder (PTD)**, and **provisional tic disorders** are characterized by involuntary, rapid, repetitive, and single or multiple motor and/or vocal/phonic tics that wax and wane in frequency but have persisted for >1 year since the first tic onset (<1 year for provisional tic disorder) (Table 37.1). PTD is differentiated from TD in that PTD is limited to either motor or vocal tics (not both), whereas TD has both motor and vocal tics at some point in the illness (although not necessarily concurrently). The tic disorders are hierarchical in order (i.e., TD followed by PTD followed by provisional tic disorder), such that once a tic disorder at one level of the hierarchy is diagnosed, a lower-hierarchy diagnosis cannot be made. **Other specified/unspecified tic disorders** are presentations in which symptoms characteristic of a tic disorder that cause significant distress or impairment predominate but do not meet the full criteria for a tic or other neurodevelopmental disorder.

DESCRIPTION

Tics are sudden, rapid, recurrent, nonrhythmic motor movements or vocalizations. *Simple motor tics* (e.g., eye blinking, neck jerking, shoulder shrugging, extension of the extremities) are fast, brief movements involving one or a few muscle groups. *Complex motor tics* involve sequentially and/or simultaneously produced, relatively coordinated movements that can seem purposeful (e.g., brushing back one's hair bangs, tapping the foot, imitating someone else's movement [**echopraxia**], or making a sexual or obscene gesture [**copropraxia**]). *Simple vocal tics* (e.g., throat clearing, sniffing, coughing) are solitary, meaningless sounds and noises. *Complex vocal tics* involve recognizable word or utterances (e.g., partial words [syllables], words out of context, obscenities or slurs [**coprolalia**], repeating one's own sounds or words [**palilalia**], or repeating the last heard word or phrase [**echolalia**]).

Table 37.1 DSM-5 Diagnostic Criteria for Tic Disorders

TOURETTE DISORDER
A. Both multiple motor and one or more vocal tics have been present at some time during the illness, although not necessarily concurrently.
B. The tics may wax and wane in frequency but have persisted for >1 year since first tic onset.
C. Onset is before age 18 years.
D. The disturbance is not attributable to the physiologic effects of a substance (e.g., cocaine) or another medical condition (e.g., Huntington disease, postviral encephalitis).
PERSISTENT (CHRONIC) MOTOR OR VOCAL TIC DISORDER
A. Single or multiple motor or vocal tics have been present during the illness, but not both motor and vocal.
B. The tics may wax and wane in frequency but have persisted for >1 year since first tic onset.
C. Onset is before age 18 years.
D. The disturbance is not attributable to the physiologic effects of a substance (e.g., cocaine) or another medical condition (e.g., Huntington disease, postviral encephalitis).
E. Criteria have never been met for Tourette disorder.
Specify if:
With motor tics only
With vocal tics only
PROVISIONAL TIC DISORDER
A. Single or multiple motor and/or vocal tics.
B. The tics have been present for <1 year since first tic onset.
C. Onset is before age 18 years.
D. The disturbance is not attributable to the physiologic effects of a substance (e.g., cocaine) or another medical condition (e.g., Huntington disease, postviral encephalitis).
E. Criteria have never been met for Tourette disorder or persistent (chronic) motor or vocal tic disorder.

Note: A tic is a sudden, rapid, recurrent, nonrhythmic motor movement or vocalization. Reprinted with permission from the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p 81. Copyright ©2013. American Psychiatric Association. All Rights Reserved.

Sensory phenomena (premonitory urges) that precede and trigger the urge to tic have been described. Individuals with tics can suppress them for varying periods of time, particularly when external demands exert their influence, when deeply engaged in a focused task or activity, or during sleep. Tics are often suggestible and are worsened by anxiety, excitement, or exhaustion. Parents have described increasing frequency of tics at the end of the day.

CLINICAL COURSE

Onset of tics is typically between ages 4 and 6 years. The frequency of tics tends to wax and wane with peak tic severity between ages 10 and 12 years and marked attenuation of tic severity in most individuals (65%) by age 18-20 years. A small percentage will have worsening tics into adulthood. New onset of tics in adulthood is very rare and most often is associated with exposure to drugs or insults to the central nervous system. Tics manifest similarly in all age groups, with changes in affected muscle groups and vocalizations that occur over time. Some individuals may have tic-free periods of weeks to months.

EPIDEMIOLOGY

Prevalence rates for all tics range from 6–18% for males and 3–11% for females, with the rate of TD alone estimated as 0.8%. In general, PTD/TD has a male preponderance with a gender ratio varying from 2:1 to 4:1.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis includes other repetitive movements of childhood (Table 37.2). Tics may be difficult to differentiate from stereotypies. Although stereotypies may resemble tics, **stereotypies** are typically rhythmic movements and do not demonstrate the change in body location or movement type over time that is typical of tics. **Compulsions** may be difficult to differentiate from tics when tics have premonitory urges. Tics should be differentiated from a variety of developmental and benign movement disorders (e.g., benign paroxysmal torticollis, Sandifer syndrome, benign jitteriness of newborns, shuddering attacks). Although tics may present in various neurologic illnesses (e.g., Wilson disease, neuroacanthocytosis, Huntington syndrome, various frontal-subcortical brain lesions), it is rare for tics to be the only manifestation of these disorders (Table 37.3).

Individuals presenting with tics in the context of declining motor or cognitive function should be referred for neurologic assessment. Substances/medications that are reported to worsen tics include selective serotonin reuptake inhibitors (SSRIs), lamotrigine, and cocaine. If tics develop in close temporal relationship to the use of a substance or medication and then remit when use of the substance is discontinued, a causal relationship is possible. Stimulants do not commonly increase tics.

COMORBIDITIES

Comorbid psychiatric disorders are common, often with both patient and family viewing the accompanying condition as more problematic than the tics. There is a bidirectional association between PTD/TD (especially TD) and obsessive-compulsive disorder (OCD), with 20–60% of TD patients meeting OCD criteria and 20–40% of OCD patients reporting tics (Fig. 37.1). Attention-deficit/hyperactivity disorder (ADHD) occurs in approximately 50% of all childhood PTD/TD, but estimates in clinically referred patients suggest much higher rates (60–80%). PTD/TD is often accompanied by behavior problems, including poor frustration tolerance, temper outbursts, and oppositionality. Learning disabilities have been found in >20% of these patients. Concurrent anxiety and depression have also been observed. Some patients with PTD/TD will display symptoms of autism spectrum disorder (ASD); careful assessment is required to determine which disorder is primary.

ETIOLOGY

Tics are proposed to be the result of dysfunctional corticostriatal-thalamocortical motor pathways in the basal ganglia, striatum, and frontal lobes associated with abnormalities in the dopamine, serotonin, and norepinephrine neurotransmitter systems. Male predominance in PTD/TD may be attributable to influences of sex hormones on the neurodevelopment of these motor pathways, as reflected by the effects of antiandrogens in the treatment of TD.

Family studies suggest a 10-100–fold increased risk of PTD/TD among first-degree relatives compared to rates in the general population. Twin studies also support a genetic link, with approximately 80% of monozygotic twins and 30% of dizygotic twins showing concordance for PTD/TD. Candidate-gene association and nonparametric linkage studies have not identified specific susceptibility genes for PTD/TD.

Autoimmune-mediated mechanisms have been hypothesized as having a potential etiologic role in *some* tic disorders. The **pediatric autoimmune neuropsychiatric disorder associated with streptococcal infection (PANDAS)** designation describes cases of acute childhood onset of OCD and/or tics following a streptococcal infection. Pediatric acute-onset neuropsychiatric syndrome **(PANS)** describes a subtype of acute childhood-onset OCD (tics are not a required feature) in which a link to a prior streptococcal infection is not evident, suggesting that other infectious agents may be responsible. In addition to a diagnosis of OCD and tics, children with PANS/PANDAS may potentially have separation anxiety, nightmares, personality change, oppositional behaviors, and deterioration in math skills and handwriting. Although some studies suggest a prior history of infections may increase the risk for developing tic disorder, this remains controversial.

Premorbid stress has been hypothesized to act as a sensitizing agent in the pathogenesis of TD among susceptible individuals by affecting stress-responsive biologic systems such as the hypothalamic-pituitary-adrenal axis.

Table 37.2 Repetitive Movements of Childhood

MOVEMENT	DESCRIPTION	TYPICAL DISORDERS WHERE PRESENT
Tics	Sudden rapid, recurrent, nonrhythmic, stereotyped, vocalization or motor movement	Transient tics, Tourette disorder, persistent tic disorder
Dystonia	Involuntary, sustained, or intermittent muscle contractions that cause twisting and repetitive movements, abnormal postures, or both	*DYT1* gene, Wilson disease, myoclonic dystonia, extrapyramidal symptoms caused by dopamine-blocking agents
Chorea	Involuntary, random, quick, jerking movements, most often of the proximal extremities, that flow from joint to joint. Movements are abrupt, nonrepetitive, and arrhythmic and have variable frequency and intensity	Sydenham chorea, Huntington chorea
Stereotypies	Stereotyped, rhythmic, repetitive movements or patterns of speech, with lack of variation over time	Autism, stereotypic movement disorder, intellectual disability
Compulsions	A repetitive, excessive, meaningless activity or mental exercise that a person performs in an attempt to avoid distress or worry	Obsessive-compulsive disorder, anorexia, body dysmorphic disorder, trichotillomania, excoriation disorder
Myoclonus	Shocklike involuntary muscle jerk that may affect a single body region, one side of the body, or the entire body; may occur as a single jerk or repetitive jerks	Hiccups, hypnic jerks, Lennox-Gastaut syndrome, juvenile myoclonic epilepsy, mitochondrial encephalopathies, metabolic disorders
Akathisia	Unpleasant sensations of "inner" restlessness, often prompting movements in an effort to reduce the sensations	Extrapyramidal adverse effects from dopamine-blocking agents; anxiety
Volitional behaviors	Behavior that may be impulsive or caused by boredom, such as tapping peers or making sounds (animal noises)	Attention-deficit/hyperactivity disorder, oppositional defiant disorder, sensory integration disorders

Adapted from Murphy TK, Lewin AB, Storch EA, Stock S. American Academy of Child and Adolescent Psychiatry (AACAP) Committee on Quality Issues (CQI). Practice parameter for the assessment and treatment of children and adolescents with tic disorders. *J Am Acad Child Adolesc Psychiatry. 2013;52(12):1341–1359.*

SEQUELAE

Many individuals with mild to moderate tics express minimal to no distress or functional impairment and may even be unaware of their tics. Even individuals with moderate to severe tics can experience minimal functional impairment, but psychologic distress may occur. Infrequently, the presence of tics can lead to social isolation, social victimization, inability to work or attend school, or impaired quality of life. TD/PTD is associated with increased risk of suicide. Suicidal behavior should be monitored, particularly in those with persistent tics, history of suicide attempts, and psychiatric comorbidities.

SCREENING

Pediatric practitioners should routinely screen for unusual movements (e.g., sudden twitches or jerks, eye blinking, neck twisting, muscle tightening, shoulder shrugging, or involuntary gestures) or vocalizations (e.g., utter involuntary sounds, like grunts, yelps, squeaks, or throat clears). Often families are unaware that frequent sniffing, coughing, or blinking may be indicative of tics, attributing these behaviors to medical problems (e.g., allergies, visual problems). A careful assessment of the timing, triggers, and specific characteristics may differentiate tics from other medical problems. If differentiation is difficult, a referral to a pediatric specialist in the affected system is warranted.

ASSESSMENT

If the screening suggests the presence of a tic disorder, a more comprehensive evaluation should ensue, including the age of onset, types of tics, tic frequency, alleviating and aggravating factors, and a family history of tics. Parent rating scales specific for tics (e.g., the *Motor Tic, Obsessions and Compulsions, Vocal Tic Evaluation Survey* [MOVES] and *Autism-Tics, ADHD and other Comorbidities inventory* (A-TAC) can supplement the assessment. For clinician-rated tic severity, the most comprehensive, reliable, and valid instrument is the *Yale Global Tic Severity Scale* (YGTSS), though its relatively long administration makes routine use in clinical practice problematic (https://candapediatricmedicalhomes.files.wordpress.com/2017/02/yale-global-tic-severity-scale.pdf).

A medical workup should be considered for new-onset tics, particularly for presentations characterized by sudden onset, atypicality, or mental status abnormalities. Basic laboratory measures (hemogram, renal/hepatic function panel, thyroid panel, and ferritin, along with urine drug screen for adolescents) should be considered. For new, sudden onset, or severe symptom exacerbation, pediatric practitioners may assess for concurrent acute infection (e.g., culture, rapid viral tests). Electroencephalography and brain imaging are not routinely recommended for isolated tics and should be reserved for patients with other neurologic findings that might suggest an autoimmune encephalitis syndrome (limbic encephalitis). Comorbid psychiatric disorders (e.g., OCD, ADHD, ASD) should be investigated.

TREATMENT

The decision to treat tics is made with the child and family based on the level of impairment and distress caused by the tics. If tics are mild in severity, the pediatric practitioner can provide the family with education, often with no need for further intervention.

Patient and family education should include common symptom presentations, implications of concurrent conditions, course and prognosis, and treatment options (including no treatment). The patient's typical exacerbating and alleviating factors should be outlined. Pediatric practitioners can also direct the patient and family to informational websites, including the Tourette Association of America (www.tourette.org).

Almost 75% of children with TD/PTD receive some form of classroom accommodation (e.g., directions to ignore tics and permission to leave the room as needed). The accommodations may need to be formalized in an individualized education plan (IEP) if a child needs special education services or a 504 plan if the child just needs accommodations in the regular classroom.

Table 37.3 Etiology of Tics

PRIMARY CAUSES
Sporadic
Transient motor or phonic (<1 year), chronic motor or phonic tics (>1 year), adult-onset recurrent) tics, Tourette disorder, primary dystonia
Inherited
Tourette disorder, Huntington disease, primary dystonia, neuroacanthocytosis syndromes, neurodegeneration with brain iron accumulation (type 1) (pantothenate kinase associated neurodegeneration), tuberous sclerosis, Wilson disease, Duchenne muscular dystrophy
SECONDARY CAUSES
Infections
Encephalitis, Creutzfeldt-Jakob disease, neurosyphilis, Sydenham chorea, PANS
Drugs
Amphetamines, methylphenidate, levodopa, cocaine, carbamazepine, phenytoin, phenobarbital, lamotrigine, antipsychotics, and other dopamine receptor-blocking drugs
Toxins
Carbon monoxide, wasp venom
Developmental
Static encephalopathy, intellectual disability syndromes, chromosomal abnormalities, autistic spectrum disorders
Chromosomal Disorders
Down syndrome, Klinefelter syndrome, XYY karyotype, fragile X, triple X, and 9p mosaicism, partial trisomy 16, 9p monosomy, citrullinemia, Beckwith-Wiedemann syndrome
Other Causes
Head trauma, stroke, cardiopulmonary bypass with hypothermia, neurocutaneous syndromes, schizophrenia, neurodegenerative diseases
RELATED DISORDERS
• Stereotypies/habits/mannerisms • Self-injurious behaviors • Motor restlessness • Akathisia • Compulsions • Hyperekplexia • Jumping Frenchman (startle response)

PANS, Pediatric acute neuropsychiatric syndrome.
Modified from Jankovic J. Differential diagnosis and etiology of tics. In: Cohen DJ, Goetz, CG, Jankovic J, eds. Tourette Syndrome. Lippincott Williams & Wilkins, 2001:Table 2.2, p. 18.

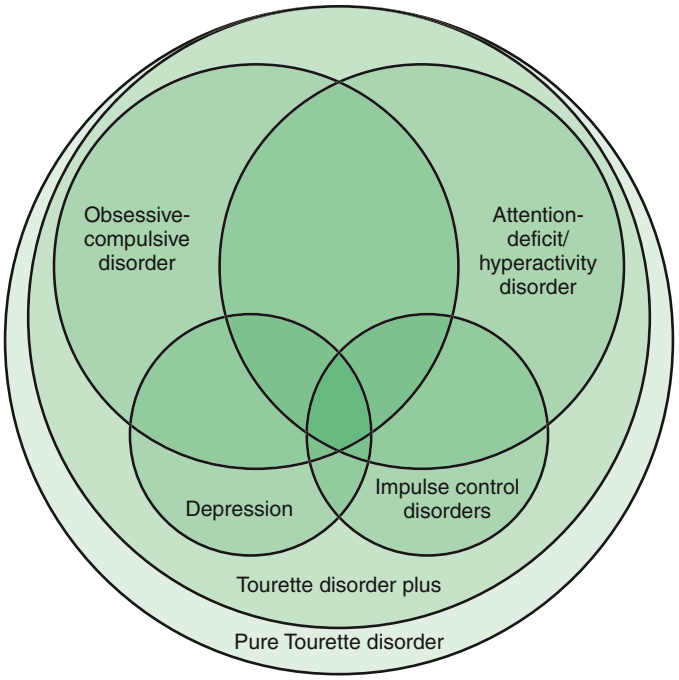

Fig. 37.1 Schematic representation of the behavioral spectrum in Tourette disorder. The size of each area is proportional to the estimated prevalence of the symptoms; the background color intensity is proportional to the complexity of the clinical presentation. *(From Cavanna AE, Seri S. Tourette's syndrome. BMJ. 2013;347:f4964.)*

Referral to a *behavioral treatment specialist* should be considered when tics are distressing or functionally impairing. The behavioral interventions with the strongest empirical support are habit reversal therapy (HRT) and comprehensive behavioral intervention for tics (CBIT). The basic components of HRT include premonitory urge awareness training and building a competing response to the urge to tic (Table 37.4). Based on HRT, CBIT additionally includes relaxation training and a functional intervention designed to mitigate against tic-generating situations. A course of HRT/CBIT treatment typically takes several months or 8-10 sessions. CBIT has been found to reduce significantly the severity of tics compared to education and supportive therapy.

Medications should be considered when the tics are causing severe impairment in the quality of life or when psychiatric comorbidities are present. The only U.S. Food and Drug Administration (FDA)–approved medications to treat TD in children and adolescents are two first-generation antipsychotics (haloperidol, pimozide) and one second-generation antipsychotic (aripiprazole). α-Agonists (clonidine, guanfacine) are also considered as first-line agents because of their more favorable side effect profile compared with the antipsychotic medications (see Chapter 33).

Youths with tic disorders may benefit from SSRIs for the treatment of comorbid obsessive-compulsive, anxiety, or depressive disorders. Augmentation of SSRIs with an atypical antipsychotic has been a consideration in patients with concurrent tic disorders and OCD responding poorly to an SSRI alone. The presence of tics does not preclude the use of stimulants to address comorbid ADHD. Treatment of tics and comorbid ADHD with a combination of α-agonists and stimulants (e.g., clonidine with methylphenidate) decreases tics. Close clinical monitoring is required for possible exacerbation of tics during stimulant treatment. Anger and rage outbursts are common particularly among youth with severe tics (up to 80% in clinically referred samples). Behavioral therapies (cognitive-behavioral therapy [CBT], parent management training; see Chapter 34) that address anger management may be useful.

A systematic review indicated high confidence of efficacy for CBIT; moderate confidence for medications, such as haloperidol, risperidone, aripiprazole, clonidine; and low confidence for medications, such as ziprasidone, guanfacine, and topiramate. No evidence exists to differentiate the effectiveness of HRT/CBIT alone vs combined with pharmacotherapy as tic disorder treatment options. There is no rigorous scientific evidence to support the use of deep brain stimulation, repetitive magnetic stimulation, or dietary supplements in the treatment of TD or PTD.

In severe presentations, pediatric practitioners should consider seeking consultations from and/or making referrals to pediatric tic disorder specialists (i.e., behavioral psychologist, pediatric neurologist, developmental-behavioral pediatrician, or child and adolescent psychiatrist) in determining a treatment regimen.

37.2 Stereotypic Movement Disorder

Jung Won Kim, Heather J. Walter, and David R. DeMaso

Stereotypic movement disorder (SMD) is defined in DSM-5 as a neurodevelopmental disorder characterized by repetitive, seemingly driven, and apparently purposeless motor behavior *(stereotypy)* that interferes with social, academic, or other activities and may result in self-injury. The onset of SMD is the early developmental period (often before age 3 years), and the symptoms are not attributable to the physiologic effects of a substance or neurologic condition and are not better explained by another neurodevelopmental or mental disorder. The disorder is considered *mild* if symptoms are easily suppressed by sensory stimulation or distraction, and *severe* if continuous monitoring and protective measures are required to prevent serious injury, with *moderate* falling between mild and severe.

DESCRIPTION

Examples of stereotypic movements include hand shaking or waving, body rocking, head banging, self-biting, and hitting one's own body. The presentation depends on the nature of the stereotypic movement and level of the child's awareness of the behavior. Among typically developing children, the repetitive movements may be stopped when attention is directed to the movements or when the child is distracted from performing them. Among youth with intellectual disability, the behaviors may be less responsive to such efforts. Each individual presents with their own uniquely patterned behavior. Stereotypic movements may occur many times during a day, lasting a few seconds to several minutes or longer. The behaviors may occur in multiple contexts, including when the individual is excited, stressed, fatigued, or bored.

CLINICAL COURSE

Stereotypic movements typically begin before age 3 years. In those who develop complex motor stereotypies, the great majority exhibit these symptoms before 24 months. In most typically developing youth, these movements resolve over time. Among those with intellectual disability, the stereotyped behaviors may persist for years, although the pattern may change over time.

EPIDEMIOLOGY

Simple stereotypic movements are common in typically developing young children. Some children may bang their head on their mattress as they are falling asleep or may sit and rock when bored or overstimulated. Self-injurious habits, such as self-biting or head banging, can occur in up to 25% of typically developing toddlers (often during tantrums), but they are *almost invariably* associated with developmental delay in youth older than 5 years. *Complex* stereotypic movements are much less common (approximately 3–4%). Between 4% and 16% of patients with intellectual disability engage in stereotypic movements.

COMORBIDITY

Stereotypic movements are a common manifestation of a variety of neurogenetic disorders, such as Lesch-Nyhan, Rett, fragile X, Cornelia de Lange, and Smith-Magenis syndromes.

DIFFERENTIAL DIAGNOSIS

According to DSM-5, stereotypic movements must be differentiated from normal development, ASDs, tic disorders, OCDs, and other neurologic/medical conditions. Simple stereotypic movements occurring in the context of typical development usually resolve with age. Stereotypic movements may be a presenting symptom of ASD, but SMD does not include the deficits in the social communication characteristic of ASD. When ASD is present, SMD is diagnosed only when there is self-injury or when the stereotypic behaviors are sufficiently severe to become a focus of treatment. Typically, SMD has an earlier age of onset than the tic disorders. SMD is distinguished from OCD by the absence of obsessions as well as the nature of the repetitive behaviors, which in OCD are purposeful (e.g., in response to obsessions). The diagnosis of stereotypic movements requires the exclusion of mannerisms, paroxysmal dyskinesias, and benign hereditary chorea. A neurologic history and examination are required to assess features suggestive of other disorders, such as myoclonus, dystonia, and chorea.

ETIOLOGY

There is a possible evolutionary link between repetitive abnormal grooming-like behaviors and early human experience with adversity. Brain regions implicated in this model (e.g., amygdala, hippocampus) are those involved in navigating human experience through unpredictable, anxiety-provoked emotional states, as well as regions (e.g., nucleus accumbens) related to pleasure and reward seeking. The latter involves the hypothesis that individuals experience some level of gratification from performing the stereotypic behavior.

Social isolation with insufficient stimulation (e.g., severe neglect) is a risk factor for self-stimulation that may progress into stereotypies, particularly repetitive rocking or spinning. Environmental stress may trigger stereotypic behaviors. Repetitive self-injurious behavior may be a behavioral phenotype in neurogenetic syndromes (e.g., Lesch-Nyhan, Rett, and Cornelia de Lange syndromes). Lower cognitive functioning is also linked to greater risk of stereotypic behaviors.

TREATMENT

The initial approach to mild stereotypy is for the primary caretakers to ignore the undesired behavior, encourage substitute behavior, and not convey worry to their child. These behaviors may disappear with time and elimination of attention in young children. However, in children with intellectual disability or ASDs, stereotypies may be more refractory to treatment than in typically developing children and may necessitate referral to a behavioral psychologist, developmental-behavioral pediatrician, or child and adolescent psychiatrist for behavioral and/or psychopharmacologic management. The pediatric practitioner should consider and rule out neglect of the child, which can be associated with repetitive rocking, spinning, or other stereotypic movements.

Behavior therapy is the mainstay of treatment, using a variety of strategies, including habit reversal, relaxation training, self-monitoring, contingency management, competing responses, and negative practice. The environment should also be modified to reduce risk of injury to those engaging in self-injurious behavior.

Atypical antipsychotic medications may be helpful in reducing stereotypic movements in youth with ASD. Patients with anxiety and obsessive-compulsive behaviors treated with SSRIs may show improvement in their stereotypic movements.

HABITS

Habits involve an action or pattern of behavior that is repeated often. Habits are common in childhood and range from usually benign and transient behaviors (e.g., thumb sucking, nail biting) to more problematic (e.g., trichotillomania, bruxism). In DSM-5, habits are not included as a diagnostic category because they are not viewed as disorders causing clinically significant distress or impairment in functioning. When they do cause distress or impairment or are associated with repeated attempts by the individual to stop the behavior they are discussed as body-focused repetitive behavior disorder. HRT has been effective as a first-line treatment approach (see Table 37.4).

Table 37.4 Components of Habit Reversal Training

INCREASE INDIVIDUAL'S AWARENESS OF HABIT
Response description—have individual describe behavior to therapist in detail while reenacting the behavior and looking in a mirror.
Response detection—inform individual of each occurrence of the behavior until each occurrence is detected without assistance.
Early warning—have individual practice identifying earliest signs of the target behavior.
Situation awareness—have individual describe all situations in which the target behavior is likely to occur.
TEACH COMPETING RESPONSE TO HABIT
The competing response must result in isometric contraction of muscles involved in the habit, be capable of being maintained for 3 min, and be socially inconspicuous and compatible with normal ongoing activities but incompatible with the habit (e.g., clenching one's fist, grasping and clenching an object). For vocal tics and stuttering, deep relaxed breathing with a slight exhale before speech has been used as the competing response.
SUSTAIN COMPLIANCE
Habit inconvenience review—have individual review in detail all problems associated with target behavior.
Social support procedure—family members and friends provide high levels of praise when a habit-free period is noted.
Public display—individual demonstrates to others that he or she can control the target behavior in situations in which the behavior occurred in the past.
FACILITATE GENERALIZATION—SYMBOLIC REHEARSAL PROCEDURE
For each situation identified in situation awareness procedure, individual imagines himself or herself beginning the target behavior but stopping and engaging in the competing response.

From Carey WB, Crocker AC, Coleman WL, et al., eds. *Developmental-Behavioral Pediatrics*. 4th ed. Philadelphia: Saunders; 2009:639.

Thumb Sucking

Thumb sucking is common in infancy and occurring in as many as 25% of children age 2 years and 15% of children age 5 years. Thumb sucking beyond 5 years of age may be associated with sequelae (e.g., paronychia, anterior open bite). As with other rhythmic patterns of behavior, thumb sucking is self-soothing. Basic behavioral management, including encouraging parents to ignore thumb sucking and instead focus on praising the child for substitute behaviors, is often an effective treatment. Simple reminders and reinforcers can also be considered; giving the child a sticker or other reward for each block of time that they do not thumb suck. In rare cases, mechanical devices placed on the thumb or in the mouth to prevent thumb sucking or noxious agents (bitter salves) placed on the thumb may be part of the treatment plan.

Bruxism

Bruxism or teeth grinding is common (5–30% of children), can begin in the first 5 years of life, and may be associated with daytime anxiety. Persistent bruxism can manifest as muscular or temporomandibular joint pain. Untreated bruxism can cause problems with dental occlusion. Helping the child find ways to reduce anxiety might relieve the problem; bedtime can be made more relaxing by reading or talking with the child and allowing the child to discuss fears. Praise and other emotional support are useful. Persistent bruxism requires referral to a dentist given the risk for dental occlusion.

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Chapter 38

Anxiety Disorders, Obsessive-Compulsive Disorder, and Post-traumatic Stress Disorder

Rosa K. Kim

Anxiety is not necessarily pathologic, is seen across the life span, and can be adaptive (e.g., the anxiety one might feel during life-threatening situations). It has both a cognitive-behavioral component, expressed in worrying and wariness, and a physiologic component, mediated by the autonomic nervous system. Anxiety is characterized as *pathologic* (e.g., a disorder) when it becomes disabling, interferes with social interactions, or derails normal development.

Anxiety disorders are some of the most common psychiatric disorders in childhood. The point prevalence worldwide is nearly 7%, and the estimated lifetime prevalence in the United States is approximately 20–30%. Anxiety disorders are often comorbid with other psychiatric and medical disorders, and they can have physical manifestations, such as weight loss, palpitations, tremors, muscle cramps, paresthesias, hyperreflexia, and abdominal distress (Table 38.1). Although onset can be acute, the course is generally chronic with periods of fluctuating severity. The potential consequences of untreated anxiety include impairments in social, educational, and overall functioning. Because anxiety is both a normal phenomenon and, when highly activated, strongly associated with impairment, the clinician is tasked with differentiating between normal anxiety and abnormal anxiety across development (Fig. 38.1).

The median age of onset is 11 years. However, there are known periods of typical onset during specific developmental phases for both normal and pathologic anxiety. Normal stranger anxiety begins around 7-9 months of age. Preschoolers typically have specific fears related to the dark, animals, and imaginary situations. **Separation anxiety** can occur during the preschool years. Although most school-aged children abandon the imaginary fears of early childhood, some replace them with fears of bodily harm or other worries, reaching the level of a **specific phobia** (Table 38.2). Some characteristics of obsessive-compulsive disorder (OCD) can be considered typical in early school-ages, but OCD often has its onset in the mid–school-aged years (Table 38.3). **Social anxiety** occurs in later grade-school ages and early adolescence (Table 38.4) as the value of peer relationships increases. **Generalized anxiety**, **panic**, and **agoraphobia** tend to occur during the teen and young adult years (Tables 38.5 to 38.7).

Genetic or temperamental factors contribute more to the development of some anxiety disorders, whereas environmental factors are closely linked to the cause of others. Specifically, behavioral inhibition (sensitivity to novel stimuli) appears to be a heritable tendency and is linked with social phobia, generalized anxiety, and selective mutism. **OCD** and other disorders associated with OCD-like behaviors, such as Tourette syndrome and other tic disorders, tend to have high genetic risk as well (see Chapter 37.1). Environmental factors, such as parent–infant attachment and exposure to trauma, contribute more to **separation anxiety disorder** and posttraumatic stress disorder (**PTSD**) (Table 38.8). Parental anxiety disorder is associated with an increased risk of anxiety disorder in offspring.

Table 38.1 Mental and Somatic Disorders that are Frequently Comorbid or Difficult to Distinguish in Anxiety Disorder

	EXAMPLES OF OVERLAPPING SYMPTOMS	KEY CLINICAL INSIGHTS TO RECOGNIZE
MENTAL DISORDERS		
Major depressive disorder	Fatigue, anxiety, worry, or agitation	Major depressive disorder is the highest comorbidity in anxiety disorder and associated with higher severity, suicidality, disability and chronicity; clinicians must comprehensively assess because major depressive disorder comorbidity requires more intensive pharmacologic treatment and a different form of psychotherapy treatment (e.g., cognitive-behavioral therapy for depression rather than for anxiety disorder)
Bipolar disorder	Agitation, irritability, or racing thoughts	Anxiety is often present in bipolar disorder and is associated with rapid cycling; targeting anxiety could aid in mood stabilization; bipolar disorder requires focus on mood stabilization and considerate use of medication, which could induce mania (especially antidepressants)
Obsessive-compulsive disorder*	Extreme worry or inability to relax	People who have obsessive-compulsive disorder engage in ritualistic, repetitive behavior to deal with their fears, which is absent in anxiety disorder; these people often realize that their behavior is irrational and inappropriate
Posttraumatic stress disorder*	Avoidance, hyperarousal, or anxiety-laden intrusive memories	The intense experience of anxiety in posttraumatic stress disorder is specifically in response to a psychologic trauma (e.g., abuse, war, or accident); specific psychotherapies focused on the trauma associated with the posttraumatic stress disorder should be used
Health anxiety* (hypochondriasis)	Anxiety or worry from bodily responses	Anxiety is specifically related to preoccupation with having or acquiring a serious, undiagnosed medical illness
Substance use (e.g., illicit drugs, alcohol, or benzodiazepines) disorder	Tremor, sweating, palpitations, or panic attacks (during withdrawal or in some cases intoxication)	When suspected, clinicians should conduct a psychiatric interview of substance use disorders, with potential breath, urine, or plasma drug screening; comorbidity of alcohol or benzodiazepine abuse with anxiety disorder is considerable
SOMATIC DISORDERS		
Cardiac disease	Chest pain or palpitations (which is also common in panic disorder)	Clinical evaluation, including electrocardiogram, assessment of plasma troponin concentration, or Holter monitoring
Thyroid disease (e.g., hyperthyroidism)	Palpitations, tremor, panic attacks, or persistent anxiety	Laboratory assessment of plasma thyroid-stimulating hormone
Respiratory disease (e.g., asthma)	Shortness of breath	Clinical evaluation with a pulmonary function test
Pheochromocytoma or other disorders that result in sudden blood pressure increase	Panic attacks or bodily sensations	Blood pressure monitoring over 24 hr or hormone assessment (e.g., in blood or urine)
Epilepsy	Anxiety symptoms as part of aura or start of seizure	Clinical evaluation or neurologic referral when the causes of symptoms are unclear

*In previous classifications of the *Diagnostic and Statistical Manual of Mental Disorders and International Classification of Diseases*, these disorders were included in the classification of anxiety disorders. In current classifications (e.g., the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* and the 11th edition of the *International Classification of Diseases)*, they are integrated in different classifications.

From Penninx BWJH, Pine DS, Holmes EA, Reif A. Anxiety disorders. *Lancet*. 2021;397:914–926:Table 2, p. 917.

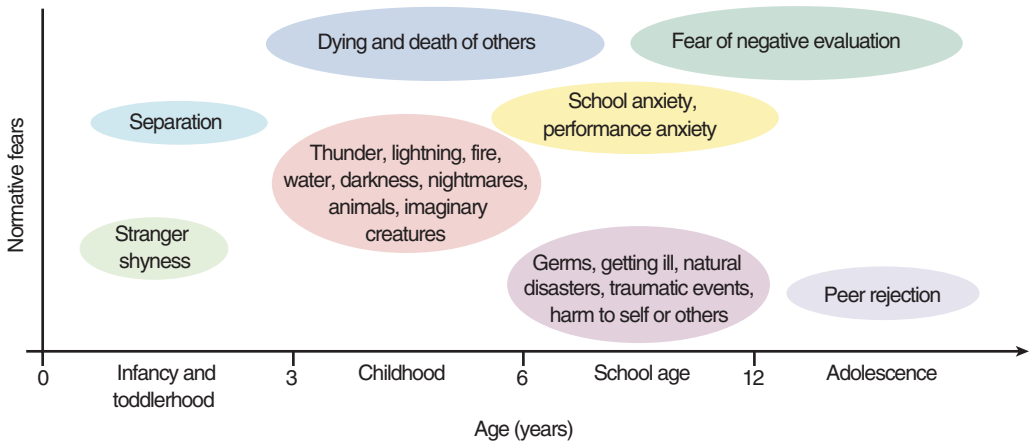

Fig. 38.1 Normative fears throughout childhood and adolescence. *(From Craske MG, Stein MB. Anxiety. Lancet. 2016;388[10063]:3048–3059.)*

Table 38.2 DSM-5 Diagnostic Criteria for Specific Phobia

A. Marked fear or anxiety about a specific object or situation (e.g., flying, heights, animals, receiving an injection, seeing blood).

Note: In children, the fear or anxiety may be expressed by crying, tantrums, freezing, or clinging.

B. The phobic object or situation almost always provokes immediate fear or anxiety.

C. The phobic object or situation is actively avoided or endured with intense fear or anxiety.

D. The fear or anxiety is out of proportion to the actual danger posed by the specific object or situation and to the sociocultural context.

E. The fear, anxiety, or avoidance is persistent, typically lasting for 6 mo or more.

F. The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

G. The disturbance is not better explained by the symptoms of another mental disorder, including fear, anxiety, and avoidance or situations associated with panic-like symptoms or other incapacitating symptoms (as in agoraphobia); objects or situations related to obsessions (as in obsessive-compulsive disorder); remainders of traumatic events (as in posttraumatic stress disorder); separation from home or attachment figures (as in separation anxiety disorder); or social situations (as in social anxiety disorder).

Specify if:

Code based on the phobic stimulus:

Animal (e.g., spiders, insects, dogs).

Natural environment (e.g., heights, storms, water).

Blood-injection-injury (e.g., needles, invasive medical procedures).

Situational (e.g., airplanes, elevators, enclosed places).

Other (e.g., situations that may lead to choking or vomiting; in children, e.g., loud sounds or costumed characters).

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp 197–198. Copyright 2013. American Psychiatric Association.

Table 38.4 DSM-5 Diagnostic Criteria for Social Anxiety Disorder (Social Phobia)

A. Marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others. Examples include social interactions (e.g., having a conversation, meeting unfamiliar people), being observed (e.g., eating or drinking), and performing in front of others (e.g., giving a speech).

B. The individual fears that he or she will act in a way or show anxiety symptoms that will be negatively evaluated (i.e., will be humiliating or embarrassing; will lead to rejection or offend others).

C. The social situations almost always provoke fear or anxiety.

Note: In children, the fear or anxiety may be expressed by crying, tantrums, freezing, clinging, shrinking, or failing to speak in social situations.

D. The social situations are avoided or endured with intense fear or anxiety.

E. The fear or anxiety is out of proportion to the actual threat posed by the social situation and to the sociocultural context.

F. The fear, anxiety, or avoidance is persistent, typically lasting for 6 mo or more.

G. The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

H. The fear, anxiety, or avoidance is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.

I. The fear, anxiety, or avoidance is not better explained by the symptoms of another mental disorder, such as panic disorder, body dysmorphic disorder, or autism spectrum disorder.

J. If another medical condition (e.g., Parkinson disease, obesity, disfigurement from burns or injury) is present, the anxiety or avoidance is clearly unrelated or is excessive.

Specify if:

Performance only: If the fear is restricted to speaking or performing in public.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp 202-203. Copyright 2013. American Psychiatric Association.

Table 38.3 DSM-5 Diagnostic Criteria for Obsessive-Compulsive Disorder

A. Presence of obsessions, compulsions, or both:

Obsessions are defined by (1) and (2):

1. Recurrent and persistent thoughts, urges, or images that are experienced, at some time during the disturbance, as intrusive and unwanted, and that in most individuals cause marked anxiety or distress.
2. The individual attempts to ignore or suppress such thoughts, urges, or images, or to neutralize them with some other thought or action (i.e., by performing a compulsion).

Compulsions are defined by (1) and (2):

1. Repetitive behaviors (e.g., handwashing, ordering, checking) or mental acts (e.g., praying, counting, repeating words silently) that the individual feels driven to perform in response to an obsession or according to rules that must be applied rigidly.
2. The behaviors or mental acts are aimed at preventing or reducing anxiety or distress, or preventing some dreaded event or situation; however, these behaviors or mental acts are not connected in a realistic way with what they are designed to neutralize or prevent, or are clearly excessive.

B. The obsessions or compulsions are time-consuming (e.g., take more than 1 hr/day) or cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The obsessive-compulsive symptoms are not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.

D. The disturbance is not better explained by the symptoms of another mental disorder (e.g., excessive worries, as in generalized anxiety disorder; preoccupation with appearance, as in body dysmorphic disorder; difficulty discarding or parting with possessions, as in hoarding disorder; hair pulling, as in trichotillomania [hair-pulling disorder]; skin picking, as in excoriation [skin-picking] disorder; stereotypies, as in stereotypic movement disorder; ritualized eating disorder, as in eating disorders; preoccupation with substances or gambling, as in substance-related and addictive disorders; preoccupation with having an illness, as in illness anxiety disorder; sexual urges or fantasies, as in paraphilic disorders; impulses, as in disruptive, impulse-control, and conduct disorders; guilty ruminations, as in schizophrenia spectrum and other psychotic disorders; or repetitive patterns of behavior, as in autism spectrum disorder).

Specify if:

With good or fair insight: The individual recognizes that obsessive-compulsive disorder beliefs are definitely or probably not true or that they may or may not be true.

With poor insight: The individual thinks obsessive-compulsive disorder beliefs are probably true.

With absent insight/delusional beliefs: The individual is completely convinced that obsessive-compulsive disorder beliefs are true.

Specify if:

Tic-related: The individual has a current or past history of a tic disorder.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p 237. Copyright 2013. American Psychiatric Association.

Table 38.5 DSM-5 Diagnostic Criteria for Generalized Anxiety Disorder

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 mo, about a number of events or activities (such as work or school performance).
B. The individual finds it difficult to control the worry.
C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms having been present for more days than not for the past 6 mo):

Note: Only one item is required in children.

1. Restlessness or feeling keyed up or on edge.
2. Being easily fatigued.
3. Difficulty concentrating or mind going blank.
4. Irritability.
5. Muscle tension.
6. Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfying sleep).

D. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.
E. The disturbance is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or other medical condition (e.g., hyperthyroidism).
F. The disturbance is not better explained by another mental disorder (e.g., anxiety or worry about having panic attacks in panic disorder, negative evaluation in social anxiety disorder [social phobia], contamination or other obsessions in obsessive-compulsive disorder, separation from attachment figures in separation anxiety disorder, remainders of traumatic events in posttraumatic stress disorder, gaining weight in anorexia nervosa, physical complaints in somatic symptom disorder, perceived appearance flaws in body dysmorphic disorder, having a serious illness in illness anxiety disorder, or the content of delusional beliefs in schizophrenia or delusional disorder).

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p 222. Copyright 2013. American Psychiatric Association.

Table 38.6 DSM-5 Diagnostic Criteria for Panic Disorder

A. Recurrent unexpected panic attacks. A panic attack is an abrupt surge of intense fear or intense discomfort that reaches a peak within minutes, and during which time four (or more) of the following symptoms occur:

Note: The abrupt surge can occur from a calm state or an anxious state.

1. Palpitations, pounding heart, or accelerated heart rate.
2. Sweating.
3. Trembling or shaking.
4. Sensations of shortness of breath or smothering.
5. Feelings of choking.
6. Chest pain or discomfort.
7. Nausea or abdominal distress.
8. Feeling dizzy, unsteady, light-headed, or faint.
9. Chills or heart sensations.
10. Paresthesias (numbness or tingling sensations).
11. Derealizations (feeling or unreality) or depersonalization (being detached from oneself).
12. Fear of losing control or "going crazy."
13. Fear of dying.

Note: Culture-specific symptoms (e.g., tinnitus, neck soreness, headache, uncontrollable screaming or crying) may be seen. Such symptoms should not count as one of the four required symptoms.

B. At least one of the attacks has been followed by 1 mo (or more) of one or both of the following:

1. Persistent concern or worry about additional panic attacks or their consequences (e.g., losing control, having a heart attack, "going crazy").
2. A significant maladaptive change in behavior related to the attacks (e.g., behaviors designed to avoid having panic attacks, such as avoidance of exercise or unfamiliar situations).

C. The disturbance is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism, cardiopulmonary disorders).
D. The disturbance is not better explained by another mental disorder (e.g., the panic attacks do not occur only in response to feared social situations, as in social anxiety disorder; in response to circumscribed phobic objects or situations, as in specific phobia; in response to obsessions, as in obsessive-compulsive disorder; or in response to reminders of traumatic events, as in posttraumatic stress disorder; or in response to separation from attachment figures, as in separation anxiety disorder).

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. pp 208-209. Copyright 2013. American Psychiatric Association..

ASSESSMENT

There is no recommendation for routine screening of children and adolescents for anxiety disorders. Freely available general screening instruments such as the Pediatric Symptom Checklist and Strengths and Difficulties Questionnaire can be used to identify anxiety concerns in primary care and school settings. Rating scales can be used to support diagnosis and to follow response to treatment, but they are not diagnostic on their own. Commonly used anxiety rating scales include the Screen for Child Anxiety Related Emotional Disorders (SCARED), the Spence Children's Anxiety Scale (SCAS), the Preschool Anxiety Scale, the Generalized Anxiety Disorder-7 (GAD-7), and the Patient Reported Outcomes Measurement Information System (PROMIS) Pediatric Short Form-Anxiety-8a.

Symptoms of anxiety are typically identified through the clinical interview by asking questions about "worries," "fears," and "stress" or by the patient and family's spontaneous report. The interview must be developmentally sensitive, and further discussions with the family may reveal environmental reinforcements, including the caregiver's parenting style and enabling of avoidance behaviors.

Because some degree of anxiety is considered normal, it is important to clarify when the symptom severity reaches the point of being pathologic and to differentiate between the subtypes (Table 38.9). The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) has specific criteria for each type of anxiety with requirements for frequency, duration, and extent of functional impairment.

DIFFERENTIAL DIAGNOSIS AND COMORBIDITIES

In addition to determining whether diagnostic criteria are met for a specific anxiety disorder, it is also crucial to rule out alternative explanations. The differential diagnosis includes numerous medical conditions and medication-induced anxiety (Table 38.10). Anxiety disorders also frequently occur with not just other anxiety subtypes but also other psychiatric comorbidities, notably depression and substance use disorders (Table 38.11; see Table 38.1).

TREATMENT OF ANXIETY

Cognitive-Behavioral Therapy (CBT)

Cognitive-behavioral therapy (CBT) is a therapy that targets the cognitions, behaviors, and physiologic symptoms of anxiety, with a particular focus on the interconnections between the three. Its framework typically involves homework assignments for practicing the skills in real-life environments. The goal is to achieve functional improvement within approximately 18 sessions. Because it is a skills-based treatment, CBT is thought to be a durable treatment, an important consideration when treating children and adolescents. It is specifically recommended to patients 6-18 years old with social anxiety, generalized anxiety, separation anxiety, specific phobia, and panic disorder.

Specialized training and experience are paramount to the effective delivery of this treatment modality, and it is worth taking the time to ensure that patients identify therapists with the training and experience to provide rigorous CBT. CBT typically should incorporate graduated exposure, in which stepwise mastery of a hierarchy of fearful stimuli results in desensitization.

Table 38.7 DSM-5 Diagnostic Criteria for Agoraphobia

A. Marked fear or anxiety about two (or more) of the following five situations:
   1. Using public transportation (e.g., automobiles, buses, trains, ships, planes).
   2. Being in open spaces (e.g., parking lots, marketplaces, bridges).
   3. Being in enclosed places (e.g., shops, theaters, cinemas).
   4. Standing in line or being in a crowd.
   5. Being outside of the home alone.

B. The individual fears or avoids these situations because of thoughts that escape might be difficult or help might not be available in the event of a developing panic-like symptoms or other incapacitating or embarrassing symptoms (e.g., fear or falling in the elderly, fear of incontinence).

C. The agoraphobic situations almost always provoke fear or anxiety.

D. The agoraphobic situations are actively avoided, require the presence of a companion, or are endured with intense fear or anxiety.

E. The fear or anxiety is out of proportion to the actual danger posed by the agoraphobic situations and to the sociocultural context.

F. The fear, anxiety, or avoidance is persistent, typically lasting for 6 mo or more.

G. The fear, anxiety, or avoidance causes clinically significant distress or impairment in social, occupational, or other important area of functioning.

H. If another medical condition (e.g., inflammatory bowel disease, Parkinson disease) is present, the fear, anxiety, or avoidance is clearly excessive.

I. The fear, anxiety, or avoidance is not better explained by the symptoms or another mental disorder—for example, the symptoms are not confined to specific phobia or situational type; do not involve only social situations (as in social anxiety disorder); and are not related exclusively to obsessions (as in obsessive-compulsive disorder), reminders or traumatic events (as in posttraumatic stress disorder), or fear of separation (as in separation anxiety disorder).

Note: Agoraphobia is diagnosed irrespective of the presence of panic disorder. If an individual's presentation meets criteria for panic disorder and agoraphobia, both diagnoses should be assigned.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp 217-218. Copyright 2013. American Psychiatric Association.

Table 38.8 DSM-5 Diagnostic Criteria for Posttraumatic Stress Disorder

POSTTRAUMATIC STRESS DISORDER

Note: The following criteria apply to adults, adolescents, and children older than 6 yr. For children 6 yr and younger, see corresponding criteria below.

A. Exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:
   1. Directly experiencing the traumatic event(s).
   2. Witnessing, in person, the event(s) as it occurred to others.
   3. Learning that the traumatic event(s) occurred to a close family member or close friend. In cases of actual or threatened death of a family member or friend, the event(s) must have been violent or accidental.
   4. Experiencing repeated or extreme exposure to aversive details of the traumatic event(s) (e.g., first responders collecting human remains; police officers repeatedly exposed to details of child abuse).

Note: Criterion A4 does not apply to exposure through electronic media, television, movies, or pictures, unless this exposure is work related.

B. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
   1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).

Note: In children older than 6 yr, repetitive play may occur in which themes or aspects of the traumatic event(s) are expressed.

   2. Recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic event(s).

Note: In children, there may be frightening dreams without recognizable content.

   3. Dissociative reactions (e.g., flashbacks) in which the individual feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the more extreme expression being a complete loss or awareness of present surroundings.)

Note: In children, trauma-specific reenactment may occur in play.

   4. Intense or prolonged psychologic distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).
   5. Marked physiologic reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

C. Persistent avoidance of stimuli associated with the traumatic event(s), beginning after the traumatic event(s) occurred, as evidenced by one or both of the following:
   1. Avoidance of or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).
   2. Avoidance of or efforts to avoid external reminders (people, places, conversations, activities, objects, situations) that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event(s).

D. Negative alterations in cognitions and mood associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
   1. Inability to remember an important aspect of the traumatic event(s) (typically due to dissociative amnesia and not to other factors such as head injury, alcohol, or drugs).
   2. Persistent and exaggerated negative beliefs or expectations about oneself, others, or the world (e.g., "I am bad," "No one can be trusted," "The world is completely dangerous," "My whole nervous system is permanently ruined").
   3. Persistent, distorted cognitions about the cause or consequences of the traumatic event(s) that lead the individual to blame himself/herself or others.
   4. Persistent negative emotional state (e.g., fear, horror, anger, guilt, or shame).
   5. Markedly diminished interest or participation in significant activities.

Table 38.8 DSM-5 Diagnostic Criteria for Posttraumatic Stress Disorder—cont'd

6. Feelings of detachment or estrangement from others.
7. Persistent inability to experience positive emotions (e.g., inability to experience happiness, satisfaction, or loving feelings).

E. Marked alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
1. Irritable behavior and angry outbursts (with little or no provocation) typically expressed by verbal or physical aggression toward people or objects.
2. Reckless or self-destructive behavior.
3. Hypervigilance.
4. Exaggerated startle response.
5. Problems with concentration.
6. Sleep disturbance (e.g., difficulty falling or staying asleep or restless sleep).

F. Duration of the disturbance (Criteria B, C, D, and E) is more than 1 mo.

G. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

H. The disturbance is not attributable to the physiologic effects of a substance (e.g., medication, alcohol) or another medical condition.

Specify whether:

With dissociative symptoms: The individual's symptoms meet the criteria for posttraumatic stress disorder, and in addition, in response to the stressor, the individual experiences persistent or recurrent symptoms of either of the following:
1. **Depersonalization:** Persistent or recurrent experiences of feeling detached from, and as if one were an outside observer of, one's mental processes or body (e.g., feeling as though one were in a dream; feeling a sense of unreality of self or body or of time moving slowly).
2. **Derealization:** Persistent or recurrent experiences of unreality of surroundings (e.g., the world around the individual is experienced as unreal, dreamlike, distant, or distorted).

Note: To use this subtype, the dissociative symptoms must not be attributable to the physiologic effects of a substance (e.g., blackouts, behavior during alcohol intoxication) or another medical condition (e.g., complex partial seizures).

Specify if:

With delayed expression: If the full diagnostic criteria are not met until at least 6 mo after the event (although the onset and expression of some symptoms may be immediate).

POSTTRAUMATIC STRESS DISORDER FOR CHILDREN 6 YEARS AND YOUNGER

A. In children 6 yr and younger, exposure to actual or threatened death, serious injury, or sexual violence in one (or more) of the following ways:
1. Directly experiencing the traumatic event(s).
2. Witnessing, in person, the event(s) as it occurred to others, especially primary caregivers.

Note: Witnessing does not include events that are only in electronic media, television, movies, or pictures.

3. Learning that the traumatic event(s) occurred to a parent or caregiving figure.

B. Presence of one (or more) of the following intrusion symptoms associated with the traumatic event(s), beginning after the traumatic event(s) occurred:
1. Recurrent, involuntary, and intrusive distressing memories of the traumatic event(s).

Note: Spontaneous and intrusive memories may not necessarily appear distressing and may be expressed as play reenactment.

2. Recurrent distressing dreams in which the content and/or effect of the dream is related to the traumatic event(s).

Note: It may not be possible to ascertain that the frightening content is related to the traumatic event.

3. Dissociative reactions (e.g., flashbacks) in which the child feels or acts as if the traumatic event(s) were recurring. (Such reactions may occur on a continuum, with the most extreme expression being a complete loss of awareness of present surroundings.) Such trauma-specific reenactment may occur in play.
4. Intense or prolonged psychologic distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event(s).

C. One (or more) of the following symptoms, representing either persistent avoidance of stimuli associated with the traumatic event(s) or negative alterations in cognitions and mood associated with the traumatic event(s), must be present, beginning after the event(s) or worsening after the event(s):

PERSISTENT AVOIDANCE OF STIMULI
1. Avoidance of or efforts to avoid activities, places, or physical reminders that arouse recollections or the traumatic event(s).
2. Avoidance of or efforts to avoid people, conversations, or interpersonal situations around recollections of the traumatic event(s).

NEGATIVE ALTERATIONS IN COGNITIONS
3. Substantially increased frequency of negative emotional states (e.g., fear, guilt, sadness, shame, confusion).
4. Markedly diminished interest or participation in significant activities, including constriction of play.
5. Socially withdrawn behavior.
6. Persistent reduction in expression of positive emotions.

D. Alterations in arousal and reactivity associated with the traumatic event(s), beginning or worsening after the traumatic event(s) occurred, as evidenced by two (or more) of the following:
1. Irritable behavior and angry outbursts (with little or no provocation), typically expressed as verbal and physical aggression toward people or objects (including extreme temper tantrums).
2. Hypervigilance.
3. Exaggerated startle response.
4. Problems with concentration.
5. Sleep disturbance (e.g., difficulty falling asleep or staying asleep or restless sleep).

E. The duration of the disturbance is more than 1 mo.

F. The disturbance causes clinically significant distress or impairment in relationships with parents, siblings, peers, or other caregivers or with school behavior.

G. The disturbance is not attributable to the physiologic effects of a substance (e.g., medication or alcohol) or another medical condition.

Continued

Table 38.8 DSM-5 Diagnostic Criteria for Posttraumatic Stress Disorder—cont'd

Specify whether:

With dissociative symptoms: The individual's symptoms meet the criteria for posttraumatic stress disorder, and the individual experiences persistent or recurrent symptoms of either of the following:

1. **Depersonalization:** Persistent or recurrent experiences of feeling detached from, and as if one were an outside observer of, one's mental processes or body (e.g., feeling as though one were in a dream; feeling a sense of unreality of self or body or of time moving slowly).
2. **Derealization:** Persistent or recurrent experiences of unreality of surroundings (e.g., the world around the individual is experienced as unreal, dreamlike, distant, or distorted).

Note: To use this subtype, the dissociative symptoms must not be attributable to the physiologic effects of a substance (e.g., blackouts, behavior during alcohol intoxication) or another medical condition (e.g., complex partial seizures).

Specify if:

With delayed expression: If the full diagnostic criteria are not met until at least 6 mo after the event (although the onset and expression of some symptoms may be immediate).

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp 271-274. Copyright 2013. American Psychiatric Association.

Table 38.9 Core Diagnostic Features and Characteristics for Anxiety Disorders

	SELECTIVE MUTISM	SEPARATION ANXIETY	SPECIFIC PHOBIA	SOCIAL ANXIETY DISORDER	AGORAPHOBIA	PANIC DISORDER	GENERALIZED ANXIETY DISORDER
Core emotions or cognitions	Consistent failure to speak in situations for which there is an expectation to speak, despite language competence	Unrealistic, persistent fear or anxiety about separation from, or loss of, attachment figure, or adverse events occurring to them	Marked, excessive, and unreasonable fear or anxiety of circumscribed objects or situations (e.g., animals, natural forces, blood injection, or places)	Marked, excessive, and unreasonable fear or anxiety of scrutiny or negative judgement by other people	Marked, excessive, and concerning fear of leaving home, entering closed or open public places, crowds, or transportation	Recurrent, unexpected panic attacks with sustained mental (e.g., fear, fear of losing control, or feeling of alienation) manifestations	Marked, uncontrollable, and anxious worry and fears about everyday events and problems
Physical symptoms	No physical symptoms	Nightmares and symptoms of distress	No physical symptoms	Blushing, fear of vomiting, urgency or fear of micturition or defecation	No physical symptoms	Multiple symptoms (e.g., palpitations, dyspnea, diaphoresis, chest pain, dizziness, paresthesia, or nausea)	Restlessness, fatigue, irritability, difficulty concentrating, muscle tension, sleep disturbance, or autonomic arousal
Behavior	Disturbance interferes with (educational) achievement or social communication	Reluctance to leave attachment figure; disturbance impairs social, school, or other functioning	Avoidance of circumscribed objects or situations; disturbance impairs social, school, work, or other functioning	Avoidance of social interactions and situations; disturbance impairs social, school, work, or other functioning	Avoidance of fear-inducing situations; disturbance impairs social, school, work, or other functioning	Changed behavior in maladaptive ways related to the attacks; disturbance impairs social, school, work or other functioning	Disturbance impairs social, school, work, or other functioning
Required symptom duration	>1 month (beyond first school month)	>1 mo (childhood; 4-18 yr); >6 months (adulthood; 18 yr or older)	>6 mo	>6 mo	>6 mo	>1 mo	>6 mo
Median age of onset	Childhood (<5 yr)	Childhood (around 6 yr)	Childhood (around 8 yr)	Early adolescence (around 13 yr)	Late adolescence (around 20 yr)	Adulthood (around 25 yr)	Adulthood (around 30 yr)

For OCD see Table 38.3; for PTSD see Table 38.8.

Characteristics and features for anxiety disorders were based on criteria from the *Diagnostic and Statistical Manual of Mental Disorders* (Fifth Edition) *and International Classification of Diseases* (11th Edition).

From Penninx BWJH, Pine DS, Holmes EA, Reif A. Anxiety disorders. *Lancet.* 2021;397:914–926. Table 1, p. 915.

Table 38.10 Differential Diagnosis of Anxiety Disorders

GENERAL	PSYCHIATRIC	MEDICAL
Shyness	Substance use (including caffeine) Substance use withdrawal Body dysmorphic disorder ADHD (distractibility, restlessness) ASD (social withdrawal, social skills deficits, distractibility) MDD (distractibility, insomnia, somatic symptoms) Bipolar disorder Delusional disorder Learning disorders (worry about school performance) ODD (refusal to do activity)	Antihistamines Bronchodilators Nasal decongestants Steroids Dietary supplements Stimulants Hyperthyroidism Allergic reactions Asthma Cardiac conditions Autoimmune encephalitis Chronic pain Headaches CNS disease Diabetes Dysmenorrhea Lead intoxication Hypoglycemia Hypoxia Pheochromocytoma Mast cell disorders Carcinoid syndrome Hereditary angioedema Systemic lupus erythematosus

Table 38.11 Psychiatry and Medical Comorbidities of Anxiety

PSYCHIATRIC	MEDICAL
Depression ADHD Bipolar disorder Eating disorder Learning disorder Language disorder Substance-related disorders	Somatic symptoms Headaches GI disorders Asthma Allergies

component of treatment, and specific plans for anxiety management can be included in a child's 504 plan or individualized education plan (IEP).

The therapy with the most evidence for PTSD is a subtype of CBT called trauma-focused CBT (**TF-CBT**). Given that standard anxiety medications are less effective in PTSD, it is particularly crucial that clinicians refer these patients to trauma-focused therapy. In TF-CBT, the therapist amplifies stress management techniques in preparation for exposure-based interventions with the goal of achieving mastery over trauma triggers. In small adult trials, ketamine- or 3,4-methyl enedioxymethamphetamine (MDMA)-assisted therapy have shown benefit. There is insufficient evidence to currently recommend either therapy.

Selective Serotonin Reuptake Inhibitors

Selective serotonin reuptake inhibitors (SSRIs) as a class are effective in treating anxiety. The available options include citalopram, escitalopram, fluoxetine, fluvoxamine, paroxetine, sertraline, and vilazodone. Despite randomized clinical trials (RCTs) providing support for the safety and effectiveness of this medication class, no specific SSRIs are U.S. Food and Drug Administration (FDA)–approved for anxiety in children. SSRIs are generally well tolerated, with the most common side effects involving xerostomia, gastrointestinal upset, headache, somnolence or insomnia, dizziness, fatigue, and changes in appetite (see Chapter 33).

RCTs in children and adolescents with PTSD found no significant difference between SSRI and placebo. SSRIs may be considered in pediatric patients with PTSD who have comorbid conditions responsive to SSRIs, including depression, affective numbing, and anxiety (see Table 33.5).

All of the SSRIs carry a "black box" warning for suicidal thinking and behavior through age 24 years, and this specific risk must be discussed with the patient and caregiver and documented before initiation. Other potential adverse effects include behavioral activation, hypomanic or manic symptoms, and serotonin syndrome (see Chapter 33).

Combination Treatment

The combination of CBT and an SSRI is generally thought to be better than either treatment alone for moderate to severe anxiety. It is important to continue recommending CBT even after the decision has been made to start pharmacologic treatment.

Serotonin-Norepinephrine Reuptake Inhibitors

Duloxetine is a serotonin-norepinephrine reuptake inhibitor (SNRI) and has an FDA indication for the treatment of generalized anxiety disorder in children ages 7-17. However, it is still considered a second-line treatment as SSRIs tend to be more effective. The other SNRI options are venlafaxine and desvenlafaxine. Potential side effects of duloxetine include xerostomia, diaphoresis, abdominal discomfort, gastrointestinal distress, headache, tremor, sedation or insomnia, decreased appetite, and weight loss. Of note, it is less likely to cause behavioral activation than the SSRIs.

α-Agonists

Clonidine and guanfacine are α-agonists and may be helpful for PTSD by targeting sleep disturbances like nightmares, persistent physiologic arousal, and exaggerated startle response.

OBSESSIVE-COMPULSIVE DISORDER AND PEDIATRIC ACUTE-ONSET NEUROPSYCHIATRIC SYNDROME

Obsessive-compulsive symptoms can be effectively treated with SSRIs (sertraline, fluoxetine). If the patient's symptoms prove to be treatment-refractory to the standard options, then one might consider fluvoxamine and/or clomipramine, which is a heterocyclic antidepressant. These are indicated when a patient has failed two or more SSRI trials. Habit reversal training is an important nonpharmacologic treatment modality for OCD as well.

A proportion of *abrupt-onset OCD* cases are attributed to an immune response that targets the brain (pediatric acute-onset neuropsychiatric syndrome [PANS]). The immune response may be brought about by

Table 38.12 Diagnostic Criteria for Pediatric Acute-Onset Neuropsychiatric Syndrome

CRITERION 1
Abrupt, dramatic onset of obsessive-compulsive disorder or severely restricted food intake.
CRITERION 2
Concurrent presence of additional neuropsychiatric symptoms with similarly severe and acute onset from at least two of the following seven categories: 1. Anxiety. 2. Emotional lability or depression. 3. Irritability, aggression, or severely oppositional behaviors. 4. Behavioral (developmental) regression. 5. Deterioration in school performance. 6. Sensory or motor abnormalities. 7. Somatic signs and symptoms, including sleep disturbances, enuresis, or urinary frequency.
CRITERION 3
Symptoms are not better explained by a known neurologic or medical disorder, such as Sydenham chorea, systemic lupus erythematosus, Tourette disorder, autoimmune encephalitis, or others. The diagnostic workup of patients with suspected PANS must be comprehensive enough to rule out these and other relevant disorders. The nature of the co-occurring symptoms will dictate the necessary assessments, which may include MRI scans, lumbar puncture, electroencephalograms, or other diagnostic tests.

PANS, Pediatric acute-onset neuropsychiatric syndrome.
Modified from Johnson M, Fernell E, Preda I, et al. Paediatric acute-onset neuropsychiatric syndrome in children and adolescents: an observational cohort study. *Lancet Child Adolesc Health.* 2019;3(3):175–180.

infections (commonly, but not exclusively, streptococcal infections) or other mechanisms that activate the immune system.

There are no DSM-5 diagnostic criteria for PANS. One suggested approach to PANS diagnostic criteria is noted in Table 38.12. Of note is the *abrupt-sudden onset* of OCD, the presence of additional psychiatric disorders (e.g., anxiety, depression, emotional lability), and the requirement to rule out other disorders like Sydenham chorea.

If PANS is suspected, a comprehensive evaluation is warranted primarily to rule out neurologic and medical conditions (see Table 38.12). Children with an abrupt onset of psychiatric *and* neurologic findings should be evaluated with MRI, electroencephalogram (EEG), and blood plus cerebrospinal fluid (CSF) autoimmune encephalitis antibody testing. Children with a sudden onset of only psychiatric symptoms (OCD, tics, anxiety) do not require extensive testing except for testing for a group A streptococcus, unless they have severe and disabling psychiatric features, The latter group should be evaluated to rule out the disorders noted in Table 38.12. Once diagnosed, clinicians should prioritize the target symptoms of the individual patient and select treatments accordingly. The three realms of PANS treatment are psychotherapeutic, antimicrobial, and immunomodulatory. Because behavioral interventions take time to work, psychiatric interventions should begin expeditiously for symptomatic relief. Antibiotics may eliminate the underlying source of neuroinflammation, and immunomodulatory options can help treat immune system disturbances.

SPECIFIC PHOBIAS

Specific phobias may not typically require treatment with an SSRI and may be better targeted with *exposure response prevention* therapies and with *premedicating* with a β blocker before an anticipated exposure. The exception to this is needle phobia; premedication with a β blocker is not indicated in this instance because of the risk of exacerbating the vasovagal response. Physical maneuvers, such as crossing the legs and tensing the muscles, may be effective in needle phobia.

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Chapter 39

Mood Disorders

Colleen K. Manak and Rosa K. Kim

Mood disorders encompass several different entities on the spectrum between depression and mania. Mood disorders are interrelated sets of psychiatric symptoms characterized by a core deficit in emotional self-regulation. Classically, the mood disorders have been divided into depressive and bipolar disorders, representing the two emotional polarities, *dysphoric* ("low") and *euphoric* ("high") mood. Mood disorders in children and adolescents are highly prevalent and are the most common psychiatric illnesses seen after attention-deficit/hyperactivity disorder (ADHD) and anxiety. Primary care is often their first point of contact when seeking treatment.

39.1 Depressive Disorders

Colleen K. Manak and Rosa K. Kim

Depressive disorders include major depressive, persistent depressive, disruptive mood dysregulation, other specified/unspecified depressive, premenstrual dysphoric, and substance/medication-induced disorders, as well as depressive disorder caused by another medical condition (Fig. 39.1).

DESCRIPTION

Major depressive disorder (MDD) is characterized by a distinct period of at least 2 weeks (an *episode*) in which there is a depressed or irritable mood and/or loss of interest or pleasure in almost all activities that is present for most of the day, nearly every day (Table 39.1 and Fig. 39.2). Major depression is associated with characteristic vegetative and cognitive symptoms, including disturbances in appetite, sleep, energy, and activity level; impaired concentration; thoughts of worthlessness or guilt; and suicidal thoughts or actions. Major depression is considered *mild* if few or no symptoms in excess of those required to make the diagnosis are present, and the symptoms are mildly distressing, manageable, and result in minor functional impairment. Major depression is considered *severe* if symptoms substantially in excess of those required to make the diagnosis are present, and the symptoms are highly distressing, unmanageable, and markedly impair function. *Moderate* major depression is intermediate in severity (Fig. 39.3).

Persistent depressive disorder is characterized by depressed or irritable mood for more days than not, for at least 1 year (in children and adolescents). This chronic form of depression is associated with characteristic vegetative and cognitive symptoms; however, the cognitive symptoms of persistent depression are less severe (e.g., low self-esteem rather than worthlessness, hopelessness rather than suicidality). Persistent depressive disorder is characterized as mild, moderate, or severe (Table 39.2).

Overall, the clinical presentation of major and persistent depressive disorders in children and adolescents is similar to that in adults. The prominence of the symptoms can change with age: irritability and somatic complaints may be more common in children, and energy, activity level, appetite, and sleep disturbances may be more common in adolescents. Because of the cognitive and linguistic immaturity of young children, symptoms of depression in that age group may be more likely to be observed than self-reported.

The core feature of **disruptive mood dysregulation disorder (DMDD)** is severe, persistent irritability evident most of the day, nearly every day, for at least 12 months in multiple settings (at home, at school, with peers). The irritable mood is interspersed

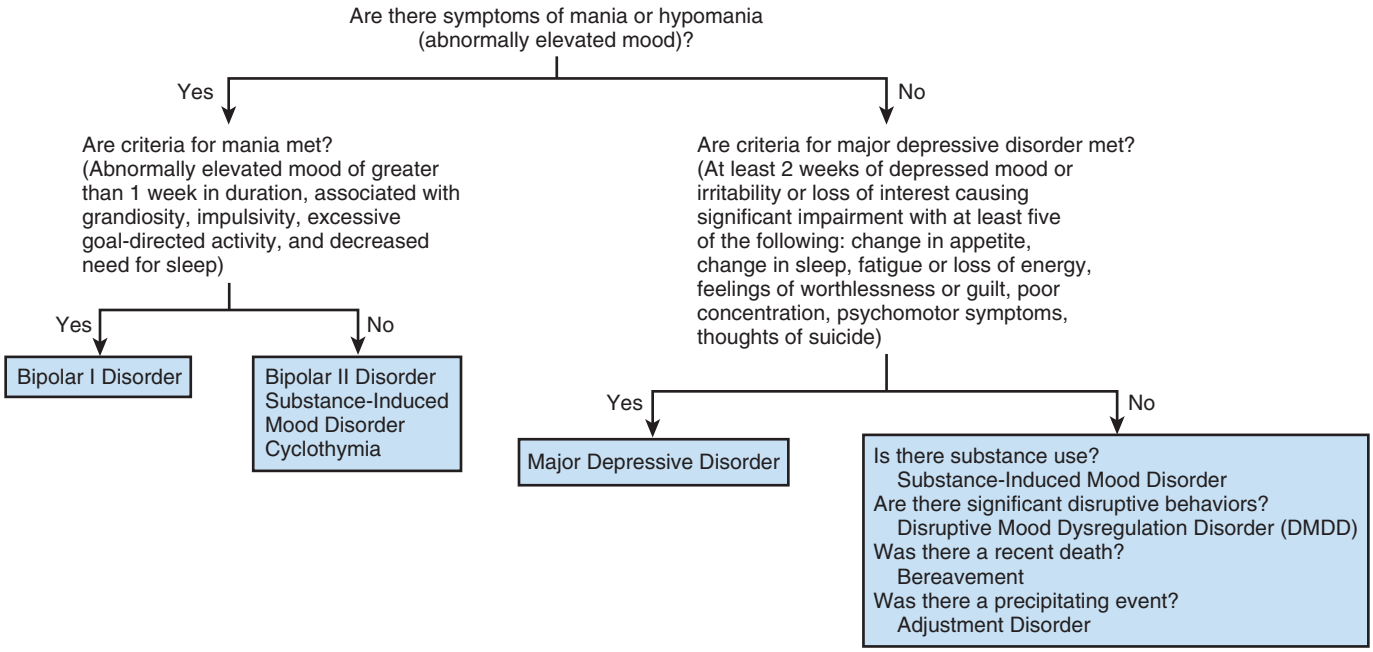

Fig. 39.1 Evaluation of mood disorders. *(From Kliegman RM, Lye, PS, Bordini BJ, et al., eds. Nelson Pediatric Symptom-Based Diagnosis. Elsevier, 2018; Fig, 27.2, p. 426.)*

Table 39.1 DSM-5 Diagnostic Criteria for Major Depressive Episode

A. Five (or more) of the following symptoms have been present during the same 2-wk period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.
   1. Depressed most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, hopeless) or observation made by others (e.g., appears tearful).

Note: In children and adolescents, can be irritable mood.

   1. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation).
   2. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite nearly every day.

Note: In children, consider failure to make expected weight gain.

   1. Insomnia or hypersomnia nearly every day.
   2. Psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down).
   3. Fatigue or loss of energy nearly every day.
   4. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick).
   5. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others).
   6. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide.

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The episode is not attributable to the physiologic effects of a substance or to another medical condition.

Note: Criteria A-C represent a major depressive episode.

D. The occurrence of the major depressive episode is not better explained by schizoaffective disorder, schizophrenia, schizophreniform disorder, delusional disorder, or other specified and unspecified schizophrenia spectrum and other psychotic disorders.

E. There has never been a manic episode or a hypomanic episode.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. pp. 125–126. Copyright 2013. American Psychiatric Association.

with frequent (≥3 times/week) and severe temper outbursts (verbal rages, physical aggression; Table 39.3). This diagnosis is intended to characterize more accurately the extreme irritability, which some investigators had considered a *developmental* presentation of bipolar disorder, and to distinguish extreme irritability from the milder presentations characteristic of oppositional defiant disorder (ODD) and intermittent explosive disorder. Table 39.4 highlights some of the similarities and differences between the various mood disorders and also factors that distinguish mood disorders from grief experienced in response to loss.

Other specified/unspecified depressive disorder (subsyndromal depressive disorder) applies to presentations in which symptoms characteristic of a depressive disorder are present and cause clinically significant distress or functional impairment but do not meet the full criteria for any of the disorders in this diagnostic class.

EPIDEMIOLOGY

The current prevalence of depressive disorder in the United States among 3-17 year olds is approximately 3.2%; the lifetime prevalence rates increase to 4.9% for ages 6-17 and to 12.8% for 12-17 year olds. The male:female ratio (excluding DMDD) is approximately 1:1 during childhood and beginning in early adolescence rises to 1:1.5-3.0 by adulthood.

Based on rates of chronic and severe persistent irritability, which is the core feature of DMDD, the overall 6 month to 1 year prevalence has been estimated in the 2–5% range. In three community samples, the 3-month prevalence rate of DMDD ranged from 0.8–3.3%, with the highest rates occurring in preschoolers (although *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* [DSM-5] does not permit this diagnosis until age 6 years). Approximately 5–10% of children and adolescents are estimated to have subsyndromal (unspecified) depression.

ETIOLOGY AND RISK FACTORS

Models of vulnerability to depressive disorders are grounded in genetic and environmental pathways. Genetic studies have demonstrated the heritability of depressive disorders, with monozygotic twin studies finding concordance rates of 40–65%. In families, both bottom-up (children to parents) and top-down (parents to children) studies have shown a two- to four–fold bidirectional increase in depression among first-degree relatives. Cerebral variations in structure and function (particularly serotonergic), the function of the hypothalamic-pituitary-adrenal axis, difficult temperament/personality (i.e., negative affectivity), and ruminative, self-devaluating cognitive style have been implicated as components of biologic vulnerability. The great majority of depressive disorders arise in youth with long-standing psychosocial difficulties, among the most predictive of which are physical/sexual abuse, neglect, chronic illness, school difficulties (bullying, academic failure), social isolation, family or marital disharmony, divorce/separation, parental psychopathology, and domestic violence. Longitudinal studies demonstrate the greater importance of environmental influences in children who become depressed than in adults who become depressed. Factors shown to be protective against the development of depression include better family function, a prosocial peer group, higher IQ, greater educational aspirations, a positive relationship with a caregiver, and closer caregiver supervision, monitoring, and involvement.

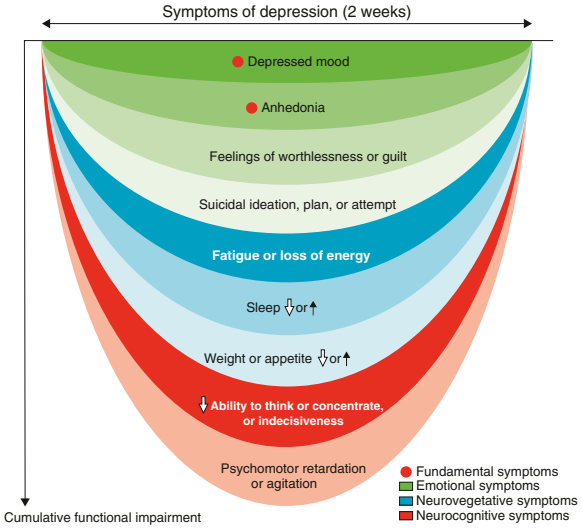

Fig. 39.2 Defining major depressive disorder. Key symptoms of *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM)-5 for major depressive disorder. For a diagnosis of major depressive disorder, the individual needs to present with five or more of any of the symptoms nearly every day during the same 2-week period, provided at least one of these symptoms is a fundamental one. The clinical symptoms of major depressive disorder are usually accompanied by functional impairment. The greater the number and severity of symptoms (as opposed to particular symptoms), the greater the probability of the functional impairment they are likely to confer. The symptoms of depression can be grouped into emotional, neurovegetative, and neurocognitive domains. Importantly sleep, weight, and appetite are usually diminished in depression but can also be increased, and suicidal ideation, plans, or an attempt should be documented whenever depression is suspected. *(From Malhi GS, Mann JJ. Depression. Lancet. 2018;392[10161]:2299–2312:Fig. 1, p. 2300.)*

SCREENING AND DIAGNOSIS

Screening

Adolescents presenting in the primary care setting should be queried, along with their caregiver(s), about depressed mood as part of the routine clinical interview. A typical screening question would be, "Everyone feels sad or angry some of the time; how about you (or your teen)?" The caregivers of younger children can be queried about overt signs of depression, such as tearfulness, irritability, boredom, or social isolation. A number of standardized screening instruments widely used in the primary care setting (e.g., *Pediatric Symptom Checklist*, *Strengths and Difficulties Questionnaire*, *Vanderbilt ADHD Diagnostic Rating Scales*) have items specific to sad mood and as such can be used to focus the interview. Additionally, screening tools specific to depression, such as the *Patient Health Questionnaire-9* (*PHQ-9*) and *Beck Depression Inventory*, can be utilized as part of routine screening (Table 39.5).

The role of universal depression screening using standardized depression-specific instruments is unclear. A Cochrane review found that the use of depression screening in primary care has little or no impact on the recognition, management, or outcome of depression. Nonetheless, the U.S. Preventive Services Task Force (USPSTF) recommends the universal use of depression screening instruments, but only among adolescents and only when systems are in place to ensure adequate follow-up. Targeted screening of known high-risk groups (e.g., youth who are homeless, refugees, attracted to the same sex, involved with child welfare or juvenile justice), or youth experiencing known psychosocial adversities or self-reporting a dysphoric mood, may be a higher-yield case-finding strategy than universal screening.

Assessment

Youth (and/or their caregivers) presenting in the primary care setting who self-report, or respond affirmatively to queries about a distressing life experience or a depressed or irritable mood should be offered the opportunity to talk about the situation with the pediatric practitioner (separately with the older youth). By engaging in active listening (e.g.,

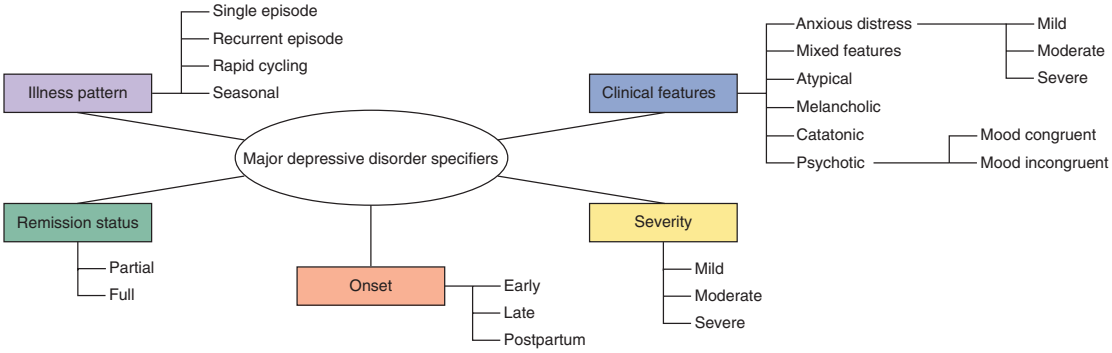

Fig. 39.3 Major depressive disorder specifiers. Episodes of major depression can be described in greater depth by specifiers (outlined in *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* [DSM-5]) that provide additional information regarding the pattern of the illness and its clinical features. Specifiers can also indicate the severity of the episode, when it first emerged (onset), and whether it has remitted (status). For example, in clinical practice, a typical episode of depression can be described as suffering from a recurrence of depression that is moderately severe with melancholic features and has partly remitted in response to initial treatment. *(From Malhi GS, Mann JJ. Depression. Lancet. 2018;392[10161]:2299–2312:Fig. 2, p. 2301.)*

Table 39.2 DSM-5 Diagnostic Criteria for Persistent Depressive Disorder

A. Depressed mood for most of the day, for more days than not, as indicated either by subjective account or observation by others, for at least 2 yr.

Note: In children and adolescents, mood can be irritable and duration must be at least 1 yr.

B. Presence, while depressed, of two (or more) of the following:
   1. Poor appetite or overeating.
   2. Insomnia or hypersomnia.
   3. Low energy or fatigue.
   4. Low self-esteem.
   5. Poor concentration or difficulty making decisions.
   6. Feelings of hopelessness.

C. During the 2 yr period (1 yr for children or adolescents) of the disturbance, the individual has never been without the symptoms in Criteria A and B for more than 2 mo at a time.

D. Criteria for a major depressive disorder may be continuously present for 2 yr.

E. There has never been a manic episode or a hypomanic episode, and criteria have never been met for cyclothymic disorder.

F. The disturbance is not better explained by a persistent schizoaffective disorder, schizophrenia, delusional disorder, or other specified or unspecified schizophrenia spectrum and other psychotic disorder.

G. The symptoms are not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hypothyroidism).

H. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Note: Because the criteria for a major depressive episode include four symptoms that are absent from the symptom list for persistent depressive disorder (dysthymia), a very limited number of individuals will have depressive symptoms that have persisted longer than 2 yr but will not meet criteria for persistent depressive disorder. If full criteria for a major depressive episode have been met at some point during the current episode of illness, they should be given a diagnosis of major depressive disorder. Otherwise, a diagnosis of other specified depressive disorder or unspecified depressive disorder is warranted.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp. 168–169. Copyright 2013. American Psychiatric Association.

Table 39.3 DSM-5 Diagnostic Criteria for Disruptive Mood Dysregulation Disorder

A. Severe recurrent temper outbursts manifested verbally (e.g., verbal rages) and/or behaviorally (e.g., physical aggression toward people or property) that are grossly out of proportion in intensity or duration to the situation or provocation.

B. The temper outbursts are inconsistent with developmental level.

C. The temper outbursts occur, on average, three or more times per week.

D. The mood between temper outbursts is persistently irritable or angry most of the day, nearly every day, and is observable by others (e.g., parents, teachers, peers).

E. Criteria A-D have been present for 12 or more months. Throughout that time, the individual has not had a period lasting 3 or more consecutive months without all of the symptoms in Criteria A-D.

F. Criteria A and D are present in at least two of three settings (i.e., at home, at school, with peers) and are severe in at least one of these.

G. The diagnosis should not be made for the first time before age 6 yr or after age 18 yr.

H. By history or observation, the age at onset of Criteria A-E is before 10 yr.

I. There has never been a distinct period lasting more than 1 day during which the full symptom criteria, except duration, for a manic or hypomanic episode have been met.

Note: Developmentally appropriate mood elevation, such as occurs in the context of a highly positive event or its anticipation, should not be considered as a symptom of mania or hypomania.

J. The behaviors do not occur exclusively during an episode of major depressive disorder and are not better explained by another mental disorder (e.g., autism spectrum disorder, posttraumatic stress disorder, separation anxiety disorder, persistent depressive disorder [dysthymia]).

Note: The diagnosis cannot coexist with oppositional defiant disorder, intermittent explosive disorder, or bipolar disorder, though it can coexist with others, including major depressive disorder, attention-deficit/hyperactivity disorder, conduct disorder, and substance use disorders. Individuals whose symptoms meet criteria for both disruptive mood dysregulation disorder and oppositional defiant disorder should only be given the diagnosis of disruptive mood dysregulation disorder. If an individual has ever experienced a manic or hypomanic episode, the diagnosis of disruptive mood dysregulation disorder should not be assigned.

K. The symptoms are not attributable to the physiologic effects of a substance or to another medical or neurologic condition.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. p. 156. Copyright 2013. American Psychiatric Association.

"I hear how upset you have been feeling; tell me more about what happened to make you feel that way"), the clinician can begin to assess the onset, duration, context, and severity of the symptoms and associated dangerousness, distress, and functional impairment. In the absence of acute dangerousness (e.g., suicidality, psychosis, substance abuse) and significant distress or functional impairment, the pediatric practitioner can schedule a follow-up appointment within 1-2 weeks to conduct a depression assessment. At this follow-up visit, to assist with decision-making about appropriate level of care, a depression-specific screening or standardized rating scale can be administered to assess symptom severity (see Table 39.5), and additional risk factors can be explored.

DIFFERENTIAL DIAGNOSIS

A number of psychiatric disorders, general medical conditions, and medications can generate symptoms of depression or irritability and must be distinguished from the depressive disorders. The psychiatric disorders include autism spectrum disorder (ASD), ADHD, and bipolar, anxiety, trauma- and stressor-related, disruptive/impulse control/conduct, and substance-related disorders. Medical conditions include neurologic disorders (including autoimmune encephalitis), endocrine disorders (including hypothyroidism and Addison disease), infectious diseases, tumors, anemia, uremia, failure to thrive, chronic fatigue disorder, and pain disorder. Medications include narcotics, chemotherapy agents, β blockers, corticosteroids, and contraceptives. The diagnosis of a depressive disorder should be made after these and other potential explanations for the observed symptoms have been ruled out.

COMORBIDITY

Major and persistent depressive disorders often co-occur with other psychiatric disorders. Depending on the setting and source of referral, 40–90% of youths with a depressive disorder have other psychiatric disorders, and up to 50% have two or more comorbid diagnoses. The most common comorbid diagnosis is an **anxiety disorder** and as such may reflect a common diathesis; other common comorbidities include ADHD and disruptive behavior, eating, and substance use disorders. The development of depressive disorders can both lead to and follow the development of comorbid disorders.

DMDD may occur with other psychiatric disorders, including other depressive disorders, ADHD, conduct disorder, and substance use disorders. Because the symptoms of DMDD overlap in part with symptoms of bipolar disorder, ODD, and intermittent explosive disorder, by DSM-5 convention, hierarchical diagnostic rules apply. Thus bipolar disorder takes precedence over DMDD if a manic/hypomanic episode

Table 39.4 A Comparison of Features of Depression, Persistent Depressive Disorder, Disruptive Mood Dysregulation Disorder, and Grief in Children with Developmental Considerations

	MAJOR DEPRESSIVE DISORDER	PERSISTENT DEPRESSIVE DISORDER	DISRUPTIVE MOOD DYSREGULATION DISORDER	GRIEF
Core feature(s)	Sadness, irritability, anhedonia	Sadness, irritability, anhedonia	Irritability and anger with behavioral outbursts (verbal, physical)	Sadness in response to the loss/death of a loved one
Duration	2 weeks with symptoms nearly every day	1 year with symptoms more days than not	1 year with outbursts at least three times/week	Ongoing, can continue/ recur indefinitely (e.g., around anniversaries, birthdays, holidays)
Associated symptoms	Changes in appetite, sleep, energy and activity level; impaired concentration; hopelessness, worthlessness and guilt; suicidal ideations/ actions	Changes in appetite, sleep, energy and activity level; impaired concentration; hopelessness, worthlessness and guilt; suicidal ideations/actions	Persistent irritability between episodes	Anger; guilt; regret; anxiety; intrusive images; overwhelmed; lonely
Age considerations	Younger children may be irritable and complain of somatic symptoms		Cannot be diagnosed before age 6 or after age 18	Developmental level and understanding of death can influence grief symptoms

Table 39.5 Depression-Specific Rating Scales

NAME OF INSTRUMENT	INFORMANT(S)	AGE RANGE (YR)	ITEMS (NO.)
Beck Depression Inventory	Youth	13+	21
Beck Depression Inventory for Youth	Youth	7-14	20
Center for Epidemiologic Studies-Depression-Children	Youth	6-18	20
Children's Depression Rating Scale-Revised	Youth, Parent, Clinician	6-18	47
Children's Depression Inventory, Second Edition	Youth, Parent, Teacher	7-17	28/17/12
Depression Self-Rating Scale	Youth	7-13	18
Mood and Feelings Questionnaire	Youth, Parent	7-18	33-34
Patient Health Questionnaire-9	Youth	12/13+	9
Preschool Feelings Checklist	Parent	3-5.6	20
PROMIS Emotional Distress-Depressive Symptoms	Youth, Parent	8-17 (youth report) or 5-17 (parent report)	8/6
Reynolds Child Depression Scale	Youth	8-13	30
Reynolds Adolescent Depression Scale, Second Edition	Youth	11-20	30

has ever occurred, and DMDD takes precedence over ODD and intermittent explosive disorder if full criteria for DMDD are met.

TREATMENT

Treatment decisions should be guided by the understanding that depression in youth is highly responsive to placebo (50–60%) or brief nonspecific intervention (15–30%). The goal of treatment is **remission,** defined as a period of at least 2 weeks with no or very few depressive symptoms, and ultimately **recovery,** defined as a period of at least 2 months with no or very few depressive symptoms. Assessment of remission and recovery can be aided using the depression-specific standardized rating scales, in which remission is defined as scores below the scale-specific clinical cut point.

For *mild symptoms* (manageable and not functionally impairing) and in the absence of major risk factors (e.g., suicidality; psychosis; substance use; history of depression, mania, or traumatic exposures; parental psychopathology, particularly depression; severe family dysfunction), **guided self-help** (anticipatory guidance) with watchful waiting and scheduled follow-up may suffice. Guided self-help can include provision of educational materials (e.g., pamphlets, books, workbooks, apps, internet sites) that provide information to the youth about coping adaptively with stressful situations, as well as advice to caregivers about strengthening the caregiver–child relationship and modifying triggering exposures (e.g., taking action against bullying, increasing opportunities for social interaction and support, protecting child from exposure to marital discord). Additional self-help activities that have shown promise in improving mild depressive symptoms include behavioral activation (e.g., physical exercise, social engagement, participation in a hobby), mindfulness (e.g., yoga, meditation), and a regular sleep schedule.

For youths who *continue* to have mild depression after a few weeks of guided self-help, supportive therapy by a mental health professional may be an appropriate subsequent step. For youths who have not responded to approximately 4–8 weeks of supportive psychotherapy, or who from the outset exhibit moderate to severe, comorbid, or recurrent depression or suicidality, or who have a history of mania, traumatic exposures, or severe family dysfunction or psychopathology,

assessment and treatment by a child-trained mental health clinician should be obtained.

For *moderate* to *severe depression*, specific manualized psychotherapies, antidepressant medication, or a combination of both should be considered. There is insufficient evidence on which to base definitive conclusions about the relative effectiveness of these treatments.

Psychotherapies

Clinical trials of acute treatments have generated support for the efficacy of cognitive-behavioral therapy (CBT)/behavioral activation therapy and interpersonal therapy as monotherapies in depressed youth, but overall effect sizes are modest. CBT focuses on identifying and correcting cognitive distortions that may lead to depressed mood and teaches problem-solving, behavior activation, social communication, and emotional regulation skills to combat depression. Interpersonal therapy focuses on enhancing interpersonal problem solving and social communication to decrease interpersonal conflicts. Each of these therapies typically involves 8-12 weekly visits. Limited evidence suggests that family therapy may be more effective than no treatment in decreasing depression and improving family functioning. Manualized CBT treatment as well as alternative therapy modalities such as play therapy are also available for younger children.

Pharmacologic Treatment

Two selective serotonin reuptake inhibitors (SSRIs), fluoxetine and escitalopram, are the only antidepressants approved by the U.S. Food and Drug Administration (FDA) for the treatment of depression in youth; fluoxetine alone is approved for preadolescents. Other SSRIs, with the exception of paroxetine, which has been shown to be ineffective in children, are frequently used off-label and may be considered for use in depressed children and teens despite the lack of FDA approval.

There are several considerations to keep in mind when starting an SSRI, including family history of response to SSRIs, comorbid medical conditions, and other concurrent medications. Fluoxetine should be given in the morning, given its propensity to be activating for some patients; escitalopram is preferentially dosed in the evening as it can be sedating. Sertraline has the advantage of a very wide dosing range, which can be helpful when small dosing changes are preferred.

All SSRIs carry a "black box" warning for increased suicidal thinking in patients under age 25 that must be discussed with all patients and caregivers before starting an SSRI. The risk for this side effect is highest when initiating treatment and when making dose adjustments. All SSRIs can cause *akathisia*, an uncomfortable feeling of internal restlessness; this side effect is more common in children than it is in adults. Gastrointestinal upset and headaches are among the most common side effects; they typically self-resolve after a few weeks. However, they may recur when dose increases are made. Education around the expected course and resolution of these side effects can be helpful when providing informed consent and may lead to improved adherence in the early phase of treatment. Sexual side effects of SSRIs, including decreased libido and difficulty reaching orgasm, are also important considerations and should be addressed with patients before treatment initiation.

If the first trial of an SSRI is unsuccessful, a trial of a second SSRI should be considered. An adequate trial of an SSRI requires that a sufficient dose be achieved and that it be continued for a reasonable amount of time. Given the length of time it takes for SSRIs to take full effect, an adequate trial would be at least 6-8 weeks at a target dose. Trials may end early if patients experience intolerable side effects. For patients who do not respond to two adequate trials of an SSRI, it is appropriate to consider referral to a psychiatrist for further management.

Clinical severity, comorbidity, family conflict, low drug concentration, nonadherence, anhedonia, sleep difficulties, subsyndromal manic symptoms, and child maltreatment have all been related to treatment resistance. Approximately 50% of depressed youth failing to respond to the first SSRI respond after switching to a second antidepressant plus CBT, vs approximately 40% who respond to a second medication alone. For youth with psychotic depression, augmenting the antidepressant with an atypical antipsychotic medication should be considered, while monitoring closely for side effects.

Because of the high rate of recurrence, successful treatment should continue for 6-12 months. The findings from one trial suggested that the addition of relapse-prevention CBT to ongoing medication management reduces the risk of relapse more than medication management alone, even after the end of treatment. When treatment concludes, all antidepressants (except possibly fluoxetine because of its long half-life) should be discontinued gradually to avoid withdrawal symptoms (gastrointestinal upset, disequilibrium, sleep disruption, flulike symptoms, sensory disturbances). Patients with recurrent (two or more episodes), chronic, or severe major depression may require treatment beyond 12 months.

Ketamine or esketamine, glutamatergic *N*-methyl-D-aspartate (NMDA) receptor antagonists have demonstrated efficacy in treating treatment resistant depression in adults.

There are no rigorous studies evaluating the effectiveness of pharmacologic or psychosocial treatment approaches to persistent depressive disorder or DMDD. The aforementioned treatments for MDD may prove helpful in persistent depressive disorder. In suspected cases of DMDD, child and adolescent psychiatry consultation may be helpful to clarify diagnosis and suggest treatment approaches.

LEVEL OF CARE

Most children and adolescents with mild to moderate depressive disorders can be safely and effectively treated as outpatients, provided that a clinically appropriate schedule of visits can be maintained through the phases of treatment. Inpatient treatment should be considered for youth who present with a substantial risk of suicide, serious self-harm, or self-neglect, or when the family is not able to provide an appropriate level of supervision or follow-up with outpatient treatment recommendations, or when comprehensive assessment for diagnostic clarity is needed. When considering inpatient admission for a young person with depression, the benefits of inpatient treatment need to be balanced against potential detrimental effects, such as separation from family and community support.

CLINICAL COURSE

Major depression may first appear at any age, but the likelihood of onset greatly increases with puberty. Incidence appears to peak in the 20s. The median duration of a major depressive episode is about 5-8 months for clinically referred youth and 3-6 months for community samples. The course is quite variable in that some individuals rarely or never experience remission, whereas others experience many years with few or no symptoms between episodes. Persistent depressive disorder often has an early and insidious onset and, by definition, a chronic course (average untreated duration in both clinical and community samples: 3.5 years).

Depressed children appear to be more likely to develop nondepressive psychiatric disorders in adulthood than depressive disorders. However, depression in adolescents has a probability of recurrence reaching 50–70% after 5 years. The persistence of even mild depressive symptoms during remission is a powerful predictor of recurrence; other negative prognostic factors include more severe symptoms, longer time to remission, history of maltreatment, and comorbid psychiatric disorders. Up to 20% of depressed adolescents develop a bipolar disorder; the risk is higher among adolescents who have a high genetic risk for bipolar disorder, who have psychotic depression, or who have had pharmacologically induced mania.

SEQUELAE

Approximately 60% of youths with MDD report thinking about suicide; 30% attempt suicide. Youths with depressive disorders are also at high risk of substance abuse, impaired family and peer relationships, early pregnancy, legal problems, educational and occupational underachievement, and poor adjustment to life stressors, including physical illness.

Children with DMDD have displayed elevated rates of social impairments, school suspension, and service use. Irritability in adolescence has predicted the development of major depressive and dysthymic disorders and generalized anxiety disorder (but not bipolar disorder) 20 years later, as well as lower educational attainment and income.

PREVENTION

Experimental trials have sought to demonstrate the effectiveness of psychologic or educational strategies in preventing the onset of depressive disorders in children and adolescents. These programs generally have provided information about the link between depressed mood, thoughts, and behaviors, as well as training in skills intended to modify these thoughts and behaviors. A Cochrane review found small effects of these programs on depression symptoms when implemented universally vs no intervention, with selective programs targeted at high-risk groups performing better than universal programs; however, the effect of prevention programs was null compared with attention controls.

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39.2 Bipolar Disorders

Colleen K. Manak and Rosa K. Kim

The bipolar and related disorders include bipolar I, bipolar II, cyclothymic, and other specified/unspecified bipolar and related disorders, as well as bipolar and related disorder caused by another medical condition.

A **manic episode** is characterized by a distinct period of at least 1 week in which there is an abnormally and persistently elevated, expansive, or irritable mood and abnormally and persistently increased goal-directed activity or energy that is present for most of the day, nearly every day (or any duration if hospitalization is necessary). The episode is associated with characteristic cognitive and behavioral symptoms, including disturbances in self-regard, speech, attention, thought, activity, impulsivity, and sleep (Table 39.6). To diagnose **bipolar I disorder**, criteria must be met for at least one manic episode, and the episode must not be better explained by a psychotic disorder. The manic episode may be preceded and may be followed by hypomanic or major depressive episodes. Bipolar I disorder is rated as mild, moderate, or severe in the same way as the depressive disorders.

To diagnose **bipolar II disorder**, criteria must be met for at least one hypomanic episode and at least one major depressive episode. A **hypomanic episode** is similar to a manic episode but is briefer (at least 4 days) and less severe (causes less impairment in functioning, is not associated with psychosis, and would not require hospitalization) (Table 39.7). In bipolar II disorder, there must never have been a manic disorder, the episodes must not be better explained by a psychotic disorder, and the symptoms of depression or the unpredictability caused by frequent alternation between periods of depression and hypomania must cause clinically significant distress or functional impairment. Bipolar II disorder is also rated as mild, moderate, or severe.

Cyclothymic disorder is characterized by a period of at least 1 year (in children and adolescents) in which there are numerous periods with hypomanic and depressive symptoms that do not meet criteria for a hypomanic episode or a major depressive episode, respectively (Table 39.8).

EPIDEMIOLOGY

The lifetime prevalence of bipolar disorder I among adults in the United States varies from 0.8–1.6%, and bipolar II carries a lifetime prevalence of around 1.1%. Bipolar I disorder affects males and females equally, whereas bipolar II disorder is more common in females. Lifetime rates of mania among youth have ranged from 0.1–1.7%. The estimated annual number of U.S. office-based visits of youth with a diagnosis of bipolar disorder increased from 25 per 100,000 population in 1994-1995 to 1,003/100,000 in 2002-2003. U.S. hospital discharge diagnoses increased from 1.4 to 7.3/10,000 in 9-13-year-old children and from 5.1 to 20.4 per 10,000 in 14-19 year olds. These increases were not found in U.K. diagnoses or hospital discharges, raising questions about whether bipolar disorder was being over-diagnosed in the United States, with resultant increases in prescribing of antipsychotic and mood-stabilizing medications.

Table 39.6 DSM-5 Diagnostic Criteria for a Manic Episode

A. A distinct period of abnormally and persistently elevated, expansive, or irritable mood and abnormally and persistently increased goal-directed activity or energy, lasting at least 1 wk and present most of the day, nearly every day (or any duration if hospitalization is necessary).

B. During the period of mood disturbance and increased energy or activity, three (or more) of the following symptoms (four if the mood is only irritable) are present to a significant degree and represent a noticeable change from usual behavior:
   1. Inflated self-esteem or grandiosity.
   2. Decreased need for sleep (e.g., feels rested after only 3 hr of sleep).
   3. More talkative than usual or pressure to keep talking.
   4. Flight of ideas or subjective experience that thoughts are racing.
   5. Distractibility (i.e., attention too easily drawn to unimportant or irrelevant external stimuli), as reported or observed.
   6. Increase in goal-directed activity (either socially, at work or school, or sexually) or psychomotor agitation (i.e., purposeless non–goal-directed activity).
   7. Excessive involvement in activities that have a high potential for painful consequences (e.g., engaging in unrestrained buying sprees, sexual indiscretions, or foolish business investments).

C. The mood disturbance is sufficiently severe to cause marked impairment in social or occupational functioning or to necessitate hospitalization to prevent harm to self or others, or there are psychotic features.

D. The episode is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication, other treatment) or to another medical condition.

Note: A full manic episode that emerges during antidepressant treatment (e.g., medication, electroconvulsive therapy) but persists at a fully syndromal level beyond the physiologic effect of that treatment is sufficient evidence for a manic episode and, therefore, a bipolar I diagnosis.

Note: Criteria A-D constitute a manic episode. At least one lifetime manic episode is required for the diagnosis of bipolar I disorder.

ETIOLOGY AND RISK FACTORS

Twin studies suggest the heritability of bipolar disorder may be 60–90%; shared and unique environmental factors may account for 30–40% and 10–20%, respectively. Offspring of parents with bipolar disorders are at high risk for early-onset bipolar disorders as well as anxiety and behavioral disorders and mood dysregulation. There is an average 10-fold increased risk among adult relatives of individuals with bipolar disorder, with the magnitude of risk increasing with the degree of kinship. Bipolar disorder and schizophrenia likely share a common genetic origin, reflected in familial co-aggregation of the two disorders.

Studies to date suggest key roles for the amygdala, anterior paralimbic cortices, and their connections in the emotional dysregulation of bipolar disorder. Some of these abnormalities are apparent by adolescence, whereas others appear to progress over adolescence into young adulthood.

Dysthymic (sad), *cyclothymic* (labile), or *hyperthymic* (irritable) temperaments may presage eventual bipolar disorder. Premorbid anxiety and dysphoria also are common. Environmental factors such as irritable and negative parenting styles, physical and sexual abuse, poor social support, and prenatal alcohol exposure may interact with genetic vulnerability to produce early onset of bipolar illness as well as negative prognostic indicators. *Affective lability,* in particular, has been associated with high levels of childhood trauma, and gradual sensitization to stressors has been linked to episode recurrence.

SCREENING

Cardinal manic symptoms of elation, increased energy, and grandiosity occurring in adolescents as a discrete episode representing an unequivocal and uncharacteristic change in functioning should alert pediatric practitioners to the possibility of bipolar disorder. High scores on parent-completed versions of mania-specific rating scales (e.g., *General Behavior Inventory, Child Mania Rating Scale, Young Mania Rating Scale*) have been associated with increased likelihood of a bipolar diagnosis. However, screening tools for bipolar disorder have suboptimal psychometric properties when applied to young people. Because of the complexity of diagnosing and treating bipolar disorders, any suspected cases should be referred to the specialty mental health setting for comprehensive assessment and treatment.

Table 39.7 DSM-5 Diagnostic Criteria for a Hypomanic Episode

A. A distinct period of abnormally and persistently elevated, expansive, or irritable mood and abnormally and persistently increased goal-directed activity or energy, lasting at least four consecutive days and present most of the day, nearly every day.

B. During the period of mood disturbance and increased energy or activity, three (or more) of the following symptoms (four if the mood is only irritable) have persisted, represent a noticeable change from usual behavior, and have been present to a significant degree:
   1. Inflated self-esteem or grandiosity.
   2. Decreased need for sleep (e.g., feels rested after only 3 hr of sleep).
   3. More talkative than usual or pressure to keep talking.
   4. Flight of ideas or subjective experience that thoughts are racing.
   5. Distractibility (i.e., attention too easily drawn to unimportant or irrelevant external stimuli), as reported or observed.
   6. Increase in goal-directed activity (either socially, at work or school, or sexually) or psychomotor agitation (i.e., purposeless non–goal-directed activity).
   7. Excessive involvement in activities that have a high potential for painful consequences (e.g., engaging in unrestrained buying sprees, sexual indiscretions, or foolish business investments).

C. The episode is associated with an unequivocal change in functioning that is uncharacteristic of the individual when not symptomatic.

D. The disturbance in mood and the change in functioning are observable by others.

E. The disturbance is not severe enough to cause marked impairment in social or occupational functioning or to necessitate hospitalization. If there are psychotic features, the episode is, by definition, manic.

F. The episode is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication, other treatment) or to another medical condition.

Note: A full hypomanic episode that emerges during antidepressant treatment (e.g., medication, electroconvulsive therapy) but persists at a fully syndromal level beyond the physiologic effect of that treatment is sufficient evidence for a hypomanic episode diagnosis. However, caution is indicated so that one or two symptoms (particularly increased irritability, edginess, or agitation following antidepressant use) are not taken as sufficient for diagnosis of a hypomanic episode, nor necessarily indicative of a bipolar diathesis.

Note: Criteria A-F constitute a hypomanic episode. Hypomanic episodes are common in bipolar I disorder but are not required for the diagnosis of bipolar I disorder.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p. 124. Copyright 2013. American Psychiatric Association.

PRESENTATION

In adolescents, the clinical manifestations of mania are similar to those in adults; psychosis (delusions, hallucinations) often is an associated symptom (see Chapter 47). Mood in a manic episode is often described as euphoric, excessively cheerful, high, or "feeling on top of the world." During the episode, the adolescent may engage in multiple new projects that are initiated with little knowledge of the topic and often at unusual hours (middle of the night). Inflated self-esteem is usually present, ranging from uncritical self-confidence to marked grandiosity, and may reach delusional proportions. The adolescent may sleep little, if at all, for days and still feel rested and full of energy. Speech can be rapid, pressured, and loud and characterized by jokes, puns, amusing irrelevancies, and theatricality. Frequently there is a "flight of ideas," evidenced by an almost continuous flow of accelerated speech, with abrupt shifts from one topic to another. Distractibility is evidenced by an inability to censor irrelevant extraneous stimuli, which often prevents an individual with mania from engaging in a rational conversation. The expansive mood, grandiosity, and poor judgment often lead to reckless involvement in activities with high potential for personal harm.

Controversy surrounds the applicability of the diagnostic criteria for mania to prepubertal children. It may be developmentally normal for children to be elated, expansive, grandiose, or talkative, reducing the specificity of these symptoms to this disorder. In addition, the distractibility, overactivity, impulsivity, and irritability formerly ascribed to bipolar disorder by some investigators may be better explained by a diagnosis of ADHD, with or without comorbid ODD. The presentation of severe and pervasive irritability formerly diagnosed as "bipolar disorder" may be better captured by the diagnosis of DMDD.

DIFFERENTIAL DIAGNOSIS

Numerous psychiatric disorders, general medical conditions, and medications can generate manic-like symptoms and must be distinguished from the bipolar and related disorders. The psychiatric disorders include ADHD, ODD, and intermittent explosive, posttraumatic stress, depressive, anxiety, substance abuse, and borderline personality disorders. Medical conditions include neurologic disorders, endocrine disorders, infectious diseases, tumors, anemia, uremia, and vitamin deficiencies. Medications include androgens, bronchodilators, cardiovascular medications, corticosteroids, chemotherapy agents, thyroid preparations, and certain psychiatric medications (benzodiazepines, antidepressants, stimulants). The diagnosis of a bipolar disorder should be made after these other explanations for the observed symptoms have been ruled out. Substance-induced mood disorder should also be considered and ruled out in patients presenting with mania.

Table 39.8 A Comparison of Bipolar I and II and Cyclothymia in Children and Adolescents

	BIPOLAR I	BIPOLAR II	CYCLOTHYMIA
Core feature(s)	One manic episode	One hypomanic episode AND one major depressive episode	Symptoms of hypomania and depression, without meeting full criteria for a manic, hypomanic or depressive episode
Duration	Mania: 7 days	Hypomania: 4 days Depressive episode: 14 days	1 year
Associated symptoms	Depressive episodes, hypomanic episodes, psychosis		Chronic disruption in mood patterns

For bipolar II disorder, the main differential is unipolar depression (MDD) or cyclothymic disorder, which are ruled out by the lack of a hypomanic episode and by not meeting full criteria for either a major depressive or hypomanic episode, respectively.

COMORBIDITY

The most common simultaneous comorbidities (ADHD, ODD, conduct disorder, anxiety) may be difficult to distinguish from mania because of considerable symptom overlap. Substance use also is a common comorbidity in adolescents, and presentations that appear to be manic may remit when the substances of abuse are discontinued.

TREATMENT

Pharmacologic Treatment

Medication is the primary treatment for mania (Table 39.9). Studies have demonstrated the superiority of antipsychotics over mood stabilizers in the treatment of mania. Risperidone and olanzapine are the most efficacious agents; quetiapine, risperidone, and olanzapine ranked as the most tolerable agents. The choice of antipsychotic medication is based on factors such as side effect profiles, comorbidities, adherence, and positive response of a family member.

Among traditional mood stabilizers, only lithium is FDA approved for the treatment of bipolar disorder from age 12 years; its efficacy and tolerability compared to placebo has been demonstrated in randomized controlled trials (RCTs). There also is evidence that lithium reduces the risk of suicide and total deaths in patients with both unipolar and bipolar depressive disorder.

Given the co-occurrence of sleep disturbance with bipolar disorders, the use of medications to help regulate sleep can have a significant benefit on mood and functioning. Medications to promote sleep, including benzodiazepines, benzodiazepine receptor agonists, and melatonin receptor agonists have some evidence for the treatment of sleep in bipolar disorder in adults. When treating children and adolescents, it is important to monitor for paradoxical activation/disinhibition when using benzodiazepines.

Medication trials should be systematic and their duration sufficient (generally 6-8 weeks) to determine effectiveness. Care should be taken to avoid unnecessary polypharmacy, in part by discontinuing agents that have not demonstrated significant benefit. Because these medications are associated with significant side effects, careful monitoring of baseline and follow-up indices is imperative (see Chapter 33).

The regimen needed to stabilize acute mania should be maintained for 12-24 months. Maintenance therapy is often needed for adolescents with bipolar I disorder, and some patients need lifelong medication. Any attempts to discontinue prophylactic medication should be done gradually while closely monitoring the patient for relapse.

Antidepressants *alone* should not be prescribed for depressive symptoms in confirmed cases of bipolar I disorder because of the risk of manic switch. For treatment of depression in bipolar II, antidepressant medication may be used cautiously. Comorbid ADHD can be treated with a stimulant once a mood stabilizer has been initiated.

Table 39.9 U.S. Food and Drug Administration–Approved Treatments for Bipolar Disorder in Youth

MEDICATION	INDICATION (APPROVED AGES)
Aripiprazole	Mania (10-17 yr)
Asenapine	Mania/mixed episode (10-17 yr)
Lithium	Acute mania/bipolar maintenance (7-17 yr)
Lurasidone	Bipolar depression (10-17 yr)
Olanzapine	Mania/mixed episode (13-17 yr)
Quetiapine	Mania (10-17 yr)
Risperidone	Mania/mixed episode (10-17 yr)

Psychotherapies

Psychotherapy is a potentially important adjunctive treatment for bipolar disorders. Therapies with some evidence of efficacy, primarily as adjunctive to pharmacotherapy, include multifamily psychoeducational psychotherapy and family-focused treatment, child and family–focused CBT, dialectical behavioral therapy, and interpersonal and social rhythm therapy. Active components of these therapies include family involvement and psychoeducation, along with self-regulation, cognitive restructuring, communication, problem-solving, and emotion regulation skills. Factors that adversely influence response to therapy include high-conflict families and sleep impairment, suggesting the importance of targeting these factors in treatment. Sleep hygiene is an important factor in the treatment of mania, and there is support for the use of CBT in treating insomnia related to bipolar disorder. Ensuring patients get adequate rest will help with recovery and the prevention of future episodes of mania.

LEVEL OF CARE

Most youths with bipolar disorders can be safely and effectively treated as outpatients, provided that an appropriate schedule of visits and laboratory monitoring can be maintained through the course of treatment. Youths who are suicidal, homicidal, psychotic, or present an intentional danger to themselves or others typically require inpatient care.

Clinical Course and Prognosis

The mean age of onset of the first manic episode is approximately 18 years old for bipolar I disorder. Premorbid problems are common in bipolar disorder, especially temperamental difficulties with mood and behavioral regulation. Premorbid anxiety also is common. The early course of adolescent-onset bipolar I disorder appears to be more chronic and refractory to treatment than adult-onset bipolar disorder. Comorbidity predicts functional impairment, and age at onset predicts duration of episodes. Sleep impairment and family conflict are inversely related to favorable treatment response, suggesting important targets for treatment. The bipolar disorders are highly recurrent, and 70–80% of bipolar I patients will have additional mood episodes. Recurrent episodes can approximate 4 in 10 years, with the interepisode interval shortening as the patient ages. Although the majority of patients with bipolar I return to a fully functional level between episodes, approximately 30% continue to be symptomatic and functionally impaired between episodes.

The initial presentation of bipolar I disorder is often a major depressive episode. Switching from a depressive episode to a manic episode by adulthood may occur in 10–20% of youth, both spontaneously and during depression treatment. Factors that predict the eventual development of mania in depressed youth include a depressive episode characterized by rapid onset, psychomotor retardation, and psychotic features; a family history of affective disorders, especially bipolar disorder; and a history of mania or hypomania after antidepressant therapy.

The mean age of onset of bipolar II disorder is 20 years old. The illness most often begins with a depressive episode and is not recognized as bipolar II disorder until a hypomanic episode occurs, in about 12% of individuals with the initial diagnosis of major depression. Many individuals experience several episodes of major depression before experiencing the first recognized hypomanic episode. Anxiety, substance misuse, or eating disorders may also precede the onset of bipolar II, complicating its detection. About 5–15% of individuals with bipolar II disorder will ultimately develop a manic episode, which changes the diagnosis to bipolar I disorder.

Depression in bipolar I or II usually has an earlier age of onset, more frequent episodes of shorter duration, an abrupt onset and offset, is linked to comorbid substance misuse, and is triggered by stressors. Atypical symptoms such as hypersomnia, lability, and weight instability are also common in bipolar depression, reported in up to 90% of cases vs 50% in unipolar depression. Psychosis, psychomotor retardation, and catatonia are also more characteristic of bipolar depression,

whereas somatic complaints are more frequent in unipolar depression. A family history of mania is also a relevant discriminating factor.

Provision of clinical services is poor for youth with bipolar disorder. In one healthcare system study spanning 2-year follow-up after diagnosis, despite complex drug regimens, medication appointments were infrequent, averaging one visit every 2 months. More than 50% of patients needed one or more hospitalizations, and almost half had psychiatric emergency department visits. In a national study, 38% of youths diagnosed with bipolar disorder had received no treatment at all.

SEQUELAE

Bipolar disorder has one of the higher rates of suicide among mental health diagnoses, with a lifetime risk of suicide in individuals with bipolar disorder estimated to be at least 15 times that of the general population. Factors associated with suicide attempts include female gender, young age at illness onset, depressive polarity of first illness episode or current or most recent episode, comorbid anxiety disorder, any comorbid substance use disorder, borderline personality disorder, and first-degree family history of suicide. In contrast, completed suicides are associated with male sex and a first-degree family history of suicide. Despite patients with bipolar disorder having normal or even superior cognition before diagnosis, bipolar disorder has been associated with decrements in executive function and verbal memory. Youths with bipolar disorder are also at high risk for substance abuse, antisocial behavior, impaired academic performance, impaired family and peer relationships, and poor adjustment to life stressors.

PREVENTION

Although empirical support is sparse, one study demonstrated the effectiveness of family-focused treatment vs an educational control in hastening and sustaining recovery from mood symptoms in a high-familial-risk cohort of youths with subsyndromal symptoms of mania. Family-focused treatment is a manualized psychoeducational intervention designed to reduce family stress, conflict, and affective arousal by enhancing communication and problem solving between youths and their caregivers. Pharmacologic interventions for subsyndromal mania have produced equivocal results.

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Chapter 40

Suicide and Attempted Suicide

Jennifer A. Zaspel and Rosa K. Kim

Youth suicide is a major public health concern. In 2021, suicide was the second leading cause of death in adolescents and young adults (aged 10-24 years) and the tenth leading cause of death for all ages. The rates of emergency department (ED) visits for psychiatric chief complaints have also increased over time, with a 2.5-fold increase in suicide-related visits in adolescents. There are numerous genetic, psychiatric, social, cultural, and environmental risk factors for suicidal behavior (Fig. 40.1). There are also many protective factors and interventions that can reduce rates of self-injury and suicide. Knowledge of these risk factors and protective factors may facilitate identification and treatment in youths at highest risk for intentional harm to themselves.

EPIDEMIOLOGY

Suicide rates for children and adolescents have been increasing over time, with the overall suicide rates increasing by 35% since 1999. It is estimated that 46% of people who die by suicide were diagnosed with a psychiatric condition at the time of their death. Linear trends in suicide attempts from 2009–2019 have also increased and specifically among certain demographic groups. A better understanding of which groups are at risk for suicide and parasuicidal behavior can help pediatricians identify and support those who are at risk (Table 40.1).

Suicidal Ideation and Attempts

More than 30% of 9th-12th grade students in the United States felt so sad or hopeless almost every day for 2 or more weeks in a row during the previous year that they stopped doing usual activities. During that same period, 18.8% of the students reported that they had seriously considered attempting suicide, and 8.9% reported that they had attempted suicide one or more times. A suicide attempt in the previous year that resulted in an injury, poisoning, or overdose that had to be treated by a physician or nurse was reported by 2.5% of students.

Ingestion is the most common method of attempted suicide. The 15–19-year-old age-group is the most likely to intentionally harm themselves by ingestion, receive treatment in the ED, and survive. Attempts are more common in adolescent females than males and in Hispanic females than their non-Hispanic counterparts. LGBTQ+ and bullied youths also have disproportionately high rates of suicidal ideation and suicide attempts (see Chapter 154). Prior self-harm (self-injury) from poisoning, drowning, firearms, fires, asphyxiation (hanging), and traffic injury are risk factors for suicide. Repeated episodes of self-harm are a higher risk factor than a single episode (see Chapter 46). Attempters who have made prior suicide attempts, who used a method other than ingestion, who have a plan, who have no regret, and who still want to die are at increased risk for completed suicide. Nonetheless, a significant number of children and adolescents who have completed suicide had no previous attempts.

Suicide Completions

In the United States, completed suicide is very rare before age 10. Rates of completed suicide increase steadily across adolescence into young adulthood, peaking in the early 20s. The male-to-female ratio for completed suicide rises with age from 3:1 in children to approximately 4:1 in those aged 15-24 and greater than 6:1 among those ages 20-24. Although exact rates have changed over time, firearms, suffocation, and poisoning remain the most common methods of suicide (Fig. 40.2).

For both male and female youth ages 15-24, suicide rates remain highest among Indigenous American and Indigenous Alaskan youth and White youth relative to Black, Asian or Pacific Islander, and Hispanic youth. However, rates have been rising for both Black and Asian or Pacific Islander youth, with the rates in Black males increasing 47% between 2013 and 2019 (12.2/100,000 to 17.9/100,000 individuals) and Asian or Pacific Islander males increasing 40% between 2013 and 2019 (12.0/100,000 to 16.8/100,000 individuals). Similar increases have also been seen in female youth in these groups in this time, with a rate increase of 59% among Black female youth (2.7 to 4.3/100,000) and 42% among Asian or Pacific Islander (3.6 to 5.1/100,000). In 2021, the combined (male and female, age 10-24) suicide rates among Indigenous youths increased ~16% (over 2018 rates); Increases were also noted among Black youths (~36%) and Hispanic youths (~8%).

RISK FACTORS

Multiple risk factors predispose youth to suicide (see Fig. 40.1, Table 40.1). Dynamic risk factors are those that change over time and are most amenable to risk mitigation through treatment, resources, and support. Static risk factors are those that increase an individual's risk of suicide attempt and completion but are not amenable to direct intervention. They include genetic factors, demographic information, an individual's past psychiatric history, family psychiatric history, and history of suicidal and parasuicidal behavior. The risk associated with each factor varies, with the highest risk associated with a personal

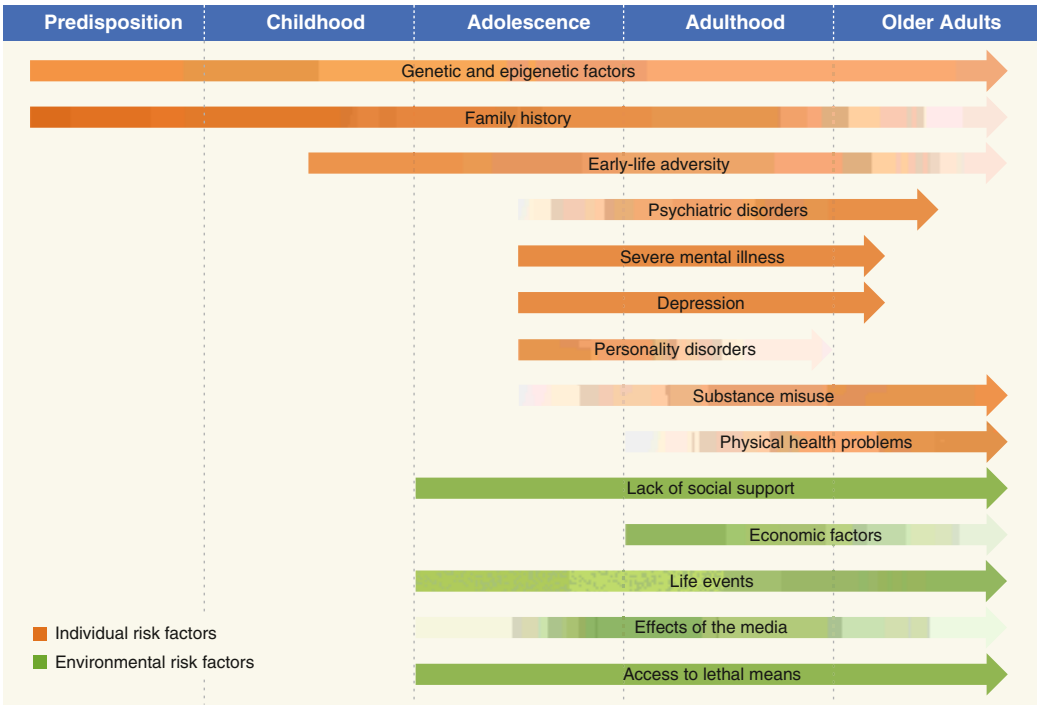

Fig. 40.1 Risk factors for suicide and the strength of the association throughout life. The strength of the association between each risk factor and suicide is indicated by the shading (darker shading indicates a stronger association). *(From Fazel S, Runeson B. Suicide [published correction appears in. N Engl J Med. 2020 Mar 12;382:1078]; N Engl J Med. 2020;382:266–274:Fig. 1, p 267.)*

history of a suicide attempt. Risk is also cumulative, with childhood adversity leading to an increased lifetime risk of suicide.

Access to Firearms

Firearms are the most lethal method of suicide completion; the death rate with respect to firearms is approximately 80–90%, whereas the death rate is only 1.5–4% for drug overdoses. Firearms have long been the most common method of completed suicide across all ages and genders and have become the most common method of suicide completion for adolescent males (see Fig. 40.2). Limiting access to lethal means, in particular firearms, reduces rates of completed suicide.

Suicide Contagion

Suicide attempts may also be precipitated by exposure to news of another person's suicide or by reading about or viewing a suicide portrayed in a romantic light in the media. Media coverage of suicide is linked to fluctuating incidence rates of suicides, particularly among adolescents. Glorification of suicide whether in news or in fictional media has been associated with an increase in suicides. When media coverage includes a detailed description of specific means used, the use of that particular method may increase in the overall population.

Preexisting Psychiatric Illness

Approximately 90% of youths who complete suicide have a preexisting psychiatric illness, most often major depression. Among females, chronic anxiety, especially panic disorder, also is associated with suicide attempts and completion. Among males, conduct disorder and substance use confer increased risk. Comorbidity of a substance use disorder, a depressive disorder, and/or conduct disorder are linked to suicide by firearm. Schizophrenia spectrum disorders are linked to suicide attempts and completions (see Chapter 47.1).

Suicidal and Parasuicidal Behavior

History of a previous suicide attempt is recognized as the strongest predictive risk factor for future suicidal behavior. Individual definitions of suicide attempts can vary; therefore parasuicidal behavior should be explored when considering past attempts. Some patients may not consider an aborted attempt or interrupted attempt an actual suicide attempt, but these behaviors carry considerable risk, as do researching suicide methods, preparatory acts, rehearsals, giving away possessions, and making arrangements for responsibilities (e.g., finding someone else to care for a pet or family member in their planned absence).

Nonsuicidal self-injury (NSSI) is the direct and deliberate destruction of one's own body tissue with the *absence of intent to die* (see Chapter 46). The most common self-harm behavior is cutting or carving, but other behaviors include scratching, burning, punching or hitting oneself, biting, and others. NSSI is common among adolescents, especially females. Up to 47.4% of youth with a diagnosis of depression engage in NSSI, and lifetime prevalence rates of NSSI are between 17% and 60%. Although the intent of these behaviors may not be to cause death, they are important to note, as they are strong predictors of future suicidality if left untreated. Seventy percent of adolescents who engaged in NSSI report a lifetime suicide attempt, and 55% reported multiple attempts. Individuals who are most likely to engage in NSSI are those who have a family member or close friend who have engaged in self-harm and those who believe that peers engage in self-harm.

Protective Factors

Protective factors (Table 40.2) can provide a counterbalance for those contemplating suicide. Internal protective factors are those that are inherent to the individual. External protective factors are typically dependent on relationships and interactions with others. Protective factors, even if present, may not counteract significant acute risk.

ASSESSMENT AND INTERVENTION

All suicidal ideation (including planning) and suicide attempts should be taken seriously and require a thorough assessment by a child-trained mental health clinician to evaluate the youth's current state of mind, ongoing risk of harm, and next best steps in treatment. Emergency mental health assessment is needed for immediate threat to self (i.e., active suicidal ideation with plan and intent); urgent mental health assessment (48-72 hours) is needed for severe psychiatric symptoms, significant change in overall functioning, and suicidal ideation without intent or plan. Routine mental health assessment is appropriate for mild to moderate psychiatric symptoms without suicidal ideation.

Pediatric practitioners should expect the mental health clinician to evaluate the presence and degree of suicidality and underlying risk factors. The reliability and validity of child interviewing are affected by

Table 40.1 Dynamic and Static Risk Factors for Suicide in Children and Adolescents

DYNAMIC RISK FACTORS	
Psychiatric symptoms	Anhedonia Feelings of hopelessness, helplessness, or worthlessness Impulsivity Insomnia Command hallucinations Agitation Anxiety or panic Poor coping
Changes in psychiatric treatment	Recent discharge from a psychiatric hospital Change in treatment plan Change in treatment team
Psychosocial stressors or precipitants	Events that can cause humiliation, shame, or despair (e.g., loss of a relationship, death of a loved one, housing insecurity, academic problems, newly diagnosed medical condition) Ongoing medical illness Substance intoxication Family turmoil/chaos/conflict Social isolation Bullying or being bullied Pending legal situation Suicide in the community (contagion)
STATIC RISK FACTORS	
Demographics	Age: 14-25 Sex: male Race: White, Indigenous American, and Native Alaskan LGBTQ+ identification
Preexisting and/or current psychiatric illness	Mood disorder Psychotic disorder Substance abuse disorder ADHD Eating disorder Posttraumatic stress disorder Cluster B personality traits/disorders Conduct disorder or behaviors (antisocial behavior, aggression) History of trauma, abuse, or neglect
Past suicidal and parasuicidal behavior	Previous suicide attempts Aborted or interrupted suicide attempts Nonsuicidal self-injury (self-harm) thoughts and/or action
Family history	Psychiatric illness Psychiatric hospitalization Suicide attempts and completions

ADHD, Attention-deficit/hyperactivity disorder.

children's level of cognitive development as well as their understanding of the relationship between their emotions and behavior. Confirmation of the youth's suicidal behavior can be obtained from information gathered by interviewing others who know the child or adolescent. A discrepancy between patient and parent reports is not unusual, with both children and adolescents more likely to disclose suicidal ideation and suicidal actions than their parents.

Suicide Inquiry

In the mental health assessment, suicidal ideation is assessed by explicit questions posed in a nonjudgmental, noncondescending, matter-of-fact approach. The clinician should explore all aspects of suicidal ideation (i.e., frequency, intensity), suicide plan, parasuicidal behaviors like preparatory acts or writing notes, and intent associated with their thoughts. The assessment of a suicide attempt should also include a detailed exploration of the hours immediately preceding an attempt to identify precipitants as well as the circumstances of the attempt itself to better understand the patient's intent and potential lethality. It is important to recognize that suicidal ideation is dynamic in nature and should be considered on an individual basis; a patient should be compared to their own baseline when assessing for risk of harm to self.

Children Under 12 Years

Although suicidal ideation and attempts are less frequent in children under 12 than older teens and adults, they do occur. A developmental approach must be taken, as children vary in their understanding of death, moral reasoning, and cognitive reasoning based on age and whether they are following a typical developmental trajectory. A young child may not recognize that their means are not lethal, but that fact should not discount their intent.

Unlike adolescents, Black male *children* are most likely to complete suicide, most often by hanging or strangulation. Children who are at risk of suicide may be less likely to demonstrate classical symptoms of depression than teens and are more likely to attempt at home. Children who die by suicide have higher rates of attention-deficit/hyperactivity disorder (ADHD), emphasizing the importance of impulsivity in suicide attempts. Relationship problems are the most common precipitating circumstance, but the specific relationship differs along developmental lines. Younger adolescents are more likely to have had relationship problems with peers or a significant other, whereas children are more likely to have had relationship problems with family.

Determining Risk

The calculation of the level of risk of harm to self is complex, requiring a determination across a spectrum of risk. At the low end of the risk spectrum are youth with thoughts of death or wanting to die but without suicidal thoughts, intent, or plan. Those with specific suicide plans, preparatory acts or suicide rehearsals, low probability of being found during an attempt, and clearly articulated intent are at the high end. A history of suicide attempts, presently impaired judgment, and poor social support further exacerbates the heightened risk. Among adolescents who consider self-harm, those who carry out self-injury are more likely to have family or friends who have engaged in self-harm. When considering all aspects of a suicide risk assessment, positive responses to a suicide inquiry carry more weight and concern than risk factors alone.

Levels of Psychiatric Care

For youth who are an imminent danger to themselves (i.e., have active thoughts of killing themselves with plan and intent), inpatient level of psychiatric care is necessary to ensure safety, clarify diagnoses, and plan comprehensive treatment. These patients can be hospitalized voluntarily or involuntarily. It is helpful for the pediatric practitioner to have an office protocol to follow in these situations. This protocol should take into consideration state laws regarding involuntary hospitalization, transportation options, nearest emergency assessment site, necessary forms for hospitalization, and available emergency mental health consultants.

For those youth suitable for treatment in the outpatient setting (e.g., suicidal ideation without plan or intent, intact mental status, few or no other risk factors for suicidality, willing and able to participate in outpatient treatment; has caregivers able to provide emotional support, supervision, safeguarding, and adherence to follow-up), an appointment should be scheduled within a few days with a mental health clinician. Ideally, this appointment should be scheduled before leaving the assessment venue. A procedure should be in place to contact the family to encourage mental health follow-up and provide additional support or resources, if needed. Some

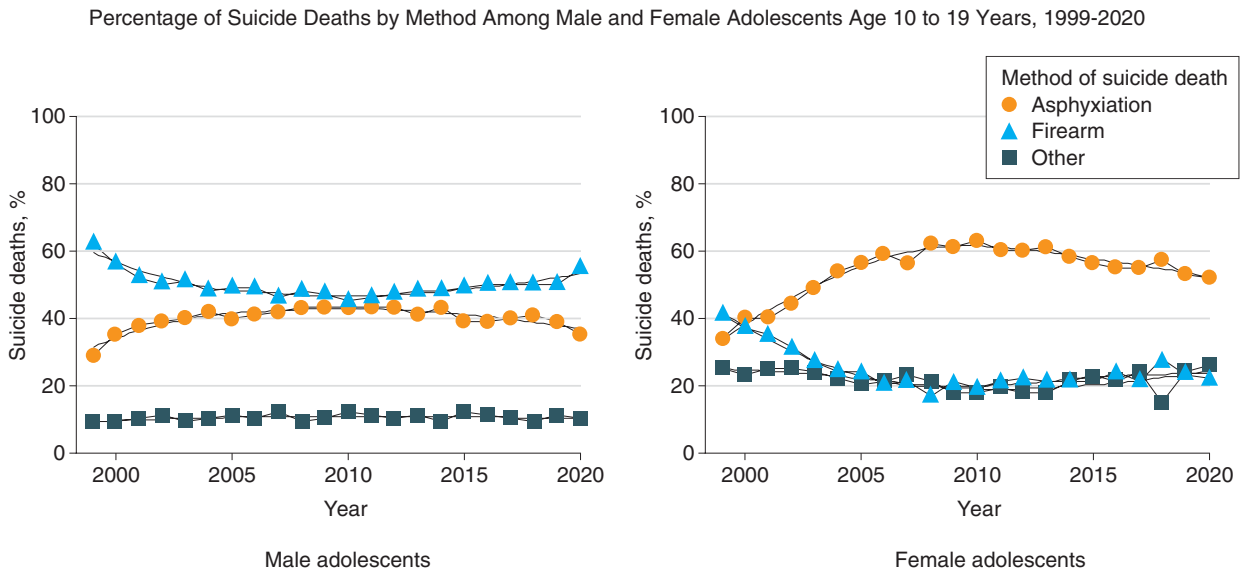

Fig. 40.2 Percentage of suicide deaths by method among male and female adolescents, age 10 to 19 years, 1999-2020. Locally estimated scatterplot smoothing regression estimated percentages of suicide deaths by method with 95% CIs. *Asphyxiation* includes suicide deaths involving hanging, strangulation, and suffocation; *Firearm* includes suicide deaths involving firearm use; and *Other* includes suicide deaths involving poisoning, drowning, fall, fire, and cuts. *(Data from Centers for Disease Control and Prevention. Multiple cause of death: 1999-2020 request form. Updated July 27, 2022. Accessed July 11, 2022.* https://wonder.cdc.gov/wonder/help/mcd.html.*)*

Table 40.2 Protective Factors Against Suicide in Children and Adolescents

PROTECTIVE FACTORS	
Internal protective factors	Positive coping skills Frustration tolerance Religious faith Fear of consequences of an attempt (e.g., disfigurement, hospitalization, effects on family/friends) Future oriented thinking Fear of lost opportunities
External protective factors	Responsibilities for others (e.g., other children in the home, pets) Positive therapeutic or mentoring relationships (e.g., physician, therapist, teacher, coach) Social supports Living with others

Table 40.3 Warning Signs of Suicide

Seek help as soon as possible by contacting a mental health professional or by calling the National Suicide Prevention Lifeline at **1-800-273-TALK** if you or someone you know exhibits any of the following signs:

- Threatening to hurt or kill oneself or talking about wanting to hurt or kill oneself.
- Looking for ways to kill oneself by seeking access to firearms, available pills, or other means.
- Talking or writing about death, dying, or suicide when these actions are out of the ordinary for the person.
- Feeling hopeless.
- Feeling rage or uncontrolled anger or seeking revenge.
- Acting reckless or engaging in risky activities, seemingly without thinking.
- Feeling trapped, "like there's no way out."
- Increasing alcohol or drug use.
- Withdrawing from friends, family, and society.
- Feeling anxious, agitated, or unable to sleep, or sleeping all the time.
- Experiencing dramatic mood changes.
- Seeing no reason for living, or having no sense of purpose in life.

Developed by the U.S. Department of Health and Human Services, Substance Abuse and Mental Health Services Administration (SAMHSA). https://www.nimh.nih.gov/health/publications/warning-signs-of-suicide

evidence suggests that quick and consistent follow-up with a team approach, including both primary care and mental health, can be helpful in enhancing treatment plan engagement among patients who are suicidal.

Safety Planning

Safety planning is a brief psychosocial intervention that has been shown to reduce suicidal behavior and increase engagement in treatment. Safety plan development consists of working ideally with both the patient and their caregivers to identify individual warning signs and symptoms related to self-harm and suicidal behavior, outlining healthy coping skills and people or places that can provide distraction, identifying loved ones and professionals who can be contacted during a crisis, and agreeing on ways to make the home environment safe (e.g., removing firearms, locking up medications). *Studies have repeatedly refuted the efficacy of safety or suicide contracts in mitigating risk of completing suicide, and some have shown them to be harmful to the therapeutic relationship.*

PREVENTION

The previously mentioned risk factors associated with suicide are relatively common and individually not strong predictors of suicide. The assessment is complicated by patients who may attempt to conceal their suicide thoughts and by those who express suicidal thoughts without serious intent. Suicide screening has been challenging because most screening instruments have variable sensitivity and specificity. In addition, the follow-up mental health evaluations for those who screen positive has been poor.

Prevention strategies in the pediatric medical home include training staff to recognize and respond to the warning signs of suicide (Table 40.3), screening for and treating depression, educating

patients/parents about warning signs for suicide, and restricting access to lethal means. Pediatric practitioners should consider counseling parents to remove firearms from the home entirely or securely lock guns and ammunition in separate locations. Anecdotal evidence suggests youths frequently know where guns and keys to gun cabinets are kept, even though parents may think they do not. The same recommendation applies to restricting access to potentially lethal prescription and nonprescription medications (e.g., containers of >25 acetaminophen tablets) and alcohol. These approaches emphasize the importance of restriction of access to means of suicide to prevent self-harm.

SCREENING AND EARLY TREATMENT

In 2022, the U.S. Preventive Services Task Force (USPSTF) concluded that there is insufficient evidence to recommend universal suicide screening in the primary care setting for children and adolescents. The American Academy of Pediatrics does recommend universal suicide screening for all children ≥12 years old. In addition, in 2018 the American Academy of Pediatrics and the USPFTS (2022) recommended annual universal depression screening for youths 12 and older, which often includes suicide screening as part of validated tools. Pediatric practitioners should also consider suicide potential and the need for mental health assessment in the

NIMH TOOLKIT

asQ Ask Suicide-Screening Questions

Suicide Risk **Screening Tool**

Ask the patient:

1. **In the past few weeks, have you wished you were dead?** ❍ Yes ❍ No
2. **In the past few weeks, have you felt that you or your family would be better off if you were dead?** ❍ Yes ❍ No
3. **In the past week, have you been having thoughts about killing yourself?** ❍ Yes ❍ No
4. **Have you ever tried to kill yourself?** ❍ Yes ❍ No

If yes, how? _____

_____

_____

When? _____

_____

If the patient answers **Yes** *to any of the above, ask the following acuity question:*

5. **Are you having thoughts of killing yourself right now?** ❍ Yes ❍ No

If yes, please describe: _____

Next steps:

- If patient answers "No" to all questions 1 through 4, screening is complete (not necessary to ask question #5). No intervention is necessary *(*Note: Clinical judgment can always override a negative screen).*
- **If patient answers "Yes" to any of questions 1 through 4, or refuses to answer, they are considered a positive screen. Ask question #5 to assess acuity:**
  - ☐ **"Yes"** to question #5 = **acute positive screen** (imminent risk identified)
    - **Patient requires a STAT safety/full mental health evaluation. Patient cannot leave until evaluated for safety.**
    - Keep patient in sight. Remove all dangerous objects from room. Alert physician or clinician responsible for patient's care.
  - ☐ **"No"** to question #5 = **non-acute positive screen** (potential risk identified)
    - **Patient requires a brief suicide safety assessment to determine if a full mental health evaluation is needed. Patient cannot leave until evaluated for safety.**
    - Alert physician or clinician responsible for patient's care.

Provide resources to all patients

- 24/7 National Suicide Prevention Lifeline 1-800-273-TALK (8255) En Español: 1-888-628-9454
- 24/7 Crisis Text Line: Text "HOME" to 741-741

asQ Suicide Risk Screening Toolkit NATIONAL INSTITUTE OF MENTAL HEALTH (NIMH) 7/1/2020

Fig. 40.3 Ask Suicide-Screening Questions—Suicide Risk Screening Tool. (ASQ Tool courtesy National Institute of Mental Health. National Institutes of Health, Bethesda, Maryland. Accessed at https://www.nimh.nih.gov/research/research-conducted-at-nimh/asq-toolkit-materials, May 9, 2022.)

Table 40.4 Columbia Suicide Severity Rating Scale Screener

1. Have you wished you were dead or wished you could go to sleep and not wake up?
2. Have you actually had any thoughts about killing yourself?
If "Yes" to 2, answer questions 3, 4, 5, and 6.
If "No" to 2, go directly to question 6.
3. Have you thought about how you might do this?
4. Have you had any intention of acting on these thoughts of killing yourself, as opposed to you having the thoughts but you definitely would not act on them?
5. Have you started to work out or worked out the details of how to kill yourself? Do you intend to carry out this plan?
6. Have you done anything, started to do anything, or prepared to do anything to end your life?
RESPONSE PROTOCOL TO SCREENING (BASED ON LAST ITEM ANSWERED "YES")
Item 1—Mental Health Referral at discharge
Item 2—Mental Health Referral at discharge
Item 3—Care Team Consultation (Psychiatric Nurse) and Patient Safety Monitor/Procedures
Item 4—Psychiatric Consultation and Patient Safety Monitor/Procedures
Item 5—Psychiatric Consultation and Patient Safety Monitor/Procedures
Item 6—If over 3 months ago, Mental Health Referral at discharge
If 3 months ago or less, Psychiatric Consultation and Patient Safety Monitor

From Posner K. Columbia Lighthouse Project. The Columbia-Suicide Severity Rating Scale (C-SSRS) Screener–Recent. https://cssrs.columbia.edu/the-columbia-scale-c-ssrs/risk-identification/

context of concerning information elicited in child/parent psychosocial histories (e.g., HEADSS Psychosocial Risk Assessment; see Chapter 32, Table 32.2), general screening measure scores out of the normal range (e.g., Pediatric Symptom Checklist Internalizing Sub-Scale; see Table 28.5), or self-reported statements or behaviors from patients and parents. The Ask Suicide-Screening Questionnaire (ASQ) is a validated four-item measure shown in the ED setting to have high sensitivity and negative predictive value in identifying youth at risk for suicide ideation and behavior (Fig. 40.3). Other common screening tools are the Columbia Suicide Severity Rating Scale (C-SSRS) Screener (Table 40.4) and the Patient Health Questionnaire (PHQ-2/PHQ-9). These scales have also been used in the emergency room setting.

Through follow-up office visits, pediatric practitioners can help support and facilitate the implementation of psychotherapies that target the *specific psychiatric disorders* and the emotional dysphoria or behavioral dysregulation that accompany suicidal ideation or behavior. In conjunction with a child and adolescent psychiatrist, psychotropic medications may be used as indicated to treat underlying psychiatric disorders. Both dialectical behavioral therapy and cognitive behavioral therapy are effective in reducing harm but must be combined with appropriate psychopharmacology of an underlying disorder. Pediatric practitioners also can encourage social connectedness to peers and to community organizations, as well as promote help-seeking (e.g., talking to a trusted adult when distressed) and wellness behaviors. In the event of a completed suicide, pediatricians can offer support to the family, particularly by monitoring for pathologic bereavement responses in siblings and parents.

SCHOOL RESOURCES

Screening for suicide in schools is also fraught with problems related to low specificity of screening instruments, paucity of referral sites, and variable acceptability among school administrators. Gatekeeper (e.g., student support personnel) training appears effective in improving skills among school personnel and is highly acceptable to administrators but has not been shown to prevent suicide. School curricula (e.g., Signs of Suicide) have shown some preventive potential by teaching students to recognize the signs of depression and suicide in themselves and others and providing them with specific action steps necessary for responding to these signs. Peer helpers have not generally been shown to be efficacious.

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Chapter 41
Eating Disorders

Taylor B. Starr and Richard E. Kreipe

Eating disorders (EDs) are characterized by body dissatisfaction related to overvaluation of a thin body ideal, associated with dysfunctional patterns of cognition and weight control behaviors that result in significant biologic, psychologic, and social complications. EDs can develop in individuals of any age, gender, sexual orientation, ethnicity, or cultural background. Early intervention in EDs improves outcome.

DEFINITIONS

Anorexia nervosa (AN) involves significant overestimation of body size and shape, with a relentless pursuit of thinness that, in the **restrictive** subtype, typically combines excessive dieting and compulsive exercising. In the **binge-purge** subtype, patients might intermittently overeat and then attempt to rid themselves of calories by vomiting or taking laxatives, still with a strong drive for thinness (Table 41.1).

Bulimia nervosa (BN) is characterized by episodes of eating large amounts of food in a brief period, followed by compensatory vomiting, laxative use, exercise, or fasting to rid the body of the effects of overeating in an effort to avoid obesity (Table 41.2).

Children and adolescents with EDs may not fulfill criteria for AN or BN in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) and may fall into a subcategory of **Other Specified Feeding and Eating Disorders (OSFED)**. Youth with these subthreshold conditions merit close monitoring over time because they may be early in the course of an illness.

Avoidant/restrictive food intake disorder **(ARFID)** involves limiting food intake based on the subjective qualities of food (e.g., appearance, color, smell, taste, texture or consistency), fear of adverse consequences of eating (e.g., choking, gagging or vomiting), or lack of interest in eating, but without concern about body image, weight, shape, or size. However, significant unintended weight loss or nutritional deficiencies and problems with social interactions can occur as a result (Table 41.3).

Binge eating disorder (BED), in which binge eating is not followed regularly by any compensatory behaviors (vomiting, laxatives), is a stand-alone category in DSM-5 but shares many features with obesity (see Chapter 65).

Table 41.1 DSM-5 Diagnostic Criteria for Anorexia Nervosa

A. Restriction of energy intake relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health. Significantly low weight is defined as a weight that is less than minimally normal or, for children and adolescents, less than that minimally expected.
B. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain, even though at a significantly low weight.
C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight.
Specify whether:
Restricting type (ICD-10-CM code F50.01): During the last 3 mo, the individual has not engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas). This subtype describes presentations in which weight loss is accomplished primarily through dieting, fasting, and/or excessive exercise.
Binge-eating/purging type (ICD-10-CM code F50.02): During the last 3 mo, the individual has engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas).
Specify if:
In partial remission: After full criteria for anorexia nervosa were previously met, Criterion A (low body weight) has not been met for a sustained period, but either Criterion B (intense fear of gaining weight or becoming fat or behavior that interferes with weight gain) or Criterion C (disturbances in self-perception of weight and shape) is still met.
In full remission: After full criteria for anorexia nervosa were previously met, none of the criteria has been met for a sustained period of time.
Specify current severity:
The minimum level of severity is based, for adults, on current BMI (see the following) or, for children and adolescents, on BMI percentile. **The ranges below are derived from World Health Organization categories for thinness in adults; for children and adolescents, corresponding BMI percentiles should be used.** The level of severity may be increased to reflect clinical symptoms, the degree of functional disability, and the need for supervision.
Mild: BMI ≥17 kg/m^2 **Moderate**: BMI 16-16.99 kg/m^2 **Severe**: BMI 15-15.99 kg/m^2 **Extreme**: BMI <15 kg/m^2

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. pp. 338–339. Copyright 2013. American Psychiatric Association.

Table 41.2 DSM-5 Diagnostic Criteria for Bulimia Nervosa

A. Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following: 1. Eating, in a discrete period of time (e.g., within any 2 hr period), an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances. 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).
B. Recurrent inappropriate compensatory behaviors to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise.
C. The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 mo.
D. Self-evaluation is unduly influenced by body shape and weight.
E. The disturbance does not occur exclusively during episodes of anorexia nervosa.
Specify if:
In partial remission: After full criteria for bulimia nervosa were previously met, some, but not all, of the criteria have been met for a sustained period of time.
In full remission: After full criteria for bulimia nervosa were previously met, none of the criteria has been met for a sustained period of time.
Specify current severity:
The minimum level of severity is based on the frequency of inappropriate compensatory behaviors (see the following). The level of severity may be increased to reflect other symptoms and the degree of functional disability.
Mild: An average of 1-3 episodes of inappropriate compensatory behaviors per week.
Moderate: An average of 4-7 episodes of inappropriate compensatory behaviors per week.
Severe: An average of 8-13 episodes of inappropriate compensatory behaviors per week.
Extreme: An average of 14 or more episodes of inappropriate compensatory behaviors per week.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p. 345. Copyright 2013. American Psychiatric Association.

EPIDEMIOLOGY

The classic presentation of AN is an early to middle adolescent female of above-average intelligence and socioeconomic status who is a conflict-avoidant, risk-aversive perfectionist and is struggling with disturbances of anxiety and/or mood. BN tends to emerge in later adolescence, sometimes evolving from AN, and is typified by impulsivity and features of borderline personality disorder associated with depression and mood swings. ARFID typically presents in late childhood, is more common in males, and more often co-occurs with anxiety disorders and autism spectrum disorder. The 0.5–1% and 3–5% incidence rates among younger and older adolescent females for AN and BN, respectively, probably reflect ascertainment bias in sampling and underdiagnosis in cases not fitting the common profile. The same may be true of the significant gender disparity, in which female patients account for approximately 85% of patients with diagnosed EDs.

No single factor causes the development of an ED; sociocultural studies indicate a complex interplay of culture, ethnicity, gender, peers, and family. The gender dimorphism is presumably related to females having a stronger relationship between body image and self-evaluation, as well as the influence of the Western culture's thin body ideal. Ethnicity appears to moderate the association between risk factors and disordered eating, with African American and Caribbean females reporting lower body dissatisfaction and less dieting than Hispanic and non-Hispanic White females. Because peer acceptance is central to healthy adolescent growth and development, especially in early adolescence, when AN tends to have its initial prevalence peak, the potential influence of peers on EDs is significant, as are the relationships among peers, body image, and eating. Teasing by peers or by family members (especially males) may be a contributing factor for overweight females.

Table 41.3 DSM-5 Diagnostic Criteria for Avoidant/Restrictive Food Intake Disorder

A. An eating or feeding disturbance (e.g., apparent lack of interest in eating or food; avoidance based on the sensory characteristics of food; concern about aversive consequences of eating) as manifested by persistent failure to meet appropriate nutritional and/or energy needs associated with one (or more) of the following: 1. Significant weight loss (or failure to achieve expected weight gain or faltering growth in children). 2. Significant nutritional deficiency. 3. Dependence on enteral feeding or oral nutritional supplements. 4. Marked interference with psychosocial functioning.
B. The disturbance is not better explained by lack of available food or by an associated culturally sanctioned practice.
C. The eating disturbance does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and there is no evidence of a disturbance in the way in which one's body weight or shape is experienced.
D. The eating disturbance is not attributable to a concurrent medical condition or not better explained by another mental disorder. When the eating disturbance occurs in the context of another condition or disorder, the severity of the eating disturbance exceeds that routinely associated with the condition or disorder and warrants additional clinical attention.
Specify if:
In remission: After full criteria for avoidant/restrictive food intake disorder were previously met, the criteria have not been met for a sustained period of time.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p. 334. Copyright 2013. American Psychiatric Association.

Family influence in the development of EDs is even more complex because of the interplay of environmental and genetic factors; shared elements of the family environment and immutable genetic factors account for approximately equal amounts of the variance in disordered eating. There are associations between parents' and children's eating behaviors; dieting and physical activity levels suggest parental reinforcement of body-related societal messages. The influence of inherited genetic factors on the emergence of EDs during adolescence is also significant, but not directly. Rather, the risk for developing an ED appears to be mediated through a genetic predisposition to *anxiety* (see Chapter 38), *depression* (see Chapter 39), or *obsessive-compulsive traits* that may be modulated through the internal milieu of puberty. There is no evidence to support the outdated notion that parents or family dynamics cause an ED; rather, the family dynamics may represent responses to having a family member with a potentially life-threatening condition. The supportive influence on recovery of parents as nurturing caregivers cannot be overestimated.

PATHOLOGY AND PATHOGENESIS

The emergence of EDs coinciding with the processes of adolescence (e.g., puberty, identity, autonomy, cognition) indicates the central role of development. EDs may be viewed as a final common pathway, with a number of *predisposing* factors that increase the risk of developing an ED, *precipitating* factors often related to developmental processes of adolescence triggering the emergence of the ED, and *perpetuating* factors that cause an ED to persist. A history of sexual trauma is more common in children with BN, and when present with any ED makes recovery more difficult. EDs often begin with dieting but gradually progress to unhealthy habits that lessen the negative impact of associated psychosocial problems to which the affected person is vulnerable because of premorbid biologic and psychologic characteristics, family interactions, and social climate. When persistent, the biologic effects of starvation and malnutrition (e.g., true loss of appetite, hypothermia, gastric atony, amenorrhea, sleep disturbance, fatigue, weakness, depression), combined with the psychologic rewards of increased sense of mastery and reduced emotional reactivity, actually maintain and reward pathologic ED behaviors.

This positive reinforcement of behaviors and consequences, generally viewed by parents and others as negative, helps to explain why persons with an ED characteristically deny that a problem exists and resist treatment. With significantly low caloric intake, patients initially exhibit extreme irritability, but over time experience emotional "numbness," which reinforces continued caloric restriction. Although noxious, purging can be reinforcing because of a reduction in anxiety triggered by overeating; purging also can result in short-term, but reinforcing, improvement in mood related to changes in neurotransmitters. In addition to an imbalance in neurotransmitters, most notably serotonin and dopamine, alterations in functional anatomy also support the concept of EDs as brain disorders. The cause-and-effect relationship in central nervous system (CNS) alterations in EDs is not clear, nor is their reversibility.

CLINICAL MANIFESTATIONS

Except for ARFID, in which weight loss is *unintentional,* a central feature of EDs is the overestimation of body size, shape, or parts (e.g., abdomen, thighs) leading to intentional weight control practices to reduce weight (AN) or prevent weight gain (BN). Associated practices include severe restriction of caloric intake and behaviors intended to reduce the effect of calories ingested, such as compulsive exercising or purging by inducing vomiting or taking laxatives. Eating and weight loss habits commonly found in EDs can result in a wide range of energy intake and output, the balance of which leads to a wide range in weight, from extreme loss of weight in AN to fluctuation around a normal to moderately high weight in BN. Reported eating and weight control habits thus inform the initial primary care approach (Table 41.4).

Although weight control patterns guide the initial pediatric approach, an assessment of common symptoms and findings on physical examination is essential to identify targets for intervention. When reported symptoms of excessive weight loss (feeling tired and cold; lacking energy; orthostasis; difficulty concentrating) are explicitly linked by the clinician to their associated physical signs (hypothermia with acrocyanosis and slow capillary refill; loss of muscle mass; bradycardia with orthostasis), it becomes more difficult for the patient to deny that a problem exists. Furthermore, awareness that bothersome symptoms can be eliminated by healthier eating and activity patterns can increase a patient's motivation to engage in treatment. Tables 41.5 and 41.6 detail common symptoms and signs that should be addressed in a pediatric assessment of a suspected ED.

DIFFERENTIAL DIAGNOSIS

In addition to identifying symptoms and signs that deserve targeted intervention for patients who have an ED, a comprehensive history and physical examination are required to rule out other conditions in the differential diagnosis. Weight loss can occur in any condition with increased *catabolism* (e.g., hyperthyroidism, malignancy, occult chronic infection) or *malabsorption* (e.g., **celiac disease**) or in other disorders (Addison disease, type 1 diabetes mellitus, stimulant abuse), but these illnesses are generally associated with other findings and are not usually associated with decreased caloric intake. Patients with **inflammatory bowel disease** can reduce intake to minimize abdominal cramping; eating can cause abdominal discomfort and early satiety in AN because of gastric atony associated with significant weight loss, not malabsorption. Likewise, signs of weight loss in AN might include hypothermia, acrocyanosis with slow capillary refill, and neutropenia similar to some features of sepsis, but the overall picture in EDs is one of relative cardiovascular stability compared with sepsis. **Endocrinopathies** are also in the differential of EDs. With BN, voracious appetite in the face of weight loss might suggest diabetes mellitus, but blood glucose levels are normal or low in EDs. Adrenal insufficiency mimics many physical symptoms and signs found in restrictive AN but is associated with elevated potassium levels and hyperpigmentation. Thyroid disorders may be considered, because of changes in weight, but the overall presentation of AN includes symptoms of both underactive and

Table 41.4 Eating and Weight Control Habits Commonly Found in Children and Adolescents with an Eating Disorder (ED)

	PROMINENT FEATURE		CLINICAL COMMENTS REGARDING ED HABITS	
HABIT	**ANOREXIA NERVOSA**	**BULIMIA NERVOSA**	**ANOREXIA NERVOSA**	**BULIMIA NERVOSA**
Overall intake	Inadequate energy (calories), although volume of food and beverages may be high because of very low caloric density of intake as a result of "diet" and nonfat choices	Variable, but calories normal to high; intake in binges is often "forbidden" food or drink that differs from intake at meals	Consistent inadequate caloric intake leading to wasting of the body is an essential feature of diagnosis	Inconsistent balance of intake, exercise, and vomiting, but severe caloric restriction is short-lived
Food	Counts and limits calories, especially from fat; emphasis on "healthy food choices" with reduced caloric density Monotonous, limited "good" food choices, often leading to vegetarian or vegan diet Strong feelings of guilt after eating more than planned leads to exercise and renewed dieting	Aware of calories and fat, but less regimented in avoidance than AN Frequent dieting interspersed with overeating, often triggered by depression, isolation, or anger	Obsessive-compulsive attention to nutritional data on food labels and may have "logical" reasons for food choices in highly regimented pattern, such as sports participation or family history of lipid disorder	Choices less structured, with more frequent diets
Beverages	Water or other low- or no-calorie drinks; nonfat milk	Variable, diet soda common; may drink alcohol to excess	Fluids often restricted to avoid weight gain	Fluids ingested to aid vomiting or replace losses
Meals	Consistent schedule and structure to meal plan Reduced or eliminated caloric content, often starting with breakfast, then lunch, then dinner Volume can increase with fresh fruits, vegetables, and salads as primary food sources	Meals less regimented and planned than in AN; more likely impulsive and unregulated, often eliminated following a binge-purge episode	Rigid adherence to "rules" governing eating leads to sense of control, confidence, and mastery	Elimination of a meal following a binge-purge only reinforces the drive for binge later in the day
Snacks	Reduced or eliminated from meal plan	Often avoided in meal plans, but then impulsively eaten	Snack foods removed early because "unhealthy"	Snack "comfort foods" can trigger a binge
Dieting	Initial habit that becomes progressively restrictive, although often appearing superficially "healthy" Beliefs and "rules" about the patient's idiosyncratic nutritional requirements and response to foods are strongly held	Initial dieting gives way to chaotic eating, often interpreted by the patient as evidence of being "weak" or "lazy"	Distinguishing between healthy meal planning with reduced calories and dieting in ED may be difficult	Dieting tends to be impulsive and short-lived, with "diets" often resulting in unintended weight gain
Binge eating	None in restrictive subtype, but an essential feature in binge-purge subtype	Essential feature, often secretive Shame and guilt prominent afterward	Often "subjective" (more than planned but not large)	Relieves emotional distress, may be planned
Exercise	Characteristically obsessive-compulsive, ritualistic, and progressive May excel in dance, long-distance running	Less predictable May be athletic, or may avoid exercise entirely	May be difficult to distinguish active thin vs ED	Males often use exercise as means of "purging"
Vomiting	Characteristic of binge-purge subtype May chew, then spit out, rather than swallow, food as a variant	Most common habit intended to reduce effects of overeating Can occur after meal as well as a binge	Physiologic and emotional instability prominent	Strongly "addictive" and self-punishing, but does not eliminate calories ingested—many still absorbed
Laxatives	If used, generally to relieve constipation in restrictive subtype, but as a cathartic in binge-purge subtype	Second most common habit used to reduce or avoid weight gain, often used in increasing doses for cathartic effect	Physiologic and emotional instability prominent	Strongly "addictive," self-punishing, but ineffective means to reduce weight (calories are absorbed in small intestine, but laxatives work in colon)
Diet pills	Very rare, if used; more common in binge-purge subtype	Used to either reduce appetite or increase metabolism	Use of diet pills implies inability to control eating	Control over eating may be sought by any means

AN, Anorexia nervosa; BN, bulimia nervosa.

Table 41.5 Symptoms Commonly Reported by Patients with an Eating Disorder (ED)

SYMPTOMS	DIAGNOSIS		CLINICAL COMMENTS REGARDING ED SYMPTOMS
	ANOREXIA NERVOSA	BULIMIA NERVOSA	
Body image	Feels fat, even with extreme emaciation, often with specific body distortions (e.g., stomach, thighs); strong drive for thinness, with self-efficacy closely tied to appraisal of body shape, size, and/or weight	Variable body image distortion and dissatisfaction, but drive for thinness is less than desire to avoid gaining weight	Challenging patient's body image is both ineffective and countertherapeutic clinically Accepting patient's expressed body image but noting its discrepancy with symptoms and signs reinforces concept that patient can "feel" fat but also "be" too thin and unhealthy
Metabolism	Hypometabolic symptoms include feeling cold, tired, and weak and lacking energy May be both bothersome and reinforcing	Variable, depending on balance of intake and output and hydration	Symptoms are evidence of body's "shutting down" in an attempt to conserve calories with an inadequate diet Emphasizing reversibility of symptoms with healthy eating and weight gain can motivate patients to cooperate with treatment
Skin	Dry skin, delayed healing, easy bruising, gooseflesh Orange-yellow skin on hands	No characteristic symptom; self-injurious behavior may be seen	Skin lacks good blood flow and ability to heal in low weight Carotenemia with large intake of β-carotene foods; reversible
Hair	Lanugo-type hair growth on face and upper body Slow growth and increased loss of scalp hair	No characteristic symptom	Body hair growth conserves energy Scalp hair loss can worsen during refeeding "telogen effluvium" (resting hair is replaced by growing hair) Reversible with continued healthy eating
Eyes	No characteristic symptom	Subconjunctival hemorrhage	Caused by increased intrathoracic pressure during vomiting
Teeth	No characteristic symptom	Erosion of dental enamel Decay, fracture, and loss of teeth	Intraoral stomach acid resulting from vomiting etches dental enamel, exposing softer dental elements
Salivary glands	No characteristic symptom	Enlargement (no to mild tenderness)	Caused by chronic binge eating and induced vomiting, with parotid enlargement more prominent than submandibular; reversible
Heart	Dizziness, fainting in restrictive subtype Palpitations more common in binge-purge subtype	Dizziness, fainting, palpitations	Dizziness and fainting due to postural orthostatic tachycardia and dysregulation at hypothalamic and cardiac level with weight loss, as a result of hypovolemia with binge-purge Palpitations and arrhythmias often caused by electrolyte disturbance Symptoms reverse with weight gain and/or cessation of binge-purge
Abdomen	Early fullness and discomfort with eating Constipation Perceives contour as "fat," often preferring well-defined abdominal musculature	Discomfort after a binge Cramps and diarrhea with laxative abuse	Weight loss is associated with reduced volume and tone of GI tract musculature, especially the stomach Laxatives may be used to relieve constipation or as a cathartic Symptom reduction with healthy eating can take weeks to occur
Extremities and musculoskeletal	Cold, blue hands and feet	No characteristic symptoms Self-cutting or burning on wrists or arms	Energy-conserving low body temperature with slow blood flow most notable peripherally Quickly reversed with healthy eating
Nervous system	No characteristic symptom	No characteristic symptom	Neurologic symptoms suggest diagnosis other than ED
Mental status	Depression, anxiety, obsessive-compulsive symptoms, alone or in combination	Depression; PTSD; borderline personality disorder traits	Underlying mood disturbances can worsen with dysfunctional weight control practices and can improve with healthy eating AN patients might report emotional "numbness" with starvation preferable to emotionality associated with healthy eating

AN, Anorexia nervosa; ED, eating disorder; GI, gastrointestinal; PTSD, posttraumatic stress disorder.

Table 41.6 Signs Commonly Found in Patients with Eating Disorder Relative to Prominent Feature of Weight Control

PHYSICAL SIGN	PROMINENT FEATURE		CLINICAL COMMENTS RELATED TO ED SIGNS
	RESTRICTIVE INTAKE	BINGE EATING/PURGING	
General appearance	Thin to cachectic, depending on balance of intake and output Might wear bulky clothing to hide thinness and might resist being examined	Thin to overweight, depending on the balance of intake and output through various means	Examine in hospital gown Weight loss more rapid with reduced intake and excessive exercise Binge eating can result in large weight gain, regardless of purging behavior Appearance depends on balance of intake and output and overall weight control habits
Weight	Low and falling (if previously overweight, may be normal or high); may be falsely elevated if patient drinks fluids or adds weights to body before being weighed	Highly variable, depending on balance of intake and output and state of hydration Falsification of weight is unusual	Weigh in hospital gown with no underwear, after voiding (measure urine SG) Remain in gown until physical exam completed to identify possible fluid loading (low urine SG, palpable bladder) or adding weights to body
Metabolism	Hypothermia: temp <35.5°C (95.9°F), pulse <60 beats/min Slowed psychomotor response with very low core temperature Hypoglycemia Hypokalemia Amenorrhea Delayed puberty	Variable, but hypometabolic state is less common than in AN	Hypometabolism related to disruption of hypothalamic control mechanisms as a result of weight loss Signs of hypometabolism (cold skin, slow capillary refill, acrocyanosis) most evident in hands and feet, where energy conservation is most active Metabolic acidosis or alkalosis
Skin	Dry, scaly Increased prominence of hair follicles Orange or yellow hands Hair loss	Calluses over proximal knuckle joints of hand (Russell sign)	Carotenemia with large intake of β-carotene foods Russell sign: maxillary incisors abrasion develops into callus with chronic digital pharyngeal stimulation, usually on dominant hand
Hair	Lanugo-type hair growth on face and upper body Scalp hair loss, especially prominent in parietal region	No characteristic sign	Body hair growth conserves energy Scalp hair loss "telogen effluvium" can worsen weeks after refeeding begins, as hair in resting phase is replaced by growing hair
Eyes	No characteristic sign	Subconjunctival hemorrhage	Increased intrathoracic pressure during vomiting
Teeth	Caries	Eroded dental enamel and decayed, fractured, missing teeth	Perimolysis (dental erosions) worse on lingual surfaces of maxillary teeth, is intensified by brushing teeth without preceding water rinse
Salivary glands	No characteristic sign	Enlargement, relatively nontender	Parotid > submandibular involvement with frequent and chronic binge eating and induced vomiting
Throat	No characteristic sign	Absent gag reflex	Extinction of gag response with repeated pharyngeal stimulation
Heart	Bradycardia, hypotension, and orthostatic pulse differential >25 beats/min	Hypovolemia if dehydrated	Changes in AN resulting from central hypothalamic and intrinsic cardiac function Orthostatic changes less prominent if athletic, more prominent if associated with purging
Abdomen	Scaphoid, organs may be palpable but not enlarged, stool-filled left lower quadrant Constipation Transaminitis	Increased bowel sounds if recent laxative use	Presence of organomegaly requires investigation to determine cause Constipation prominent with weight loss Pancreatitis Esophageal or gastric ulceration or perforation
Extremities and musculoskeletal system	Cold, acrocyanosis, slow capillary refill Edema of feet Loss of muscle, subcutaneous, and fat tissue Osteopenia	No characteristic sign, but may have rebound edema after stopping chronic laxative use	Signs of hypometabolism (cold) and cardiovascular dysfunction (slow capillary refill and acrocyanosis) in hands and feet Edema, caused by capillary fragility more than hypoproteinemia in AN, can worsen in early phase of refeeding
Nervous system	No characteristic sign Peripheral neuropathy	No characteristic sign	Water loading before weigh-ins can cause acute hyponatremia
Mental status	Anxiety about body image, irritability, depressed mood, oppositional to change	Depression, evidence of PTSD, more likely suicidal than AN	Mental status often improves with healthier eating and weight; SSRIs only shown to be effective for BN

AN, Anorexia nervosa; BN, bulimia nervosa; ED, eating disorder; PTSD, posttraumatic stress disorder; SG, specific gravity; SSRIs, selective serotonin reuptake inhibitors.

overactive thyroid, such as hypothermia, bradycardia, and constipation, as well as weight loss and excessive physical activity, respectively.

In the CNS, craniopharyngiomas and Rathke pouch tumors can mimic some of the findings of AN, such as weight loss and growth failure, and even some body image disturbances, but the latter are less fixed than in typical EDs and are associated with other findings, including evidence of increased intracranial pressure. **Mitochondrial neurogastrointestinal encephalomyopathy**, caused by a mutation in the *TYMP* gene, presents with gastrointestinal dysmotility, cachexia, ptosis, peripheral neuropathy, ophthalmoplegia, and leukoencephalopathy. Symptoms begin during the second decade of life and are often initially diagnosed as AN. Early satiety, vomiting, cramps, constipation, and pseudoobstruction result in weight loss often before the neurologic features are noticed (see Chapter 638.2). Acute or chronic oromotor dysfunction and obsessive-compulsive disorder may mimic an ED. Fear of choking may lead to **avoidance-restrictive food intake disorder**.

Any patient with an atypical presentation of an ED, based on age, sex, or other factors not typical for AN or BN, deserves a scrupulous search for an alternative explanation. In ARFID, disturbance in the neurosensory processes associated with eating, not weight loss, is the central concern and must be recognized for appropriate treatment. Patients can have both an underlying illness and an ED. The core features of dysfunctional eating habits (body image disturbance and change in weight) can co-occur with conditions such as diabetes mellitus, where patients might manipulate their insulin dosing to lose weight.

LABORATORY FINDINGS

Because the diagnosis of an ED is made clinically, there is no confirmatory laboratory test. Laboratory abnormalities, when found, are the result of malnutrition secondary to weight control behaviors or medical complications; studies should be chosen based on history and physical examination. A routine screening battery typically includes complete blood count, erythrocyte sedimentation rate (should be normal), and biochemical profile. Common abnormalities in ED include low white blood cell count with normal hemoglobin and differential; hypokalemic, hypochloremic metabolic alkalosis from severe vomiting; mildly elevated liver enzymes, cholesterol, and cortisol levels; low gonadotropins and blood glucose with marked weight loss; and generally normal total protein, albumin, and renal function. An electrocardiogram (ECG) may be useful when profound bradycardia or arrhythmia is detected; the ECG usually has low voltage, with nonspecific ST or T-wave changes. Although prolonged QTc has been reported, prospective studies have not found an increased risk for this. Nonetheless, when a prolonged QTc is present in a patient with ED, it may increase the risk for ventricular dysrhythmias.

COMPLICATIONS

No organ is spared the harmful effects of dysfunctional weight control behaviors, but the most concerning targets of medical complications are the heart, brain, gonads, and bones. Some **cardiac** findings in EDs (e.g., sinus bradycardia, hypotension) are *physiologic* adaptations to starvation that conserve calories and reduce afterload. Cold, blue hands and feet with slow capillary refill that can result in tissue perfusion insufficient to meet demands also represent energy-conserving responses associated with inadequate intake. All these acute changes are reversible with restoration of nutrition and weight. Significant orthostatic pulse changes, ventricular dysrhythmias, or reduced myocardial contractility reflect myocardial impairment that can be lethal. In addition, with extremely low weight, **refeeding syndrome** (a result of the rapid drop in serum phosphorus, magnesium, and potassium with excessive reintroduction of calories, specifically carbohydrates), is associated with acute tachycardia and heart failure and neurologic symptoms (see Chapter 63). With long-term malnutrition, the myocardium appears to be more prone to tachyarrhythmias, the second most common cause of death in these patients after suicide. In BN, dysrhythmias can also be related to electrolyte imbalance.

Clinically, the primary CNS area affected acutely in EDs, especially with weight loss, is the **hypothalamus.** Hypothalamic dysfunction is reflected in problems with thermoregulation (warming and cooling), satiety, sleep, autonomic cardioregulatory imbalance (orthostasis), and endocrine function (reduced gonadal and excessive adrenal cortex stimulation), all of which are reversible. Anatomic studies of the brain in ED have focused on AN, with the most common finding being increased ventricular and sulcal volumes that normalize with weight restoration. Persistent gray matter deficits following recovery, related to the degree of weight loss, have been reported. Elevated medial temporal lobe cerebral blood flow on positron emission tomography, similar to that found in psychotic patients, suggests that these changes may be related to body image distortion. Also, visualizing high-calorie foods is associated with exaggerated responses in the visual association cortex that are similar to those seen in patients with specific phobias. Patients with AN might have an imbalance between serotonin and dopamine pathways related to neurocircuits in which dietary restraint reduces anxiety.

Reduced **gonadal** function occurs in male and female patients; it is clinically manifested in AN as amenorrhea in female patients and erectile dysfunction in males. It is related to understimulation from the hypothalamus as well as cortical suppression related to physical and emotional stress. Amenorrhea precedes significant dieting and weight loss in up to 30% of females with AN, and most adolescents with EDs perceive the absence of menses positively. The primary health concern is the negative effect of decreased ovarian function and estrogen on **bones**. Decreased bone mineral density (BMD) with osteopenia or the more severe osteoporosis is a significant complication of EDs (more pronounced in AN than BN). Data do not support the use of sex hormone replacement therapy because this alone does not improve other causes of low BMD (low body weight, lean body mass, low insulin-like growth factor-1, high cortisol).

TREATMENT

Principles Guiding Primary Care Treatment

The approach in primary care should facilitate the acceptance by the ED patient (and parents) of the diagnosis and initial treatment recommendations. A **nurturant-authoritative** approach using the biopsychosocial model is useful. A pediatrician who explicitly acknowledges that the patient may disagree with the diagnosis and treatment recommendations and may be ambivalent about changing eating habits, while also acknowledging that recovery requires strength, courage, willpower, and determination, demonstrates *nurturance*. Parents also find it easier to be nurturing once they learn that the development of an ED is neither a willful decision by the patient nor a reflection of poor parenting. Framing the ED as a "maladaptive coping mechanism" for a complex variety of issues with both positive and negative aspects avoids blame or guilt and can prepare the family for professional help that will focus on strengths and restoring health, rather than on the deficits in the adolescent or the family.

The *authoritative* aspect of a physician's role comes from expertise in health, growth, and physical development. A goal of primary care treatment should be attaining and maintaining health, not merely weight gain, although weight gain is a means to the goal of wellness. Providers who frame themselves as consultants to the patient with authoritative knowledge about health can avoid a countertherapeutic authoritarian stance. Primary care health-focused activities include monitoring the patient's physical status, setting limits on behaviors that threaten the patient's health, involving specialists with expertise in EDs on the treatment team, and continuing to provide primary care for health maintenance, acute illness, or injury.

The **biopsychosocial model** uses a broad ecologic framework, starting with the biologic impairments of physical health related to dysfunctional weight control practices, evidenced by symptoms and signs. Explicitly linking ED behaviors to symptoms and signs can increase motivation to change. In addition, there are usually unresolved psychosocial conflicts in both the intrapersonal (self-esteem, self-efficacy) and the interpersonal (family, peers, school)

domains. Weight control practices initiated as coping mechanisms become reinforced because of positive feedback. That is, external rewards (e.g., compliments about improved physical appearance) and internal rewards (e.g., perceived mastery over what is eaten or what is done to minimize the effects of overeating through exercise or purging) are more powerful to maintain behavior than negative feedback (e.g., conflict with parents, peers, and others about eating) is to change it. Thus, when definitive treatment is initiated, more productive alternative means of coping must be developed.

Nutrition and Physical Activity

The primary care provider generally begins the process of prescribing nutrition, although a dietitian should be involved eventually in the meal planning and nutritional education of patients with AN or BN. Framing food as fuel for the body and the source of energy for daily activities emphasizes the health goal of increasing the patient's energy level, endurance, and strength. For patients with AN and low weight, the nutrition prescription should work toward gradually increasing weight at the rate of about 0.5-1 lb/week, by increasing energy intake by 100-200 kcal increments every few days, toward a target of approximately 90% of average body weight for sex, height, and age. Weight gain will not occur until intake exceeds output, and eventual intake for continued weight gain can exceed 4,000 kcal/day, especially for patients who are anxious and have high levels of thermogenesis from nonexercise activity. Stabilizing intake is the goal for patients with BN, with a gradual introduction of "forbidden" foods while also limiting foods that might trigger a binge.

When initiating treatment of an ED in a primary care setting, the clinician should be aware of common cognitive patterns. Patients with AN typically have all-or-none thinking (related to perfectionism) with a tendency to overgeneralize and jump to catastrophic conclusions, while assuming that their body is governed by rules that do not apply to others. These tendencies lead to the dichotomization of foods into good or bad categories, having a day ruined because of one unexpected event, or choosing foods based on rigid self-imposed restrictions. These thoughts may be related to neurocircuitry and neurotransmitter abnormalities associated with executive function and rewards. Weight loss in the absence of body shape, size, or weight concerns should raise suspicion about ARFID, because the emotional distress associated with "forced" eating is not associated with gaining weight, but with the neurosensory experience of eating.

A standard nutritional balance of 15–20% calories from protein, 50–55% from carbohydrate, and 25–30% from fat is appropriate. The fat content may need to be lowered to 15–20% early in the treatment of AN because of continued fat phobia. With the risk of low BMD in patients with AN, calcium and vitamin D supplements are often needed to attain the recommended 1,300 mg/day intake of calcium. Refeeding can be accomplished with frequent small meals and snacks consisting of a variety of foods and beverages (with minimal diet or fat-free products), rather than fewer high-volume high-calorie meals. Some patients find it easier to take in part of the additional nutrition as canned supplements (medicine) rather than food. Regardless of the source of energy intake, the risk for refeeding syndrome (e.g., see the previous section on "Complications") increases with the degree of weight loss and the rapidity of caloric increases (see Chapter 63). Therefore, if the weight has fallen below 80% of expected weight for height, refeeding should proceed carefully (not necessarily slowly) and possibly in the hospital (Table 41.7).

Patients with AN tend to have a highly structured day with restrictive intake, in contrast to BN, which is characterized by a lack of structure, resulting in chaotic eating patterns and binge-purge episodes. All patients with AN, BN, or ED-NOS benefit from a daily structure for healthy eating that includes three meals and at least one snack a day, distributed evenly over the day, based on balanced meal planning. Breakfast deserves special emphasis because it is often the first meal eliminated in AN and is often avoided the morning after a binge-purge episode in BN. In addition to structuring meals and snacks, patients should plan structure in their activities. Although overexercising is common in AN, completely prohibiting exercise can lead to further restriction of intake or to surreptitious exercise; inactivity should be limited to situations in which weight loss is dramatic or there is physiologic instability. Also, healthy exercise (once a day, for no more than 30 min, at no more than moderate intensity) can improve mood and make increasing calories more acceptable. Because patients with AN often are unaware of their level of activity and tend toward progressively increasing their output, exercising without either a partner or supervision is not recommended.

Table 41.7 Potential Indications for Inpatient Medical Hospitalization of Patients with Anorexia Nervosa

PHYSICAL AND LABORATORY
Heart rate <50 beats/min
Other cardiac rhythm disturbances
Blood pressure <80/50 mm Hg
Postural hypotension resulting in >10 mm Hg decrease or >25 beats/min increase
Hypokalemia
Hypophosphatemia
Hypoglycemia
Dehydration
Body temperature <36.1°C (97°F)
<80% healthy body weight
Hepatic, cardiac, or renal compromise
PSYCHIATRIC
Suicidal intent and plan
Very poor motivation to recover (in family and patient)
Preoccupation with ego-syntonic thoughts
Coexisting psychiatric disorders
MISCELLANEOUS
Requires supervision after meals and while using the restroom
Failed day treatment

Primary Care Treatment

Follow-up primary care visits are essential in the management of EDs. Close monitoring of the response of the patient and the family to suggested interventions is required to determine which patients can remain in primary care treatment (patients with early, mildly disordered eating), which patients need to be referred to individual specialists for co-management (mildly progressive disordered eating), and which patients need to be referred for interdisciplinary team management (EDs). Between the initial and subsequent visits, the patient can record daily caloric intake (food, drink, amount, time, location), physical activity (type, duration, intensity), and emotional state (e.g., angry, sad, worried) in a journal that is reviewed jointly with the patient in follow-up. Focusing on the recorded data helps the clinician to identify dietary and activity deficiencies and excesses, as well as behavioral and mental health patterns, and helps the patient to become objectively aware of the relevant issues to address in recovery.

Given the tendency of patients with AN to overestimate their caloric intake and underestimate their activity level, before reviewing the journal record it is important at each visit to measure weight, without underwear, in a hospital gown after voiding; urine specific gravity; temperature; and blood pressure and pulse in supine, sitting, and standing positions as objective data. In addition, a targeted physical examination focused on hypometabolism, cardiovascular stability, and mental status, as well as any related symptoms, should occur at each visit to monitor progress (or regression).

Referral to Mental Health Services

In addition to referral to a registered dietitian, mental health and other services are important elements of treatment of ED patients. Depending on availability and experience, these services can be provided by a psychiatric social worker, psychologist, or psychiatrist, who should team with the primary care provider. ARFID presents the challenge of working with patients' negative experiences of eating, or fear of trauma such as vomiting or choking, while also addressing inadequate nutritional needs. Although patients with AN often are prescribed a selective serotonin reuptake inhibitor (SSRI) because of depressive symptoms, there is no evidence of efficacy for patients at low weight; food remains the initial treatment of choice to treat depression in AN. SSRIs, very effective in reducing binge-purge behaviors regardless of depression, are considered a standard element of therapy in BN. SSRI dosage in BN, however, may need to increase to an equivalent of >60 mg of fluoxetine to maintain effectiveness.

Cognitive-behavioral therapy, which focuses on restructuring "thinking errors" and establishing adaptive patterns of behavior, is more effective than interpersonal or psychoanalytic approaches in ED patients. **Dialectical behavioral therapy**, in which distorted thoughts and emotional responses are challenged, analyzed, and replaced with healthier ones, with an emphasis on "mindfulness," requires adult thinking skills and is useful for older patients with BN. **Group therapy** can provide much needed support, but it requires a skilled clinician. Combining patients at various levels of recovery who experience variable reinforcement from dysfunctional coping behaviors can be challenging if group therapy patients compete with each other to be "thinner" or take up new behaviors such as vomiting.

The younger the patient, the more intimately the parents need to be involved in therapy. The only treatment approach with evidence-based effectiveness in the treatment of AN in children and adolescents is **family-based treatment**, exemplified by the Maudsley approach. This three-phase intensive outpatient model helps parents play a positive role in restoring their child's eating and weight to normal, then returns control of eating to the child, who has demonstrated the ability to maintain healthy weight, and then encourages healthy progression in the other domains of adolescent development. Features of effective family treatment include (1) an agnostic approach in which the cause of the disease is unknown and irrelevant to weight gain, emphasizing that parents are *not* to blame for EDs; (2) parents being actively nurturing and supportive of their child's healthy eating while reinforcing limits on dysfunctional habits, rather than an authoritarian "food police" or complete hands-off approach; and (3) reinforcement of parents as the best resource for recovery for almost all patients, with professionals serving as consultants and advisors to help parents address challenges.

Referral to an Interdisciplinary Eating Disorder Team

The treatment of a child or adolescent diagnosed with an ED is ideally provided by an interdisciplinary team (physician, nurse, dietitian, mental health provider) with expertise treating pediatric patients. Because such teams, often led by specialists in adolescent medicine at medical centers, are not widely available, the primary care provider might need to convene such a team. Adolescent medicine–based programs report encouraging treatment outcomes, possibly related to patients entering earlier into care and the stigma that some patients and parents may associate with psychiatry-based programs. Specialty centers focused on treating EDs are generally based in psychiatry and often have separate tracks for younger and adult patients. The elements of treatment noted earlier (cognitive-behavioral, dialectical behavioral, family-based), as well as individual and group treatment, should all be available as part of interdisciplinary team treatment. Comprehensive services ideally include intensive outpatient and partial hospitalization as well as inpatient treatment. Regardless of the intensity, type, or location of the treatment services, the patient, parents, and primary care provider are essential members of the treatment team. A recurring theme in effective treatment is helping patients and families reestablish connections that are disrupted by the ED.

Inpatient medical treatment of EDs is generally limited to patients with AN to stabilize and treat life-threatening starvation and to provide supportive mental health services. Inpatient medical care may be required to avoid refeeding syndrome in severely malnourished patients, provide nasogastric tube feeding for patients unable or unwilling to eat, or initiate mental health services, especially family-based treatment, if this has not occurred on an outpatient basis (see Table 41.7). Admission to a general pediatric unit is advised only for short-term stabilization in preparation for transfer to a medical unit with expertise in treating pediatric EDs. Inpatient psychiatric care of EDs should be provided on a unit with expertise in managing often challenging behaviors (e.g., hiding or discarding food, vomiting, surreptitious exercise) and emotional problems (e.g., depression, anxiety). Suicidal risk is small, but patients with AN might threaten suicide if made to eat or gain weight in an effort to "get their parents to back off."

An ED **partial hospital program** offers outpatient services that are less intensive than round-the-clock inpatient care. Generally held 4-5 days/week for 6 to 9 hours each session, partial hospital program services typically are group based and include eating at least two meals as well as opportunities to address issues in a setting that more closely approximates "real life" than inpatient treatment. That is, patients sleep at home and are free-living on weekends, exposing them to challenges that can be processed during the 25-40 hours each week in program, as well as sharing group and family experiences.

Supportive Care

In relation to pediatric EDs, support groups are primarily designed for parents. Because their daughter or son with an ED often resists the diagnosis and treatment, parents often feel helpless and hopeless. Because of the historical precedent of blaming parents for causing EDs, parents often express feelings of shame and isolation (www.maudsleyparents.org). Support groups and multifamily therapy sessions bring parents together with other parents whose families are at various stages of recovery from an ED in ways that are educational and encouraging. Patients often benefit from support groups after intensive treatment or at the end of treatment because of residual body image or other issues after eating and weight have normalized.

PROGNOSIS

With early diagnosis and effective treatment, ≥80% of youth with AN recover: They develop normal eating and weight control habits, resume menses, maintain average weight for height, and function in school, work, and relationships, although some still have poor body image. With weight restoration, fertility returns as well, although the weight for resumption of menses (approximately 92% of average body weight for height) may be lower than the weight for ovulation. The prognosis for BN is less well established, but outcome improves with multidimensional treatment that includes SSRIs and attention to mood, past trauma, impulsivity, and any existing psychopathology. Since the diagnosis of ARFID was only established in 2013, little is known about its long-term prognosis, although anecdotal evidence suggests that weight restoration is not actively resisted as it is in AN.

PREVENTION

Given the complexity of the pathogenesis of EDs, prevention is difficult. Targeted preventive interventions can reduce risk factors in older adolescents and college-age women. Universal prevention efforts to promote healthy weight regulation and discourage unhealthy dieting have not shown effectiveness in middle school students. Programs that include recovered patients or focus on the problems associated with EDs can inadvertently normalize or even glamorize EDs and should be discouraged.

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Chapter 42

Disruptive, Impulse-Control, and Conduct Disorders

Erica H. Lee, Keneisha R. Sinclair-McBride, David R. DeMaso, and Heather J. Walter

The disruptive, impulse-control, and conduct disorders (CDs) are interrelated sets of psychiatric symptoms characterized by a core deficit in self-regulation of anger, aggression, defiance, and antisocial behaviors that typically begin in childhood or adolescence. These disorders include oppositional defiant, intermittent explosive, conduct, and other specified/unspecified disruptive/impulse-control/CDs, as well as pyromania, kleptomania, and antisocial personality disorder. Although all involve difficulty with both emotional and behavioral self-regulation, the disorders vary by the relative intensity of problems with emotional regulation (e.g., anger outbursts) vs behavioral regulation (e.g., defiance, aggression, violating the rights of others or societal norms).

DESCRIPTION

Oppositional defiant disorder (ODD) is characterized by a persistent pattern lasting at least 6 months of **angry/irritable mood, argumentative/defiant behavior, and/or vindictiveness** exhibited during interaction with at least one individual who is not a sibling (Table 42.1). For preschool children, the behavior must occur on most days, whereas in school-age children, the behavior must occur at least once a week. The severity of the disorder is considered *mild* if symptoms are confined to only one setting (e.g., at home, at school, at work, with peers), *moderate* if symptoms are present in at least two settings, and *severe* if symptoms are present in three or more settings.

Intermittent explosive disorder (IED) is characterized by **recurrent verbal or physical aggression** that is grossly disproportionate to the provocation or to any precipitating psychosocial stressors (Table 42.2). The outbursts, which are impulsive and/or anger-based rather than premeditated and/or instrumental, typically onset rapidly, last <30 minutes, and frequently occur in response to a minor provocation by a close intimate.

CD is characterized by a repetitive and persistent pattern over at least 12 months of **serious aggressive, destructive, and/or rule-violating behavior** in which the basic rights of others or major age-appropriate societal norms or rules are violated (Table 42.3). The symptoms of CD are divided into four major categories: aggression to people and animals, destruction of property, deceitfulness or theft, and serious rule violations (e.g., truancy, running away). Three subtypes of CD (which have different prognostic significance) are based on the age of onset: childhood-onset type, adolescent-onset type, and unspecified. A small proportion of individuals with CD exhibit characteristics (lack of remorse/guilt, callous/lack of empathy, unconcerned about performance, shallow/deficient affect) that qualify for the "with limited prosocial emotions" specifier. CD is classified as *mild* when few if any symptoms over those required for the diagnosis are present, and the symptoms cause relatively minor harm to others. CD is classified as *severe* if many symptoms over those required for the diagnosis are present, and the symptoms cause considerable harm to others. *Moderate* severity is intermediate between mild and severe.

Other specified/unspecified disruptive/impulse-control/CD (subsyndromal disorder) applies to presentations in which symptoms characteristic of the disorders in this class are present and cause clinically significant distress or functional impairment, but do not meet full diagnostic criteria for any of the disorders in this class.

EPIDEMIOLOGY

The prevalence of ODD is approximately 3%, and in preadolescents is more common in males than females (1.4:1). One-year prevalence rates for IED and CD approximate 3% and 4%, respectively. For CD, prevalence rates rise from childhood to adolescence and are higher among males than females.

CLINICAL COURSE

Oppositional behavior can occur in all children and adolescents at times, particularly during the toddler and early teenage periods when autonomy and independence are normative developmental tasks. Oppositional behavior becomes a concern when it is frequent, intense, persistent, and pervasive and when it affects the child's social, family, and/or academic life. Some of the earliest manifestations of oppositionality are stubbornness (3 years), defiance and temper tantrums (4-5 years), and argumentativeness (6 years). Approximately 65% of children with ODD exit from the diagnosis after a 3-year follow-up; earlier age at onset of oppositional symptoms conveys a poorer prognosis. ODD often precedes the development of CD and there is an approximately 30% higher likelihood of CD when ODD is comorbid with attention-deficit/hyperactivity disorder (ADHD). ODD also increases the risk for the development of depressive and anxiety disorders. The defiant, argumentative, and vindictive symptoms carry most of the risk for CD, whereas the angry, irritable mood symptoms carry most of the risk for depression and anxiety.

IED usually begins in late childhood or adolescence and appears to follow a persistent course over many years, with recurrent periods of impulsive and aggressive outbursts.

The onset of CD may occur as early as the preschool years, but the first significant symptoms usually emerge during the period from middle childhood through middle adolescence; onset is rare after age 16 years. Symptoms of CD vary with age as the individual develops increased physical strength, cognitive abilities, and sexual maturity. Symptoms that emerge first tend to be less serious (e.g., lying), while those emerging later tend to be more severe (e.g., sexual or physical assault). Severe behaviors emerging at an early age convey a poor prognosis. In the majority of individuals, the disorder remits by adulthood; in a substantial fraction, antisocial personality disorder develops. Individuals with CD also are at risk for the later development of mood, anxiety, posttraumatic stress, impulse-control, psychotic, somatic symptom, and substance-related disorders.

DIFFERENTIAL DIAGNOSIS

The disorders in this diagnostic class share a number of characteristics with each other as well as with disorders from other classes, and as such must be carefully differentiated. ODD can be distinguished from CD by the absence of physical aggression and destructiveness and by the presence of angry, irritable mood. ODD can be distinguished from IED by the lack of serious aggression toward others (e.g., physical assault). IED can be distinguished from CD by the lack of predatory aggression and other, nonaggressive symptoms of CD.

The oppositionality seen in ODD, the explosivity seen in IED, and the aggression/destructiveness seen in CD must be distinguished from those symptoms occurring in the context of other psychiatric disorders, particularly ADHD, depression, and bipolar, substance-related, autism spectrum, or psychotic disorders.

COMORBIDITY

Rates of ODD are much higher in children with ADHD, which suggests shared temperamental risk factors. Depressive, anxiety, and substance-related disorders are most often comorbid with IED. ADHD and ODD are both common in individuals with CD, and this comorbid presentation predicts worse outcomes. CD may also occur with anxiety, depressive, bipolar, learning, language, and substance-related disorders.

SEQUELAE

The disruptive, impulse-control, and CDs are associated with a wide range of psychiatric disorders in adulthood and with many other adverse outcomes, such as suicidal behavior, physical injury,

Table 42.1 DSM-5 Diagnostic Criteria for Oppositional Defiant Disorder

A. A pattern of angry/irritable mood, argumentative/defiant behavior, or vindictiveness lasting at least 6 mo as evidenced by at least four symptoms from any of the following categories, and exhibited during interaction with at least one individual who is not a sibling:

ANGRY/IRRITABLE MOOD
1. Often loses temper.
2. Is often touchy or easily annoyed.
3. Is often angry and resentful.

ARGUMENTATIVE/DEFIANT BEHAVIOR
4. Often argues with authority figures or, for children and adolescents, with adults.
5. Often actively defies or refuses to comply with requests from authority figures or with rules.
6. Often deliberately annoys others.
7. Often blames others for his or her mistakes or misbehavior.

VINDICTIVENESS
8. Has been spiteful or vindictive at least twice within the past 6 mo.

Note: The persistence and frequency of these behaviors should be used to distinguish a behavior that is within normal limits from a behavior that is symptomatic. For children younger than 5 yr, the behavior should occur on most days for a period of at least 6 mo unless otherwise noted (Criterion A8). For individuals 5 yr or older, the behavior should occur at least once per week for at least 6 mo, unless otherwise noted (Criterion A8). Although these frequency criteria provide guidance on a minimal level of frequency to define symptoms, other factors should be considered, such as whether the frequency and intensity of the behaviors are outside a range that is normative for the individual's developmental level, gender, and culture.

B. The disturbance in behavior is associated with distress in the individual or others in his or her immediate social context (e.g., family, peer group, work colleagues), or it impacts negatively on social, educational, occupational, or other important areas of functioning.

C. The behaviors do not occur exclusively during the course of a psychotic, substance use, depressive, or bipolar disorder. Also, the criteria are not met for disruptive mood dysregulation disorder.

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Table 42.2 DSM-5 Diagnostic Criteria for Intermittent Explosive Disorder

A. Recurrent behavioral outbursts representing a failure to control aggressive impulses as manifested by either of the following:
1. Verbal aggression (e.g., temper tantrums, tirades, verbal arguments or fights) or physical aggression toward property, animals, or other individuals, occurring twice weekly, on average, for a period of 3 mo. The physical aggression does not result in damage or destruction of property and does not result in physical injury to animals or other individuals.
2. Three behavioral outbursts involving damage or destruction of property and/or physical assault involving physical injury against animals or other individuals occurring with a 12 mo period.

B. The magnitude of aggressiveness expressed during the recurrent outbursts is grossly out of proportion to the provocation or to any precipitating psychosocial stressors.

C. The recurrent aggressive outbursts are not premeditated (i.e., they are impulsive and/or anger-based) and are not committed to achieve some tangible objective (e.g., money, power, intimidation).

D. The recurrent aggressive outbursts cause either marked distress in the individual or impairment in occupational or interpersonal functioning, or as associated with financial or legal consequences.

E. Chronologic age is at least 6 yr (or equivalent developmental level).

F. The recurrent aggressive outbursts are not better explained by another mental disorder (e.g., major depressive disorder, bipolar disorder, disruptive mood dysregulation disorder, a psychotic disorder, antisocial personality disorder, borderline personality disorder) and are not attributable to another medical condition (e.g., head trauma, Alzheimer disease) or to the physiologic effects of a substance (e.g., a drug of abuse, a medication). For children ages 6-18 yr, aggressive behavior that occurs as part of an adjustment disorder should not be considered for this diagnosis.

Note: This diagnosis can be made in addition to the diagnosis of attention-deficit/hyperactivity disorder, conduct disorder, oppositional defiant disorder, or autism spectrum disorder when recurrent impulsive aggressive outbursts are in excess of those usually seen in these disorders and warrant clinical attention.

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delinquency and criminality, legal problems, substance use, unplanned pregnancy, social instability, marital failure, and academic and occupational underachievement.

ETIOLOGY AND RISK FACTORS

At the individual level, a number of neurobiologic markers (lower heart rate and skin conductance reactivity, reduced basal cortisol reactivity, abnormalities in the prefrontal cortex and amygdala, serotonergic abnormalities) have been variously associated with aggressive behavior disorders. Other biologic risk factors include pre-, peri-, and postnatal insults; cognitive and linguistic impairment, particularly language-based learning deficits; difficult temperamental characteristics, particularly negative affectivity, emotional reactivity, poor frustration tolerance, and impulsivity; certain personality characteristics (novelty seeking, reduced harm avoidance, and reward dependence); and certain cognitive characteristics (cognitive rigidity, hostile attributions for ambiguous social cues).

At the family level, a consistently demonstrated risk factor is ineffective parenting. Parents of behaviorally disordered children are more inconsistent in their use of rules, issue more and unclear commands, are more likely to respond to their child based on their own mood rather than the child's behavior, are more likely to utilize a harsh or neglectful parenting style, are less likely to monitor their children's whereabouts, and are relatively unresponsive to their children's prosocial behavior. Complicating this association is the consistent finding that temperamentally difficult children are more likely to elicit negative parenting responses, including physical punishment, which can exacerbate anger and oppositionality in the child. Other important family-level influences include impaired parent–child attachment, child maltreatment (physical and sexual abuse, neglect), exposure to marital conflict and domestic violence, family poverty and crime, frequent changes in caregivers, and family genetic liability (family history of the disorders in this class along with substance use, depressive, bipolar, schizophrenic, somatization, and personality disorders, as well as ADHD, have all been shown to be associated with the development of behavior disorders).

Peer-level influence on the development of behavior problems includes peer rejection in childhood and antisocial peer groups. Neighborhood influences include social processes such as collective efficacy, social control, and exposure to violence. Culturally, it is helpful to consider the context in which undesirable behaviors occur to better understand their function.

PREVENTION

An effective conduct problem prevention program was *Fast Track*, a multicomponent school-based intervention comprising a classroom curriculum targeted at conflict resolution and interpersonal skills, parent training, and interventions targeted at the school environment. Implemented in grades 1 through 10, former program participants at age 25 had a lower prevalence of any externalizing, internalizing, or substance

Table 42.3 DSM-5 Diagnostic Criteria for Conduct Disorder

A. A repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated, as manifested by the presence of at least 3 of the following 15 criteria in the past 12 mo from any of the following categories, with at least one criterion present in the past 6 mo:
AGGRESSION TO PEOPLE AND ANIMALS 1. Often bullies, threatens, or intimidates others. 2. Often initiates physical fights. 3. Has used a weapon that can cause serious physical harm to others (e.g., a bat, brick, broken bottle, knife, gun). 4. Has been physically cruel to people. 5. Has been physically cruel to animals. 6. Has stolen while confronting a victim (e.g., mugging, purse snatching, extortion, armed robbery). 7. Has forced someone into sexual activity.
DESTRUCTION OF PROPERTY 8. Has deliberately engaged in fire setting with the intention of causing serious damage. 9. Has deliberately destroyed others' property (other than by fire setting).
DECEITFULNESS OR THEFT 10. Has broken into someone else's house, building, or car. 11. Often lies to obtain good or favors or to avoid obligations (i.e., "cons" others). 12. Has stolen items of nontrivial value without confronting a victim (e.g., shoplifting, but without breaking and entering; forgery).
SERIOUS VIOLATIONS OF RULES 13. Often stays out at night despite parental prohibitions, beginning before age 13 yr. 14. Has run away from home overnight at least twice while living in the parental or parental surrogate home, or once without returning for a lengthy period. 15. Is often truant from school, beginning before age 13 yr.
B. The disturbance in behavior causes clinically significant impairment in social, academic, or occupational functioning.
C. If the individual is age 18 yr or older, criteria are not met for antisocial personality disorder.

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abuse problem than program nonparticipants. Program participants also had lower violent and drug crime conviction scores, lower risky sexual behavior scores, and higher well-being scores. Another useful prevention program, the *Seattle Social Development Project*, was also a multicomponent school-based intervention with teacher, parent, and student components targeting classroom management, interpersonal problem solving, child behavior management, and academic support skills. Implemented in grades 1 through 6, outcomes at age 19 years demonstrated that the intervention decreased lifetime drug use and delinquency for participant males compared with males in comparator communities but had no significant effects on females.

SCREENING/CASE FINDING

The parents of children presenting in the primary care setting should be **queried about angry mood or aggressive, defiant, or antisocial behavior as part of the routine clinical interview**. A typical screening question would be, "Does [name] have a lot of trouble controlling [his/her] anger or behavior?" A number of standardized broad-band screening instruments widely used in the primary care setting (e.g., *Pediatric Symptom Checklist*, *Strengths and Difficulties Questionnaire*) have items specific to angry mood and aggressive behavior, and as such can also be used to identify problems in this domain.

EARLY INTERVENTION

Youth (and/or their parents) presenting in the primary care setting who self-report or respond affirmatively to queries about difficulties managing angry mood or aggressive or antisocial behavior should be afforded the opportunity to talk about the situation with the pediatric practitioner (separately with older youth as indicated). By engaging in **active listening** (e.g., "I hear how you have been feeling. Tell me more about what happened to make you feel that way"), the pediatric practitioner can establish therapeutic rapport and begin to assess the onset, duration, context, severity, and complexity of the symptoms, and associated dangerousness, distress, and functional impairment. In the absence of acute dangerousness (e.g., homicidality, assaultiveness, psychosis, substance abuse) and significant distress or functional impairment, the pediatric practitioner can schedule a follow-up appointment within a few weeks to conduct a behavior assessment. At this follow-up visit, to assist with decision-making about appropriate level of care, a focused symptom rating scale can be administered (Table 42.4) and additional risk factors explored (e.g., see the previous section on "Etiology and Risk Factors").

For mild symptoms (manageable by the parent and not functionally impairing) and in the absence of major risk factors, guided self-help (anticipatory guidance) and monitoring with a scheduled follow-up may suffice. Guided self-help can include provision of educational materials (pamphlets, books, videos, workbooks, internet sites) that provide information to the youth about dealing with anger-provoking situations, and advice to parents about strengthening the parent–child relationship, effective parenting strategies, and the effects of adverse environmental exposures on the development of behavior problems. In a Cochrane review, media-based parenting interventions had a moderate positive effect on child behavior problems, either alone or as an adjunct to medication. An example of a self-help program for parents is the *Positive Parenting Program* (*Triple P*; http://www.triplep-parenting.com), online version, in which parents can purchase 6-8 modules of instruction addressing techniques for positive parenting and strategies for encouraging good behavior, teaching new emotional and behavioral skills, and managing misbehavior with youth from toddlers to teens (see Chapter 20).

If a mental health clinician has been **co-located or integrated into the primary care setting**, all parents of young children (universal prevention), as well as the parents of youth with mild behavior problems (indicated prevention), could be provided with a brief version of **behavioral parent training**. For example, *Incredible Years* (http://www.incredibleyears.com) has a 4-8 session universal prevention version to help parents promote their 2–6-year-old children's emotional regulation, social competence, problem solving, and reading readiness. A randomized trial in pediatric practices found that *Incredible Years* significantly improved parenting practices and 2–4-year-olds' disruptive behaviors compared to a wait-list control. *Incredible Years*' positive effects on parenting and child behavior have been found for populations diverse in race, cultural background, and socioeconomic status. Similarly, the *Triple P* program has seminar (three, 90 minute sessions), brief (15-30 min consultations), and primary care (four, 20-30 minute consultations) versions for the parents of youth from birth to the teenage years, specifically designed for implementation in the primary care setting. The *Triple P* interventions, supported by an extensive evidence base, focus on strengthening the parent–child relationship, identifying and monitoring the frequency of a problem behavior, and implementing and reviewing the effects of a targeted behavior plan. Meta-analyses have found that gains from *Triple P* are maintained over time.

TREATMENT

For youth who continue to have mild to moderate behavior problems after several weeks of guided self-help or a brief course of behavioral parent training, or who from the outset exhibit moderate to severe symptoms, or who have a history of maltreatment or severe family dysfunction or psychopathology, assessment and treatment in the specialty mental health setting by a child-trained mental health clinician should be provided.

The youth's problem behavior may predominantly occur at home, at school, with peers, or in the community, or it may be pervasive. If possible, interventions need to address each context specifically, rather than assuming generalizability of treatment. Thus, for behaviors mostly manifested in the home setting, behavioral parent training would be the treatment of

Table 42.4 Selected Anger/Aggression Rating Scales

NAME OF INSTRUMENT	INFORMANT(S)	AGE RANGE (YR)	NO. OF ITEMS
Children's Aggression Scale	Parent, Teacher	5-18	33 (P), 23 (T)
Eyberg Child Behavior Inventory	Parent	2-16	36
Outburst Monitoring Scale	Parent	12-17	20
Sutter-Eyberg Student Behavior Inventory–Revised	Teacher	2-16	38
Vanderbilt ADHD Diagnostic Rating Scales	Parent, Teacher	6-12	55 (P), 43 (T)

choice, whereas for behaviors manifested mostly at school, consultation with the teacher regarding an assessment for a 504 plan or individualized education plan (IEP) can be useful. School-based services can include a functional behavioral analysis to determine the function of the problematic behavior for the child, and development of a behavioral intervention plan to direct the child toward alternative positive behaviors that can achieve the same goal. School-based services should be considered whenever a child is subjected to repeated disciplinary action in school or suspensions for misbehavior. When there are pervasive problems, including aggression toward peers, **cognitive-behavioral therapy (CBT)** with the child/teen can be employed in addition to the other interventions.

Behavioral parent training has been extensively studied for the treatment of youth problem behavior. These programs work by reshaping negative family patterns that may trigger or reinforce problem behaviors. They are typically 10-15 weeks in duration and focus on some combination of the following components: understanding social learning principles, developing a warm supportive relationship with the child, encouraging child-directed interaction and play, providing a predictable structured household environment, setting clear and simple household rules, consistently praising and materially or socially rewarding positive behavior, consistently ignoring annoying behavior (followed by praise when the annoying behavior ceases), giving effective commands, and consistently giving consequences (e.g., time-out, loss of privileges) for dangerous or destructive behavior. Other important targets for parenting training include understanding developmentally appropriate moods and behavior, managing difficult temperamental characteristics, fostering the child's social and emotional development, and protecting the child from traumatic exposures. Parent training can be implemented with families in individual or group formats. Specific parent training programs include *Incredible Years* and *Triple P,* described earlier, and *Parent–Child Interaction Therapy*, *Helping the Noncompliant Child,* and *Parent Management Training Oregon.* Predictors of nonresponse to these interventions have included greater initial symptom severity as well as involvement of the parent with child protection services.

Difficulty with adherence to the complete treatment regimen has limited the effectiveness of parent training programs. Estimates of premature termination are as high as 50–60%, and termination within five treatment sessions is not uncommon. Predictors of premature termination have included single-parent status, low family income, low parental education levels, young maternal age, minority group status, and life stresses.

CBT for youth with disruptive behavior also has been extensively studied. Common CBT techniques for disruptive behavior include identifying the antecedents and consequences of disruptive or aggressive behavior, learning strategies for recognizing and regulating anger expression, problem-solving and cognitive restructuring (perspective-taking) techniques, and modeling and rehearsing socially appropriate behaviors that could replace angry or aggressive reactions. Programs typically are delivered in 16-20 weekly sessions.

Multicomponent treatments for serious behavior disorders such as CD target the broader social context. **Multidimensional Treatment Foster Care**, delivered in a foster care setting for 6-9 months, typically includes foster parent training and support; family therapy for biologic parents; youth anger management, social skills, and problem-solving training; school-based behavioral interventions and academic support; and psychiatric consultation and medication management, when needed. **Multisystemic Therapy**, typically lasting 3-5 months, generally includes social competence training, parent and family skills training, medications, academic engagement and skills building, school interventions and peer mediation, mentoring and after-school programs, and involvement of child-serving agencies. Due to the strength of the supporting evidence, these multicomponent programs have been designated "well-established" treatments for adolescents involved in the juvenile justice system. Predictors of nonresponse to multicomponent treatments have included higher frequency of rule-breaking behavior and predatory aggression, higher psychopathy scores, and comorbid mood disorders.

Psychosocial interventions should be considered the first-line intervention; pharmacotherapy may provide benefit, particularly if psychosocial treatment has not led to adequate improvement. Three classes of medication, stimulants, α_2-adrenergic agonists, and atypical antipsychotics, have evidence for the management of impulsive, anger-driven aggressive behavior, although none is approved by the U.S. Food and Drug Administration (FDA) for this indication, except irritability/aggression in autism. Resource limitations may necessitate provision of pharmacotherapy in the primary care setting; the safety and efficacy of this practice can be enhanced by regular consultation with a child and adolescent psychiatrist or developmental-behavioral pediatrician.

There are favorable effects of stimulants on oppositional behavior, anger outbursts, and aggression in youths, with or without comorbid ADHD. The doses of stimulants used for aggression are similar to those used for ADHD. An extended-release α_2-adrenergic agonist (guanfacine) is efficacious for oppositionality comorbid with ADHD, with a dose of 1-4 mg/day, dosed according to weight. There is evidence for efficacy of risperidone in reducing aggression and conduct problems in children age 5-18 years. The suggested usual daily dose of risperidone for severe aggression is 1.5-2 mg for children and 2-4 mg for adolescents, titrating up as needed and tolerated from starting doses of 0.25 mg (children) or 0.5 mg (adolescents). The use of this class of medication should be reserved for severe presentations in which the safety of self and/or others is compromised.

Medication trials should be systematic, and the duration of trials should be sufficient (generally 6-8 weeks for atypical antipsychotics; shorter for stimulants and α-agonists) to determine the agent's effectiveness. The short-term goal of medication treatment is to achieve at least a 50% reduction in aggressive symptoms, as assessed by a focused symptom rating scale (see Table 42.4); the ultimate goal is to achieve symptom remission (below clinical cutpoint on the rating scale). A second medication of the same class can be considered if there is insufficient evidence of response to the maximal tolerated dose. Care should be taken to avoid unnecessary polypharmacy, in part by discontinuing agents that have not demonstrated significant benefit. Discontinuation of the medication should be considered after a symptom-free interval.

LEVEL OF CARE

Most children and adolescents with a behavior disorder can be safely and effectively treated in the outpatient setting. Youths with intractable CD may benefit from residential or specialized foster care treatment, where more intensive treatments can be provided.

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Chapter 43

Tantrums and Breath-Holding Spells

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Temper tantrums are common during early childhood. They are typically developmentally normative expressions of children's frustration with their own limitations or anger about not being able to get their way. It is important for parents to recognize the different triggers for tantrums to determine the best course of action to prevent or manage this behavior as it arises. Dealing with tantrum behavior can become very frustrating for parents and these feelings should be validated, while also helping make sure parents are aware that many tantrums can be averted by awareness or attunement to certain cues given by their child. In particular, parents should be aware that when a child is tired, hungry, or has to make a transition, it can be expected that the child will be more likely to have a tantrum because limit setting or unmet expectations may feel particularly overwhelming in these circumstances. In this case, it is advised that parents plan ahead and take a preventive stance by being aware of triggers and minimizing the potential for a tantrum. Parents should not make a tired or hungry child accompany them on an extended outing unless absolutely necessary. Additionally, depending on the child's developmental level, it is helpful to have a clear discussion ahead of time about the expectations in certain scenarios. An example of setting expectations to help prevent a tantrum is: "When we go into the store I need you to (1) stay with me, (2) keep your hands to yourself, and (3) not whine for treats. If you can do these three things, we can pick one treat to bring home." When children are able to demonstrate good control, their behavior should be acknowledged, praised, and rewarded when appropriate. This will increase the likelihood that they will engage in the desired response more often, even in situations they find frustrating.

When children tantrum as an expression of anger or sadness in not getting their way, parents may feel inclined to give in or respond to the negative behavior with yelling or threats. Unfortunately, these responses can reinforce and even escalate the oppositional behavior. Parents should attempt to avert defiance by giving the child choices (e.g., you can walk to the car on your own two feet or I can carry you). Active ignoring can be used for mild tantrum behaviors because paying attention, even negative attention, can be reinforcing. If a child is tantruming in a way that is unsafe, they can be removed from the unsafe situation and given a consequence by being placed in time-out. If the tantrum was to avoid a task, the child should be required to complete the task once time-out is over.

Breath-holding spells occasionally occur during a tantrum and can be frightening to parents. These are reflexive events in which the crying child becomes apneic, pale, or cyanotic, may lose consciousness, and occasionally will have a brief seizure. Parents are best advised to ignore breath holding during a tantrum once it has started. Without reinforcement, breath-holding generally disappears.

Subtypes of breath-holding spells include cyanotic, pallid, or mixed episodes. Cyanotic spells are the dominant type. Pallid spells may be similar to vasovagal-related syncopal events in older children and may be initiated by similar stimuli. Iron deficiency with or without anemia may be present, and some children with breath-holding spells respond to iron therapy. There is no increased risk of seizure disorders in children who have had a short seizure during a breath-holding spell. Medical conditions to rule-out in breath-holding spells (usually pallid) include seizures, Chiari crisis, familial dysautonomia, cardiac arrhythmias, cataplexy, hereditary hyperekplexia, and other central nervous system lesions.

The first key to the management of temper tantrums and breath-holding spells is to help parents intervene before the child is highly distressed. The parent can be instructed to calmly remind the child of the expected behavior and the potential consequence if the expected behavior does not occur. In addition, distraction to another activity or conversation may help. If the child does not comply, he or she should be placed in time-out for a period approximating 1 min for each year of age. Parents should state the reason the child is being placed in time-out beforehand in a calm and neutral tone, but they should not discuss the reasons during time-out. Once the time-out is over and the child is calm, it may be helpful for parents to discuss with the child the reasons for the child's frustration and their expectations for how the child will respond in the future.

Time-out can be effectively used in children up to approximately 10 years of age. Parents should also be advised to be mindful of their own reactions to their child's tantrum behavior to avoid an escalation of the child's behavior caused by an angry parental response.

If behavioral measures such as time-out fail, pediatricians must assess other aspects of parent–child interactions, such as the frequency of positive interactions, the consistency of parental responses to child behavior, and the ways that parents handle anger, before making further recommendations. In the absence of frequent positive parent–child interactions, time-out may not be effective, and inconsistent responding to problem behavior increases the likelihood of the negative behavior continuing. Children can be frightened by the intensity of their own angry feelings and by angry feelings they arouse in their parents. Parents should model the anger control that they want their children to exhibit. Some parents are unable to see that if they lose control themselves, their own angry behavior does not help their children to behave differently. Advising parents to calmly provide simple choices will help the child to feel more in control and to develop a sense of autonomy. Providing the child with options also typically helps reduce the child's feelings of anger and shame, which can later have adverse effects on social and emotional development. Providing choice also reduces power struggles between the parent and child and can aid in enhancing the parent–child relationship and building problem-solving skills.

When tantrum behavior, including breath holding, does not respond to parent coaching or is accompanied by head banging or high levels of aggression, referral for a mental health evaluation is indicated. Further evaluation is also recommended if tantrum behavior persists into the latency period and preteen years.

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Chapter 44

Lying, Stealing, and Truancy

Keneisha R. Sinclair-McBride, Erica H. Lee, David R. DeMaso, and Heather J. Walter

Young children lie for a multitude of reasons. Lies for this age group can be considered developmentally normative attempts at understanding language, communication, rules, and expectations. In early childhood, lying often occurs as a child experiments with language. By observing the reactions of parents, preschoolers learn about expectations for honesty in communication. Lying can also be a form of fantasy for children, who often describe things as they wish them to be rather than as they are. To avoid an unpleasant confrontation, a child who has not followed a rule or met an expectation may lie. At this stage, children often do not understand that lying only postpones a confrontation. Parents should keep in mind that lying behavior in this age group is rarely malicious or premeditated.

In *older children*, lying is generally an effort to cover up actions that do not fit into the child's conceptualization of themselves. Children in this age group may lie as an attempt to maintain self-esteem. Of course, lying is also often used to avoid a negative consequence for misbehavior. Older children are also more likely to intentionally leave out critical parts of a story in an attempt to deceive or avoid a negative consequence. Lying can also be promoted by poor adult modeling. Many children and adolescents lie to avoid adults' disapproval. If children and teens are responded to in harsh and punitive ways, they may lie to avoid this. Alternatively, lying may be used as a method of rebellion, especially in adolescence. Lying about forbidden activities, social media use, or other behaviors may be an attempt to continue to break the rules without detection. Chronic lying can occur in combination with several other antisocial behaviors and is a sign of underlying psychopathology or family dysfunction.

Parents should address lying by giving the child a clear message of what is acceptable. Sensitivity and support combined with limit setting are necessary for a successful intervention. Although habitual lying can become frustrating for parents, they should be discouraged from making accusations or focusing on catching their child in a lie and instead should work toward creating an atmosphere that makes it easier for their child to tell the truth. Parents should let the child know that telling the truth about a difficult situation will allow the parents to help them better problem-solve the issue at hand. Should a situation arise where a child has lied and the parents are aware of the true details, the lie should be confronted while providing the facts of what is known and also stating the desired or expected behavior. This should be done in a calm, neutral manner. For example, if a parent is aware that a child played video games instead of doing homework and the child denies it, the parent can state, "I notice that your homework is incomplete and that you are playing without permission. Our rule is that you complete homework first. There will be no more video games for the rest of the week." This response reminds the child how he can meet his goals in an acceptable way and an appropriate consequence can then be given. Parents should be encouraged to address the expectations for their home and children in a family meeting or in regular discussions with their child outside the context of the child's lying.

Regardless of age or developmental level, when lying becomes a common way of managing conflict, intervention is warranted. If this behavior cannot be resolved through the parents' understanding of the situation and the child's understanding that lying is not a reasonable alternative, a mental health evaluation is indicated.

STEALING

Many children steal something at some point in their lives. Often, when very *young children* steal, the behavior is an impulsive action to acquire something they want. A common example is the child who takes candy or a toy from the store shelf. If a parent notices this behavior, they can use the situation as a teaching opportunity to explain that community and family expectations are that we have to pay for things at the store and not take them without permission. It should not be expected that a very young child will be aware of all the rules around shopping or stealing. It may also be difficult for a child who has been used to being able to freely take whatever she wants to be aware of all the expected behaviors across different settings. When preschoolers and school-age children begin to steal frequently even after they have been told not to, the behavior may be a response to stressful environmental circumstances and requires further exploration and evaluation.

For some *older children*, stealing can be an expression of anger or revenge for perceived frustrations with parents or other authority figures. In such instances, stealing becomes one way the child and adolescent can manipulate and attempt to control their world. Stealing can also be learned from adults. Some children will report that the behavior is "exciting" for them, and they may also engage in the behavior for peer approval. In some cases, youth living in poverty may engage in the behavior as a survival mechanism.

Kleptomania, an impulse-control disorder, may begin in adolescence and is characterized by an intense impulse to steal objects that may not be rationally needed by the patient. There are often comorbid disorders such as anxiety, eating disorders, substance misuse, and depression. Treatment includes cognitive-behavioral therapy (CBT) in addition to various drugs such as lithium, naltrexone, and selective serotonin reuptake inhibitors (SSRIs).

Parents should work with their children to rectify stealing through restitution. Parents should require that their child return stolen items or pay for them with their own money (i.e., allowance or gift money). When this is not possible, another reasonable consequence should be given, such as losing a privilege or completing additional chores. When stealing is part of a pattern of broader conduct problems, referral for a mental health evaluation is warranted.

TRUANCY

Truancy and running away are never developmentally appropriate. Truancy may represent an unsafe environment of disorganization within the home including lack of appropriate supervision or older children being required to caretake for younger siblings. Truancy can also be a sign of developing conduct problems or behavioral health problems including depression or anxiety. When truancy occurs in younger children, there are usually psychosocial concerns with the parents or adult caretakers in the home that prevent them from following through with the required demands of getting their children to school each day. Families struggling with housing and food insecurity may have difficulties having their children attend school regularly. Parents with intellectual disability or their own mental health or substance abuse problems may become overwhelmed with managing the home and caring for their children; thus they might not consistently ensure their child gets to school. In addition, children might decide to remain at home to take care of parents who are impaired.

Truancy is more common in *preteens and adolescents* and can be a function of multiple factors, including but not limited to learning difficulties, social anxiety, depression, traumatic exposure, bullying, peer pressure, and substance use. In any of these cases, the child should be referred for further evaluation to assess the barriers to returning to school. Best practices for dealing with truancy resulting from school avoidance and anxiety include addressing the underlying psychologic symptoms causing the school avoidance and empowering parents, children, and school staff to work on a consistent plan for a return to school.

Younger children may threaten running away out of frustration or a desire to "get back at" parents. Older children who run away are almost always expressing a serious underlying problem within themselves or their family, including violence, abuse, and neglect. Adolescent runaways are at high risk for substance abuse and other risk-taking behaviors as well as at risk for being victims of abuse (e.g., sexual exploitation).

Youth exhibiting truancy or running away should be referred for a mental health evaluation.

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Chapter 45

Aggression

Keneisha R. Sinclair-McBride, Erica H. Lee, David R. DeMaso, and Heather J. Walter

Aggressive behavior is a serious symptom associated with significant morbidity and mortality. Early intervention is indicated for persistent aggressive behavior given that children may not simply "grow out of" this pattern of behavior. Aggressive tendencies are heritable, although environmental factors can promote aggression in susceptible children. Both enduring and temporary stressors affecting a family can increase aggressive behavior in children. Aggression in childhood is correlated with both poverty and chaotic family situations, including chronic unemployment, family discord, and exposure to community and domestic violence, criminality, and psychiatric disorders. Children born to teenage mothers and parents with limited resources and support are also at risk. Males are reported to be more aggressive than females. A difficult temperament and later aggressiveness are related. When children with temperament difficulties are responded to with punitive discipline strategies within the family environment, it can set up a cycle of increasing aggression. Aggressive children often misinterpret social cues in such a way that they perceive hostile intent in ambiguous or benign interactions, and then may react with verbal or physical aggression toward peers and parents.

It is important to differentiate the causes and motives for childhood aggression. Intentional aggression may be primarily instrumental (i.e., to achieve an end), primarily hostile (i.e., to inflict physical or psychologic pain), or primarily impulsive. Impulsive aggression can often be effectively managed with simple behavioral interventions at home. Children who are callous, not empathetic, and more consistently aggressive require intervention in the specialty mental health setting (see Chapter 42). These children are at high risk for suspension from school and eventual school failure. Because learning disorders are common in this population, aggressive children should be referred for screening. Aggressive behavior is often present in a variety of other psychologic conditions, including attention-deficit/hyperactivity and oppositional defiant, intermittent explosive, conduct, and disruptive mood dysregulation disorders (see Chapters 39 and 42).

Aggressive behavior in males is relatively consistent from the preschool period through adolescence. Without effective intervention, a male with a high level of aggressive behavior between 3 and 6 years of age has a high probability of carrying this behavior into adolescence. The developmental progression of aggression among females is less well studied. Fewer females show physically aggressive behavior in early childhood. However, interpersonal coercive behavior, especially in peer relationships, is seen in females. This behavior may be related to the development of physical aggression for females in adolescence (e.g., fighting) or other conduct problems (e.g., stealing).

Children exposed to aggressive models on television, in video games, or in play have more aggressive behavior compared with children not exposed to these models. Parents' anger and aggressive or harsh punishment can model behavior that children may imitate when they are physically or psychologically hurt. Parents' abuse may be transmitted to the next generation by several modes: children imitate aggression that they have witnessed; abuse can cause neurologic damage, which itself predisposes the child to violence; and internalized rage often results from abuse.

Aggressive behavior in youth is often oriented toward peers through bullying (see Chapter 15.1). Although it is developmentally normative for children to engage in some teasing behavior, bullying has a more serious tone. Bullying is defined as unwanted aggressive behavior in which there is a real or perceived imbalance of power or strength between the bully and the victim. Typically, it involves a pattern of behavior repeated over time. Although most often perceived as physical aggression, bullying can take on a variety of forms, including relational bullying, the most common form engaged in by females. Cyberbullying is a particular risk during the middle and high school years because of increased exposure and access to multiple social media platforms at this developmental stage. Parents should be advised to closely monitor their child's social media and maintain open communication with their children. Children may bully others because of impulse-control and social skills deficits, strong need for power and negative dominance, satisfaction in causing harm to others, or psychologic or material rewards. Children who bully are at risk for a variety of negative school and psychologic outcomes.

Victims of bullying are particularly at risk for negative outcomes, especially if the behavior is not addressed by adults. Victimization experiences are associated with school avoidance and school dropout, social isolation, somatic symptoms, and increased psychologic problems such as depression and anxiety. There have been numerous cases of suicide in children who reported a prior history of being bullied. Should a concern arise around bullying in the school setting, parents should be advised to reach out to their child's teacher, school counselor, and school administrative staff to have the bullying behavior addressed. Many schools also have a bullying intervention protocol that can be implemented, and state departments of education have antibullying policies with formal protocols to address concerns. Given the significant psychologic risks for both victims and perpetrators of bullying, it is essential that all children who are persistently involved in these incidents be referred for mental health evaluation.

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Chapter 46

Self-Injurious Behavior

Kiera M. James and Molly C. Adrian

Self-injurious behaviors, or deliberate engagement in self-inflicted harm, comprise both **suicidal behaviors** and **nonsuicidal self-injury (NSSI)** (see Chapter 40). NSSI, specifically, involves intentional self-inflicted damage to bodily tissue without the intent to die, though it can unintentionally result in significant harm or even death.

Suicidal behaviors and NSSI are both transdiagnostic behaviors occurring in the context of numerous psychiatry disorders as well as in the absence of any diagnosis at all. Nonetheless, the vast majority of youth who engage in NSSI meet diagnostic criteria for a psychiatry disorder. Self-injurious behavior may also be associated with developmental disabilities often as a manifestation of stereotypic movement disorder (Chapter 37.2).

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Although NSSI and suicidal behavior are distinct constructs based on the *intent* of the behavior, they are also highly comorbid. Research exploring the attitudes of youth who have engaged in NSSI indicates that there is a strong identification with suicide and death for this population, which makes NSSI a significant clinical issue and risk factor that cannot be ignored or minimized. Although some youth engage in repeated NSSI without ever attempting suicide, studies suggest that 50–75% of adolescents who have a history of NSSI will make a suicide attempt at some point.

NSSI has been documented in children as young as 7 years of age, with rates increasing from childhood (~8%) to adolescents (~18%), and decreasing during adulthood (~5.5%). Although traditionally thought to be more prevalent in females than males, NSSI occurs in both sexes. Emerging research suggests that, if present at all, gender differences in rates of NSSI are more likely in clinical than community populations. Notably, however, rates of NSSI are particularly high among transgender and gender nonconforming teens with up to 55% reporting past-year engagement in NSSI. There are no significant ethnicity or class differences among youth who engage in NSSI. Youth identified as those with the highest risk include females ages 15-19 and males 20-24.

Cutting is the most commonly reported form of NSSI. For those youth who engage in NSSI for the first time, approximately 20% will repeat the behavior within the same year; cutting is the most commonly repeated method of NSSI. Other methods of NSSI include scratching, burning, carving, piercing, hitting or punching, biting, picking at wounds, and digging nails into the skin. The most common areas of injury are the arms, legs, and torso, though NSSI may also occur on other parts of the body (e.g., breasts, genitals, groin, neck). Objects used in cutting include razors, scissors, broken glass, hard plastic, knives, staples, paper clips, or any other objects sharp enough to cause injury. Importantly, there are gender differences in methods such that females are more likely to engage in cutting, scratching, biting, hair pulling, and wound picking whereas males are more likely to engage in burning and self-battery, including hitting and head banging.

Youth often report exposure to NSSI before engaging in the behavior. Some youth report that they have friends who self-injure (e.g., cut) to attempt to alleviate negative emotions. Others may view stories of their peers' engagement in NSSI on websites and social media. Impressionable youth have also reported learning about NSSI for the first time from celebrities who have engaged in the behavior.

NSSI is associated with depression, anxiety, peer (bullying) victimization, social isolation, low self-esteem, substance abuse, eating disorders, impulsivity, poor school performance, delinquency, and neglectful or highly punitive parenting practices, as well as trauma, including a history of physical or sexual abuse. The behavior may begin as an impulsive response to internal distress for younger children, but for those who are older, the behavior can take on a self-reinforcing function. Youth may feel a sense of *relief* or *mastery* over negative emotions once the behavior has been completed. Some youth report that they engage in NSSI when feeling intense negative emotions, overwhelmed, or panicked to regulate their emotions. Others engage in the behavior when they are feeling numb, to "feel something" again. NSSI may also serve as a *distraction* from emotional pain, provide a sense of *control* over the body, or be used as a form of *self-punishment* for a perceived wrongdoing. NSSI may also function to *communicate* distress or strength or provide peer group *affiliation*. Youth often report that they are unable to resist the urge to engage in the behavior and will continue to feel increasing levels of distress until they engage in NSSI. Others plan or schedule the behavior, building it into their routine. Youth who view NSSI as an effective, private, and necessary coping strategy tend to have more dependence on the behavior and more resistance to stopping it.

Some adolescents and young adults engage in repeated NSSI for years without disclosing the behavior. Due to the shame associated with this stigmatized behavior, youth will often go to great lengths to keep it a secret. Some wear bracelets to cover scars on their arms or wear long sleeves in summer to hide the scarring. They report feeling ashamed of the behavior and fear rejection or disappointment from family and friends should they find out. At times, fear of being rejected or a disappointment to others can increase feelings of depression and anxiety and can serve to perpetuate the behavior. In contrast, others are more open about showing their scars and sharing their behavior with others. In either case, the behavior is a way to communicate or manage some level of *distress*. Many youth who engage in NSSI may never be seen in a hospital emergency department or by a mental health professional. Factors that protect against engagement in NSSI include a lack of awareness of, or exposure to, NSSI; an aversion to physical pain; an aversion to NSSI-related stimuli (e.g., blood); a positive view of the self; the use of other more adaptive emotion regulation strategies; and social norms. *Youth with repetitive NSSI should be referred to behavioral health services.* Effective treatment strategies include conducting a functional analysis around NSSI behavior, identifying and teaching alternative emotion regulation strategies, and reducing access to means to harm oneself. Reduction of NSSI has been observed with dialectical behavior therapy for adolescents, cognitive-behavioral therapy, cognitive analytic therapy, and mentalization-based therapy for adolescents. There are no psychopharmacologic treatments that have demonstrated efficacy; thus behavioral approaches should be prioritized.

Parents should be advised to monitor youth social media access and be aware of their peer group. Maintaining open communication can assist parents in recognizing an increase in concerning behaviors or patterns of behaviors. Parents should talk with their child about strategies for managing strong emotions and provide emotion coaching to support their child through experiences of distress. They should also be encouraged to talk with their child about their use of and exposure to drugs and alcohol as substance use can be associated with NSSI. Learning that their child has been engaging in self-injury can be frightening for parents because they are unsure of what to do or why their child is engaging in this behavior. It is important that parents receive psychoeducation about NSSI to reduce common misconceptions that make it difficult to understand their child's engagement in NSSI and respond effectively. Such information should be digestible and accurate, including written suggestions and examples. Parents should also seek mental health services for their child. *It is recommended that the child receive a full assessment for risk of suicide when NSSI is a concern.*

The *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) has classified NSSI as a condition requiring further study before consideration for possible placement in forthcoming editions of DSM. Proposed diagnostic criteria include self-inflicted injury without suicidal intent occurring on 5 or more days in the past year, with lack of suicidal intent either stated by the individual or inferred by the individual's repeated engagement in a behavior not likely to result in death. The individual expects that the self-injurious behavior will relieve a negative feeling or thought, resolve an interpersonal difficulty, or induce a positive feeling state. The self-injurious behavior is associated with interpersonal difficulties or negative feelings or thoughts, preoccupation with the intended behavior that is difficult to control, or frequent thoughts about the intended behavior. The proposed criteria also specify that the behavior is not socially sanctioned (e.g., body piercing, tattooing) and is not restricted to skin picking or nail biting. The behavior must be associated with significant *distress* or functional impairment.

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Chapter 47

Childhood Psychoses

Jennifer A. Zaspel and Rosa K. Kim

Psychosis is a severe disruption of thought, perception, and behavior resulting in *loss of reality testing*. Psychosis can occur as part of a mood disorder, such as major depressive disorder or bipolar I disorder; between mood disorder episodes, as in schizoaffective disorder; or without mood disorder episodes, as in schizophrenia. Transient psychotic episodes can arise during times of psychologic or physiologic stress in patients who are vulnerable because of personality, developmental, or genetic disorders. **Positive symptoms**, including delusions, hallucinations, disorganized thinking, and grossly disorganized behavior, are key features that define psychoses across disorders, likely because of shared pathophysiologic mechanisms. **Negative symptoms**, on the other hand, are most typical of schizophrenia.

Delusions are fixed, unchangeable, false beliefs held despite conflicting evidence. They may include a variety of themes, including persecutory, referential (the belief that irrelevant events or details in the world are related directly to oneself), somatic, religious, and grandiose. Delusions are considered bizarre if they are clearly implausible. **Hallucinations** are vivid, clear, perceptual disturbances that occur without external stimulus and have the full force and impact of normal perceptions. They may occur in any sensory modality; auditory hallucinations are the most common associated with psychosis. **Disorganized thinking** is inferred from an individual's speech by examining their thought process and thought content and is typically severe enough to impair one's ability to communicate. **Grossly disorganized behavior** may range from childlike silliness to unpredictable agitation to catatonic behavior. **Negative symptoms** include diminished emotional expression, avolition (decreased drive to perform purposeful tasks), alogia (lack of speech), anhedonia, and social withdrawal. Negative symptoms account for a substantial portion of the long-term morbidity associated with schizophrenia.

Given the centrality of hallucinations and delusions in making a diagnosis of a psychotic illness, their differentiation from developmentally normal fantasy is essential. When children are imagining, they control the fantasy and do not have the perceptual experience of seeing and hearing. When children are hallucinating, they do not control the hallucination. Almost two thirds of children will endorse at least one psychotic-like experience, most often a hallucination. When not persistent or accompanied by distress, these experiences are not usually a cause for concern. The largest population-based study to date evaluating psychotic symptoms and neurocognition in youth 11-21 years old found that those who endorsed more psychotic-like experiences than is typical for their age had reduced accuracy across neurocognitive domains, reduced global functioning, and increased risk of depression, anxiety, behavioral disorders, substance use, and suicidal ideation. Thus psychotic-like symptoms that are frequent, distressing, and cause impairment signal a need for further evaluation and monitoring; however, only a small minority of these children will develop persisting psychotic illnesses.

47.1 Schizophrenia Spectrum Disorders

Jennifer A. Zaspel and Rosa K. Kim

Schizophrenia spectrum and other psychotic disorders as described in the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-5) include brief psychotic disorder, schizophreniform disorder, schizophrenia, schizoaffective disorder, substance/medication-induced psychotic disorder, psychotic disorder caused by another medical condition, catatonia associated with another mental disorder, catatonic disorder due to another medical condition, unspecified catatonia, delusional disorder, schizotypal personality disorder, and other specified/unspecified schizophrenia spectrum and other psychotic disorders.

DESCRIPTION

The **schizophrenia spectrum** and other psychotic disorders are primarily characterized by the presence of symptoms of psychosis, specifically delusions, hallucinations, disorganized speech, or grossly disorganized or catatonic behavior, and negative symptoms. **Brief psychotic disorder** is characterized by the duration of one or more of these symptoms for at least 1 day but less than 1 month followed by complete resolution. Emergence of symptoms may or may not be preceded by an identifiable stressor (Table 47.1). Although brief, the level of impairment in this disorder may be severe enough that supervision is required to ensure that basic needs are met and that the individual is protected from the consequences of poor judgment and cognitive impairment.

If two or more psychotic symptoms persist for between 1 and 6 months, the condition is called **schizophreniform disorder** (Table 47.2). To meet DSM-5 criteria for **schizophrenia**, two or more psychotic symptoms must have been present for a significant portion of time for at least 1 month (unless suppressed by treatment), and the level of psychosocial functioning must either be markedly below the level achieved before the onset or there is failure to achieve the expected level of functioning. In addition, there must be continuous signs of the disturbance for at least 6 months (Table 47.3).

Individuals with schizophrenia can display inappropriate affect, dysphoric mood, disturbed sleep patterns, and lack of interest in eating, or food refusal. Depersonalization, derealization, somatic concerns, and anxiety and phobias are common. Cognitive deficits are observed, including decrements in declarative memory, working memory, language function, and other executive functions, as well as slower processing speed. These individuals may have no

Table 47.1 DSM-5 Diagnostic Criteria for Brief Psychotic Disorder

A. Presence of one (or more) of the following symptoms. At least one of these must be (1), (2), or (3):
   1. Delusions
   2. Hallucinations
   3. Disorganized speech (e.g., frequent derailment or incoherence)
   4. Grossly disorganized or catatonic behavior

Note: Do not include a symptom if it is a culturally sanctioned response.

B. Duration of an episode of the disturbance is at least 1 day but less than 1 mo, with eventual full return to premorbid level of functioning.

C. The disturbance is not better explained by major depressive or bipolar disorder with psychotic features or another psychotic disorder such as schizophrenia or catatonia, and is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.

Specify if:

With marked stressor(s) (brief reactive psychosis): If symptoms occur in response to events that, singly or together, would be markedly stressful to almost anyone in similar circumstances in the individual's culture.

Without marked stressor(s): If the symptoms do not occur in response to events that, singly or together, would be markedly stressful to almost anyone in similar circumstances in the individual's culture.

With postpartum onset: If onset is during pregnancy or within 4 wk postpartum.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p 94. Copyright 2013. American Psychiatric Association.

Table 47.2 DSM-5 Diagnostic Criteria for Schizophreniform Disorder

A. Two (or more) of the following, each present for a significant portion of time during a 1 mo period (or less if successfully treated). At least one of these must be (1), (2), or (3):
   1. Delusions
   2. Hallucinations
   3. Disorganized speech (e.g., frequent derailment or incoherence)
   4. Grossly disorganized or catatonic behavior
   5. Negative symptoms (i.e., diminished emotional expression or avolition)

B. An episode of the disorder lasts at least 1 mo but less than 6 mo. When the diagnosis must be made without waiting for recovery, it should qualified as "provisional."

C. Schizoaffective disorder and depressive or bipolar disorder with psychotic features have been ruled out because either (1) no major depressive or manic episodes have occurred concurrently with the active-phase symptoms or (2) if mood episodes have occurred during active-phase symptoms, they have been present for a minority of the total duration of the active and residual periods of the illness.

D. The disturbance is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.

Specify if:

With good prognostic features: This specifier requires the presence of at least two of the following features: onset of prominent psychotic symptoms within 4 wk of the first noticeable change in usual behavior or functioning; confusion or perplexity; good premorbid social and occupational functioning; and absence of blunted or flat affect.

Without good prognostic features: This specifier is applied if two or more of the previous features have not been present.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. pp 96–97. Copyright 2013. American Psychiatric Association.

Table 47.3 DSM-5 Diagnostic Criteria for Schizophrenia

A. Two (or more) of the following, each present for a significant portion of time during a 1 mo period (or less if successfully treated). At least one of these must be (1), (2), or (3):
   1. Delusions
   2. Hallucinations
   3. Disorganized speech (e.g., frequent derailment or incoherence)
   4. Grossly disorganized or catatonic behavior
   5. Negative symptoms (i.e., diminished emotional expression or avolition)

B. For a significant portion of the time since the onset of the disturbance, level of functioning in one or more major areas, such as work, interpersonal relations, or self-care, is markedly below the level achieved before the onset (or when the onset is in childhood or adolescence, there is failure to achieve expected level of interpersonal, academic, or occupational functioning).

C. Continuous signs of the disturbance persist for at least 6 mo. This 6 mo period must include at least 1 mo of symptoms (or less if successfully treated) that meet Criterion A (i.e., active-phase symptoms) and may include periods of prodromal or residual symptoms. During these prodromal or residual periods, the signs of the disturbance may be manifested by only negative symptoms or by two or more symptoms listed in Criterion A present in an attenuated form (e.g., odd beliefs, unusual perceptual experiences).

D. Schizoaffective disorder and depressive or bipolar disorder with psychotic features have been ruled out because either (1) no major depressive or manic episodes have occurred concurrently with the active-phase symptoms or (2) if mood episodes have occurred during active-phase symptoms, they have been present for a minority of the total duration of the active and residual periods of the illness.

E. The disturbance is not attributable to the physiologic effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.

F. If there is a history of autism spectrum disorder or a communication disorder of childhood onset, the additional diagnosis of schizophrenia is made only if prominent delusions or hallucinations, in addition to the other required symptoms of schizophrenia, are also present for at least a month (or less if successfully treated).

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. pp 99–100. Copyright 2013. American Psychiatric Association.

insight or awareness of their disorder, which is a predictor of nonadherence to treatment, higher relapse rates, and poorer prognosis. Hostility and aggression can be associated with schizophrenia, although spontaneous or random assault is uncommon. Aggression is more frequent for younger males and for individuals with a history of violence, nonadherence with treatment, substance abuse, and impulsivity.

The essential features of schizophrenia are the same in childhood as in adulthood, but it is more difficult to make the diagnosis. In children, delusions and hallucinations may be less elaborate, visual hallucinations may be more common, and disorganized speech may be better attributed to an autism spectrum or communication disorder. In youth with schizophrenia, the most frequent psychotic symptoms are auditory hallucinations (82%), delusions (78%), thought disorder (66%), disorganized or bizarre behavior (53%), and negative symptoms (50%). Childhood-onset schizophrenia tends to represent a more severe form of the disorder spectrum, with more genetic risk factors, more brain abnormalities, and more prominent prepsychotic developmental disorders.

EPIDEMIOLOGY

Brief psychotic disorder is reported to account for 9% of first-onset psychosis in the United States and is more common in females than males. The incidence of schizophreniform disorders in the United States appears as much as fivefold less than that of schizophrenia. The lifetime prevalence of schizophrenia is approximately 0.3–0.7%, although variations are reported by race/ethnicity, across countries, and by geographic origin for immigrants. The male-to-female ratio is approximately 1.4:1. Males generally have poorer premorbid adjustment, lower educational achievement, more prominent negative symptoms, and more cognitive impairment than females. Childhood (preadolescent)-onset is exceedingly rare, with an incidence of less than 0.04%, and 2:1 ratio in males versus females.

CLINICAL COURSE

Brief psychotic disorder most often appears in adolescence or early adulthood, with the average age of onset in the mid-30s but can occur throughout the life span. A diagnosis of brief psychotic disorder requires *full remission* within 1 month of onset and gradual return to premorbid level of function. The age of onset of schizophreniform disorder is similar to that of schizophrenia. Recovery from an episode of the disorder is within 6 months; however, about 65% of patients relapse and eventually receive a diagnosis of schizophrenia or schizoaffective disorder. Abrupt onset, confusion, absence of blunted affect, and good premorbid functioning predict a better outcome in schizophreniform disorder.

Schizophrenia typically develops between the late teens and the mid-30s; onset before adolescence is rare. The peak age at onset for the first psychotic episode is in the early to mid-20s for males and in the late 20s for females. The onset may be abrupt or insidious, but most individuals manifest a slow and gradual development of symptoms, with about 50% of individuals complaining of depressive symptoms. The predictors of course and outcome are largely unexplained. The course is favorable in approximately 20% of cases; a small number of individuals are reported to recover completely. However, many remain chronically ill, with exacerbations and remissions of active symptoms, whereas others experience

progressive deterioration. Most individuals diagnosed with schizophrenia require some form of daily living support. Positive symptoms tend to diminish over time, and negative symptoms are the most persistent, along with cognitive deficits.

It is important to recognize hallmark phases in the assessment and management of schizophrenia. In the **prodrome phase**, most patients experience functional deterioration over the course of months (e.g., social withdrawal, idiosyncratic preoccupations, unusual behaviors, academic failure, deteriorating self-care skills, and/or dysphoria) before the onset of overt psychotic symptoms. The **acute phase** is characterized by prominent positive symptoms and deterioration in functioning and is the phase in which most patients present for care. During the **recovery phase**, negative symptoms and disorganization may persist as active psychosis remits. The **residual phase** has minimal to no positive symptoms, although negative symptoms may cause continued impairment. Some patients will experience **chronic impairment** despite adequate treatment.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis for the psychotic disorders is broad and includes reactions to substances/medications (dextromethorphan, LSD, hallucinogenic mushrooms, psilocybin, peyote, cannabis, stimulants, inhalants, corticosteroids, anesthetics, anticholinergics, antihistamines, amphetamines); medical conditions causing psychotic-like symptoms (Table 47.4; see Table 32.4); and other psychiatric disorders (depressive, bipolar, obsessive-compulsive, factitious, body dysmorphic, posttraumatic stress, autism spectrum, communication, personality). The differential diagnosis can be difficult because many conditions that can be mistaken for psychosis also increase the risk for it.

There are many indications that suggest psychotic symptoms may be related to a physical illness rather than a primarily psychiatric illness (Table 47.5). When psychotic symptoms are caused by identifiable medical conditions, there are often impairments in attention, orientation, recent memory, and intellectual function. Hallucinations associated with medical illness are more often tactile or visual, whereas auditory hallucinations are more common in primary psychotic disorders. Patients whose hallucinations are caused by medical illness are more likely to recognize that they do represent reality. A positive family or prior personal history of psychosis or other serious psychiatric illnesses is less likely to be present.

Autoimmune encephalitis caused by anti–*N*-methyl-D-aspartate (NMDA) receptor or other autoantibodies may manifest with psychosis, anxiety, depression, agitation, aggression, delusions, catatonia, visual or auditory hallucinations, disorientation, and paranoia in combination with sleep disturbances, autonomic dysfunction, dyskinesias, movement disorders, seizures, memory loss, and a depressed level of consciousness (Fig. 47.1; see Table 32.5). The cerebrospinal fluid (CSF) and MRI are usually, but not always, abnormal. The constellation of a relatively rapid onset psychosis and encephalitic features should suggest the diagnosis, although at presentation, behavioral problems may be the dominant feature (see Chapter 638.4; Table 47.6). A small number of patients present with purely psychiatric symptoms without other neurologic findings.

Determining when identifiable medical conditions are causing delirium with prominent psychotic symptoms may be difficult

Table 47.4 Possible Causes of Secondary Psychosis

	EXAMPLES	INVESTIGATIONS
Trauma	Traumatic head injury	CT, MRI
Autoimmune disorders	Systemic lupus erythematosus, NMDA receptor encephalitis and others	Autoantibody titers
Cytogenetic/congenital disorders	Velocardiofacial syndrome, agenesis of corpus callosum	Karyotyping, MRI
Toxic/substance-induced disorders	PCP, MDMA, LSD, cannabis, alcohol, cocaine, synthetic cannabinoids (bath salts) Lead, mercury or arsenic poisoning, ginseng, St. John's Wort, ma huang	Careful medication history; urine screen for drugs, heavy metal screen; trial off the offending agent
Iatrogenic disorders	Antimalarials, steroids, isoniazid	Careful medication history; trial off the offending agent
Cerebrovascular disorders	Stroke, subdural hematomas	CT, MRI
Space-occupying disorders	Cerebral tumors	CT, MRI
Metabolic disorders	Pheochromocytoma, metachromatic leukodystrophy, Wilson disease, adult Tay-Sachs disease, acute intermittent porphyria	Urinary catecholamines; arylsulfatase-A levels, copper and ceruloplasmin levels
Dietary disorders	Pellagra, B_{12} deficiency; thiamine deficiency	B_{12}, folate, thiamine levels
Sepsis/infectious disorders	Neurosyphilis, toxoplasmosis, HIV disease, encephalitis	RPR to rule out syphilis; HIV antibody titers; glucose, protein in CSF
Unknown cause/degenerative/demyelinating disorders	Lewy body dementia, Parkinson disease, Huntington disease, multiple sclerosis, Friedreich ataxia	MRI, CT, EEG, evoked potentials
Seizure disorders	Partial complex seizures, temporal lobe epilepsy	EEG, including sleep deprivation; telemetric EEG as indicated
Endocrine disorders	Hyperthyroidism, hypothyroidism, hyperparathyroidism	Serum calcium, thyroid/parathyroid hormone levels

CSF, Cerebrospinal fluid; EEG, electroencephalography; LSD, lysergic acid diethylamide; MDMA, 3,4-methylenedioxy-*N*-methylamphetamine; NMDA, *N*-methyl-D-aspartate; PCP, phencyclidine; RPR, rapid plasma reagin.

Modified from Keshavan MS, Kaneko Y. Secondary psychoses: An update. *World Psychiatry*. 2013;12(1):4–15:Table 1, p 5.

Table 47.5 Red Flags and Features Suggesting Secondary Etiologies of Psychosis

ATYPICAL FEATURES
- Normal before event
- Very early (≤13 yr) age of onset
- Acute or subacute onset (days, ≤1 mo)
- Catatonia
- Dyskinesias
- Isolated misidentification delusion (Capgras syndrome)
- Depressed level of consciousness; disorientation; somnolence
- Cognitive and recent memory decline
- Poor orientation
- Intractability despite adequate therapy
- Rapidly progressive and/or fluctuating (polymorphic) symptoms
- Multimodal hallucinations: visual, auditory, olfactory, gustatory
- Poor response to antipsychotics

HISTORY
- Infectious prodrome (fever)
- New or worsening headache; change in headache pattern
- Paresthesias
- Past, current substance misuse
- Recent onset incontinence
- Anorexia/weight loss
- Risk factors for cerebrovascular disease or central nervous system infections
- Malignancy
- Immunocompromised status
- Head trauma
- Seizures
- Hepatobiliary disorders
- Systemic lupus erythematosus/other autoimmune diseases
- Biologic relatives with similar medical complaints
- Aphasia, mutism, dysarthria

PHYSICAL EXAMINATION
- Autonomic hyperactivity: tachycardia, hypertension, mydriasis, sleep disturbance
- Incoordination, or gait difficulty; nystagmus
- Toxidrome
- Abnormal neurologic exam: upper and lower motor neuron focal findings
- Movement disorder
- Neuroendocrine changes

DIAGNOSTIC ABNORMALITIES
- Abnormal electroencephalogram (extreme delta brush, diffuse slowing)
- Abnormal cerebrospinal fluid (pleocytosis: greater than 5 lymphocytes)
- Positive urine toxicology
- Screening laboratory tests including *N*-methyl-D-aspartate receptor and other antibodies
- Abnormal neuroimaging studies (unilateral or bilateral hippocampal/medial temporal lobe hyperdensities: limbic encephalitis)
- Hyponatremia

Modified from Kliegman RM, Toth H, Bordini BJ, Basel D, eds. *Nelson Pediatric Symptom-Based Diagnosis*. 2nd ed. Elsevier, 2023: Table 31.9, p 526

and is more fully explored in Chapter 48. In general, **delirium** is hallmarked by fluctuating levels of consciousness and is often associated with abnormalities in the neurologic exam and vital signs. Psychosis may be present in patients with delirium, but it will be accompanied by clear signs and symptoms of physical illness.

The diagnosis of a psychotic disorder should be made only after other explanations for the observed symptoms have been thoroughly considered. Mistakenly diagnosing psychosis when it is not present can lead to inappropriate use of antipsychotics with their attendant risks. The persistence, frequency, and form of possible psychotic symptoms, as well as the degree of accompanying distress and functional regression, need to be considered in determining the likelihood of an underlying psychotic pathophysiology.

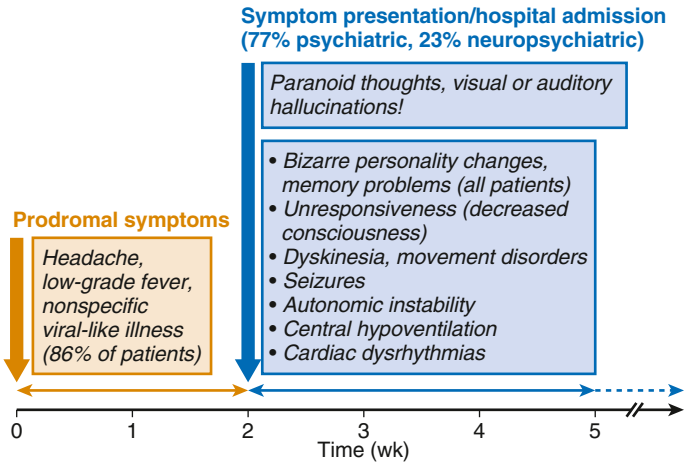

Fig. 47.1 Clinical characteristics of patients with anti–NMDA-receptor encephalitis. (*Modified from Wandinger KP, Saschenbrecker S, Stoecker W, Dalmau J. Anti-NMDA-receptor encephalitis: A severe, multistage, treatable disorder presenting with psychosis. J Neuroimmunol. 2011;231:86–91. Fig 2.*)

Table 47.6 Proposed Diagnostic Criteria for Autoimmune Psychosis

For a diagnosis of possible autoimmune psychosis:

The patient must have current psychotic symptoms of abrupt onset (rapid progression of <3 months) with at least one of the following:
- Currently or recently diagnosed with a tumor
- Movement disorder (catatonia or dyskinesia)
- Adverse response to antipsychotics, raising suspicion of neuroleptic malignant syndrome (rigidity, hyperthermia, or raised creatine kinase)
- Severe or disproportionate cognitive dysfunction
- A decreased level of consciousness
- The occurrence of seizures that are not explained by a previously known seizure disorder
- A clinically significant autonomic dysfunction (abnormal or unexpectedly fluctuant blood pressure, temperature, or heart rate)

If a patient has possible autoimmune psychosis, they should be investigated as per section 5 ("Consensus multimodal approach to the systematic investigation of patients with suspected autoimmune psychosis"), including electroencephalography, MRI, serum autoantibodies, and CSF analysis (including CSF autoantibodies). The results should lead to a diagnosis of non-autoimmune psychosis or probable/definite autoimmune psychosis.

For a diagnosis of probable autoimmune psychosis:

The patient must have current psychotic symptoms of abrupt onset (rapid progression of <3 mo) with at least one of the seven clinical criteria listed previously for possible autoimmune psychosis and at least one of the following:
- CSF pleocytosis of >5 white blood cells/μL
- Bilateral brain abnormalities on T2 weighted fluid-attenuated inversion recovery MRI highly restricted to the medial temporal lobes

Or two of the following:
- Electroencephalogram encephalopathic changes (i.e., spikes, spike-wave activity, or rhythmic slowing [intermittent rhythmic delta or theta activity] focal changes, or extreme delta brush
- CSF oligoclonal bands or increased IgG index
- The presence of a serum antineuronal antibody detected by cell-based assay

After exclusion of alternative diagnoses.

For a diagnosis of definite autoimmune psychosis:

The patient must meet the criteria for probable autoimmune psychosis with IgG class antineuronal antibodies in CSF.

Note that these criteria do not exclude a diagnosis being made in a patient with an acute onset (<3 mo) of psychosis, even if that patient has had a previous psychotic, other psychiatric, or encephalopathic episode that resolved.

From Pollak TA, Lennox BR, Müller S, et al. Autoimmune psychosis: an international consensus on an approach to the diagnosis and management of psychosis of suspected autoimmune origin [published correction appears in *Lancet Psychiatry*. 2019 Dec;6(12):e31]. *Lancet Psychiatry*. 2020;7(1):93–108: Panel 1, p 100.

COMORBIDITY

Among youth with schizophrenia, rates of comorbidity are approximately 34% for posttraumatic stress disorder, 34% for attention-deficit/hyperactivity and/or disruptive behavior disorders, and 32% for substance abuse/dependence. At least 10–20% of children diagnosed with schizophrenia have intellectual delays; it is unclear if this is related to the impact of the illness on cognitive testing. Children with schizophrenia also demonstrate impairments in language, communication, and information processing. Co-occurring *rates* of schizophrenia and autism spectrum disorder (ASD) are higher than would be expected in general populations; childhood-onset schizophrenia has been linked to ASD, with an estimated 30–50% of cases preceded by a diagnosis of an ASD.

SEQUELAE

Follow-up studies of early-onset schizophrenia suggest moderate to severe impairment across the life span. Poor outcome is predicted by low premorbid functioning, insidious onset, higher rates of negative symptoms, childhood onset, and low intellectual functioning. When followed into adulthood, youth with schizophrenia demonstrated greater social deficits, lower levels of employment, and lower likelihood of independent living, relative to those with other childhood psychotic disorders.

Approximately 5–10% of individuals with schizophrenia die by suicide or accidental death directly related to behaviors caused by psychotic thinking, approximately 20% attempt suicide on one or more occasions, and many more have suicidal ideation. Life expectancy is reduced in individuals with schizophrenia because of associated medical conditions; a shared vulnerability for psychosis and medical disorders may explain some of the medical comorbidity of schizophrenia.

ETIOLOGY AND RISK FACTORS

Etiologic evidence for schizophrenia supports a neurodevelopmental and neurodegenerative model, with multiple genetic and environmental risks having important roles. It has been hypothesized that although psychotic disorders have their origins in early development, it is not until youth are in their mid-teens that the underlying neural structures manifest the disabling functional deficits and resultant psychotic symptoms.

Genetic Factors

The lifetime risk of developing schizophrenia is 5-20 times higher in first-degree relatives of affected probands than the general population. Concordance rates of 40–60% and 5–15% have been reported in monozygotic and dizygotic twins, respectively. Genome-wide association studies have implicated variants in >100 different genes that are statistically significant but individually only demonstrate small increases in the risk for schizophrenia. The risk for schizophrenia increases with increasing burden of these risk alleles; approximately 30% of the risk is attributable to common genetic variants. Rare variants of larger effect have also been implicated as increasing risk. Some rare copy number variants, where segments of the genome encompassing many genes are either duplicated or deleted, increase the risk of schizophrenia more markedly, with odds ratios of 2-25. Although these copy number variants may be responsible for 0.5–1.0% of typical adolescent/adult-onset schizophrenia, data indicate that they are responsible for about 12% of schizophrenia cases with onset before age 13 years.

Environmental Factors

In utero exposure to maternal famine, advanced paternal age, prenatal infections, obstetric complications, marijuana use, and immigration have been hypothesized to contribute to the development of schizophrenia. Cannabis use in teens is associated with a higher risk of eventually developing psychosis, but it is difficult to determine whether this is related to drug effects or an unmasking of underlying disease potential. Environmental exposures may mediate disease risk through direct neurologic damage, gene-environment interactions, epigenetic effects, or de novo mutations. There is no evidence that psychologic or social factors alone cause schizophrenia. Rather, environmental factors potentially interact with biologic risk factors to mediate the timing of onset, course, and severity of an acute episode. Expressed emotion within the family setting can influence the onset and exacerbation of acute episodes and relapse rates.

NEUROANATOMIC ABNORMALITIES

Increased lateral ventricle volumes, along with reductions in hippocampus, thalamus, and frontal lobe volumes, have been reported in schizophrenia. Youth with schizophrenia have reductions in gray matter volumes and reduced cortical folding. Neurotransmitter systems, particularly central nervous system dopamine circuits, are hypothesized to have a key role in the pathophysiology of schizophrenia. The dopamine hypothesis is derived in part from the identification of D_2 receptor blockade as the mechanism for the action of antipsychotic medications. On neurologic exam, those with schizophrenia are often found to have deficits in smooth-pursuit eye movements and autonomic responsivity.

PREVENTION

There has been significant interest in prospectively identifying youth at risk for schizophrenia spectrum and other psychotic disorders to provide early intervention before the development of a chronic psychotic disorder. Those considered to be at clinically high risk may express a variety of unusual or odd beliefs. They may have unusual perceptual experiences, including frank hallucinations, but retain insight into their unreality. Their speech and behavior may be unusual, but not overtly disorganized. Individuals who had been socially active may become withdrawn. The symptoms are described as present at least once per week for the past month and have begun or worsened over the past year. Although the symptoms are less severe and more transient than in a psychotic disorder, 20–40% of patients with these attenuated symptoms appear to go on to a psychotic disorder within several years of symptom presentation. There is evidence that premorbid lower cognitive and social skills as well as a history of substance abuse contribute to the risk of developing a schizophrenia spectrum disorder.

Some evidence indicates that antipsychotic medication may delay conversion to a psychotic disorder and ameliorate attenuated symptoms in active treatment, yet there appear to be no lasting effects after the medication is withdrawn. Additionally, the known adverse effects of antipsychotics argue against their being used broadly to prevent psychosis in these patients, given that about 65% do not go on to develop a psychotic disorder.

Antidepressants have been associated with symptomatic improvement in adolescents who are at risk of developing a schizophrenia spectrum disorder. Psychologic interventions, including social skills, cognitive, and interaction training programs, as well as educational family interventions and cognitive-behavioral therapy (CBT), are reported to improve symptoms and psychosocial functioning in youth with early symptoms and decrease the rate of conversion to psychosis.

Despite improvements in diagnostic predictive validity, significant concern remains regarding a high false-positive rate that may cause individuals to be stigmatized or exposed to unnecessary treatment. In this context, youth with early symptoms suggestive of psychosis should be referred to a child and adolescent psychiatrist or other qualified mental health specialist.

SCREENING

There are no validated tools for screening for schizophrenia spectrum disorders in children or adolescents. A widely accepted premorbid phenotype for childhood-onset schizophrenia has yet to be established.

Of children with childhood-onset schizophrenia, 67% show disturbances in social, motor, and language functioning, as well as learning disabilities. Many meet criteria for comorbid ASDs, mood disorders, and anxiety disorders.

Pediatric practitioners can make general inquiries of youth and their parents regarding problems with thinking or perceptions, including hallucinations and delusions. For younger children, the clinician must ensure that the child understands the questions. True psychotic symptoms are generally confusing to the individual. Highly descriptive, detailed, organized, and situation-specific reports are less likely to represent true psychosis. Overt evidence of psychosis is not always present on mental status examination, but in the absence of this, the validity of symptom reports should be scrutinized. Given the strong genetic component of schizophrenia spectrum disorders, a thorough family history is key in supporting the workup of psychosis in children. Youth presenting with possible psychosis warrant assessment and treatment by a child and adolescent psychiatrist or other qualified mental health specialist.

ASSESSMENT

The diagnostic assessment of schizophrenia in youth is uniquely complicated; misdiagnosis is common. Most children who report hallucinations do not meet criteria for schizophrenia, and many do not have a psychotic illness. The persistence, frequency, and form of possible psychotic symptoms; the presence of distress; functional impairment; and insight need to be considered in arriving at a diagnosis. Expertise in childhood psychopathology and experience in assessing reports of psychotic symptoms in youth are important prerequisite skills for clinicians evaluating youth for psychosis. Comprehensive diagnostic assessments, which reconcile mental status findings with the rigorous application of diagnostic criteria, help improve accuracy.

All children who present with psychotic symptoms should receive a thorough pediatric and neurologic evaluation to focus on ruling out nonpsychiatric causes of psychosis (see Tables 47.4 and 32.4). There is no neuroimaging or laboratory test that establishes a diagnosis of schizophrenia spectrum disorders; these diagnostic tests are instead used to further assist with the medical evaluation while also establishing baseline laboratory parameters for monitoring medication therapy. Routine laboratory testing typically includes blood counts; basic metabolic panel; and assessment of liver, renal, and thyroid function. More extensive evaluation is indicated for atypical presentations, such as a gross deterioration in cognitive and motor abilities, focal neurologic symptoms, or delirium (see Table 47.5). Neuroimaging may be indicated when neurologic deficits are present, or EEG may be indicated for a clinical history suggestive of seizures or encephalopathy. Toxicology screens are indicated for acute onset or exacerbations of psychosis when exposure to drugs of abuse cannot be ruled out. Genetic testing is indicated if there are associated dysmorphic or syndromic features. Tests to rule out specific syndromes or diseases are indicated for clinical presentations suggestive of a specific syndrome (e.g., amino acid screens for inborn errors of metabolism, ceruloplasmin for Wilson disease, porphobilinogen for acute intermittent porphyria, neuronal antibodies for autoimmune encephalitis). Neuropsychologic testing cannot establish the diagnosis but may be important for documenting cognitive deficits for academic planning.

TREATMENT

Treatment goals include decreasing psychotic symptomatology, directing the child toward a developmentally typical trajectory, and reintegrating the child into the home and community. Children and families facing schizophrenia spectrum disorders require an array of mental health services to address their psychologic, social, educational, and cultural needs. Given the insidious onset and chronic course of these disorders, the patient must be followed longitudinally, with periodic reassessment to hone diagnostic accuracy and tailor services to meet the patient's and family's needs. Integrated psychopharmacologic, psychotherapeutic, psychoeducational, and case management services are often necessary.

Psychoeducation about the illness with an assessment of the potential role of stigma in treatment participation is critical for improving adherence with treatment recommendations. Assessing a child's strengths and vulnerabilities as well as available environmental resources is critical in devising an effective treatment plan. School and community liaison work to develop and maintain a day-to-day schedule for the patient is important. Specialized educational programs should be considered within the school system. Cognitive remediation has led to some promising gains in planning ability and cognitive flexibility. Effective and collaborative communication among the family, the pediatrician, a child and adolescent psychiatrist, and other mental health providers increases the potential for the patient's optimal functioning.

Pharmacotherapy

First-generation (typical) and second-generation (atypical) antipsychotic medications are effective in reducing psychotic symptoms. Antipsychotics appear to outperform placebo and to have approximately equal effectiveness, except for ziprasidone and clozapine, which may be less and more effective than the others, respectively. Risperidone, aripiprazole, quetiapine, olanzapine, and lurasidone are FDA-approved second-generation antipsychotics for treating schizophrenia in patients 13 years and older, and paliperidone for those 12 years and older. Several first-generation antipsychotics are also FDA-approved for children and adolescents. The choice of which agent to use first is typically based on FDA approval status, side effect profile, patient and family preference, clinician familiarity, and cost. Although clozapine is effective in treating both positive and negative symptoms, it has a risk for agranulocytosis and seizures, which limits its use to those patients with *treatment-resistant* disorders. Ziprasidone and paliperidone are associated with QT prolongation; this finding along with the inferior effectiveness of ziprasidone limits its use with children and adolescents. All antipsychotics carry some degree of risk of sedation, weight gain, and extrapyramidal symptoms (see Chapter 33).

Most patients require long-term treatment and are at significant risk of relapse if their medication is discontinued. However, more than 75% of youth with schizophrenia discontinue their medication within 6 months. Common reasons for discontinuation include lack of efficacy, intolerable side effects, and general lack of adherence with treatment plan. Many patients will continue to experience some degree of positive or negative symptoms, requiring ongoing treatment. Patients should maintain regular physician contact to monitor symptom course, side effects, and adherence. Depot or long-acting injectable antipsychotics have not been studied well in pediatric age groups and have inherent risks with long-term exposure to adverse side effects. They are typically only considered when there is a well-documented history of psychotic symptoms as well as poor medication adherence.

Electroconvulsive Therapy

Electroconvulsive therapy (ECT) may be used with severely impaired adolescents if medications are either not helpful or cannot be tolerated. It has not been systematically studied in children, but its use is supported in adults with schizophrenia, typically in combination with antipsychotic therapy.

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47.2 Non-Schizophrenia Spectrum Psychotic Disorders

Jennifer A. Zaspel and Rosa K. Kim

Beyond the schizophrenia spectrum of psychotic disorders, substance/medication-induced psychotic disorder (Table 47.7) and psychotic disorder due to another medical condition (Table 47.8) can be seen in pediatric populations.

The hallmark features of **substance/medication-induced psychosis** are delusions and hallucinations that develop within the context of substance exposure: typically a drug of abuse, a medication, or a toxin exposure (see Tables 47.4 and 32.4 for a brief list). Synthetic cannabinoids (bath salts) are a common drug producing psychotic effects. A substance-induced psychosis is distinguished from a primary psychotic disorder by examining the onset and course of symptoms; the onset of a primary psychosis may precede substance exposure and may occur during periods of sustained abstinence. Once they arise, psychotic symptoms may be present as long as substance exposure is continued. Although the prevalence of substance/medication-induced psychotic disorder in the general population is unknown, it is estimated that 7–25% of individuals presenting with a first episode of psychosis meet criteria for this diagnosis. Symptoms can be managed with antipsychotics until they remit, which often happens shortly after the offending substance is removed. Patients can develop a schizophrenia spectrum disorder following substance exposure, but this tends to occur in individuals who are at high risk for developing a primary psychotic disorder regardless of substance exposure.

Psychosis due to **another medical condition** (see Table 47.8) is also characterized by prominent hallucinations or delusions, but history, physical exam, and laboratory findings support a direct pathophysiologic connection between these symptoms and another medical condition (see Tables 32.4, 47.4, 47.5, and 47.8). Any sensory modality can be affected by hallucinations. The hallucinations vary in complexity depending on their etiology, and their description may be highly suggestive of a particular diagnosis, like olfactory hallucinations in temporal lobe epilepsy. Associations between delusions and medical conditions tend to be less specific. The list of medical conditions that can cause psychosis is long, and includes epilepsy, strokes, neoplasms, endocrine disorders, genetic syndromes like velocardiofacial syndrome, autoimmune disorders, and the permanent sequelae of toxic exposures (see Tables 32.4 and 47.4). Notably, delirium is excluded from psychosis due to another medical condition. When narrowing the differential between schizophrenia spectrum disorders, psychosis due to another medical condition, and any other etiology, it is important to consider the timeline of symptoms, the presence of features that are atypical for a primary psychosis, and the possibility of substance or medication exposure. Treatment of the underlying medical condition may or may not require adjunctive antipsychotic treatment for management of psychosis, and the course and prognosis of the psychosis will likely depend on the etiology.

A notable example of psychosis due to another medical condition is **psychosis associated with epilepsy.** The disorder manifests with delusions or hallucinations associated with poor insight, and can be further differentiated into ictal, interictal, and postictal psychosis. Ictal-induced psychosis is a form of **nonconvulsive status epilepticus**, usually a complex partial status that can last for hours to days and is associated with periods of impaired consciousness. Brief interictal psychosis can last days to weeks and is associated with paranoia, delusions, and auditory hallucinations. Chronic interictal psychosis resembles schizophrenia and manifests with paranoia, visual hallucinations, and catatonia. Postictal psychosis is the most common type (observed in 2–7% of patients with epilepsy) and lasts up to 1 week and then spontaneously remits. The diagnosis requires a strong index of suspicion and EEG monitoring. Treatment requires appropriate anticonvulsant drugs and, if the psychosis persists, initiating low-dose antipsychotic medication.

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Table 47.7 DSM-5 Diagnostic Criteria for Substance/Medication Induced Psychotic Disorder

A. Presence of one or both of the following symptoms:
   1. Delusions
   2. Hallucinations
B. There is evidence from the history, physical examination, or laboratory findings of both (1) and (2):
   1. The symptoms of Criterion A developed during or soon after substance intoxication or withdrawal or after exposure to a medication.
   2. The involved substance/medication is capable of producing the symptoms in Criterion A.
C. The disturbance is not better explained by a psychotic disorder that is not substance/medication induced.
D. The disturbance does not occur exclusively during the course of a delirium.
E. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify if:

With onset during intoxication: If the criteria are met for intoxication with the substance and the symptoms develop during intoxication.

With onset during withdrawal: If the criteria are met for withdrawal from the substance and the symptoms develop during, or shortly after, withdrawal.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp 110–115. Copyright 2013. American Psychiatric Association. .

Table 47.8 DSM-5 Diagnostic Criteria for Psychotic Disorder Due to Another Medical Condition

A. Prominent hallucinations or delusions.
B. There is evidence from the history, physical examination, or laboratory findings that the disturbance is the direct pathophysiologic consequence of another medical condition.
C. The disturbance is not better explained by another mental disorder.
D. The disturbance does not occur exclusively during the course of a delirium.
E. The disturbance causes clinically significant distress or impairment in social, occupational, or other important areas of functioning.

Specify whether:

With delusions: If delusions are the predominant symptom.

With hallucinations: If hallucinations are the predominant symptom.

From the *Diagnostic and Statistical Manual of Mental Disorders,* 5th ed. pp 115–116. Copyright 2013. American Psychiatric Association. .

47.3 Catatonia in Children and Adolescents

Jennifer A. Zaspel and Rosa K. Kim

Catatonia is a constellation or syndrome of psychomotor features, the most notable of which are decreased purposeful motor activity, decreased engagement in interviews and physical exams, or excessive and peculiar motor activity. The most characteristic symptoms are waxy flexibility and bizarre poses, but these may or may not be present (Table 47.9). Diagnosis can be challenging, as psychomotor disturbances can range from unresponsiveness to agitation. Catatonia has been associated with a broad array of conditions affecting children, adolescents, and adults, including psychotic, affective, drug-related, autoimmune, encephalitic, and neurodevelopmental conditions (Table 47.10). Autoimmune encephalitis may be the most common etiology in childhood. In addition, catatonia *(autism shut down syndrome)* may complicate ASD (Chapter 58).

Table 47.9 Catatonia

Excitement: Extreme hyperactivity; constant motor unrest, which is apparently nonpurposeful
Immobility/stupor: Extreme hypoactivity, immobility; minimally responsive to stimuli
Mutism: Verbally unresponsive or minimally responsive
Staring: Fixed gaze, little or no visual scanning of environment, decreased blinking
Posturing/catalepsy: Maintains posture(s), including mundane (e.g., sitting or standing for hours without reacting)
Grimacing: Maintenance of odd facial expressions
Echopraxia/echolalia: Mimics of examiner's movements/speech
Stereotypy: Repetitive, non–goal-directed motor activity (e.g., finger play; repeatedly touching, patting, or rubbing self)
Mannerisms: Odd, purposeful movements (hopping or walking tiptoe, saluting passersby, exaggerated caricatures of mundane movements)
Verbigeration: Repetition of phrases or sentences
Rigidity: Maintenance of a rigid posture despite efforts to be moved
Negativism: Apparently motiveless resistance to instructions or to attempts to move/examine the patient; contrary behavior does the opposite of the instruction
Waxy flexibility: During reposturing of the patient, offers initial resistance before allowing themselves to be repositioned (similar to that of bending a warm candle)
Withdrawal: Refusal to eat, drink, or make eye contact
Impulsivity: Suddenly engaging in inappropriate behavior (e.g., runs down the hallway, starts screaming, or takes off clothes) without provocation; afterward, cannot explain
Automatic obedience: Exaggerated cooperation with examiner's request, or repeated movements that are requested once
Passive obedience *(mitgehen)*: Raising arm in response to light pressure of finger, despite instructions to the contrary
Negativism *(gegenhalten)*: Resistance to passive movement that is proportional to strength of the stimulus; response seems automatic rather than willful
Ambitendency: Appears stuck in indecisive, hesitant motor movements
Grasp reflex: Striking the patient's open palm with two extended fingers of the examiner's hand results in automatic closure of the patient's hand
Perseveration: Repeatedly returns to the same topic or persists with the same movements
Combativeness: Belligerence or aggression, usually in an undirected manner, without explanation
Autonomic abnormality: Abnormality of body temperature (fever), blood pressure, pulse rate, respiratory rate, inappropriate sweating

From Dhossche DM, Wachtel LE. Catatonia is hidden in plain sight among different pediatric disorders: A review article. *Pediatr Neurol*. 2010;43:307–315.

Table 47.10 Conditions Associated with Catatonia

Psychotic Disorders
- Paranoid schizophrenia, catatonic schizophrenia, psychosis, autism, Prader-Willi syndrome, intellectual impairment

Mood Disorders
- Bipolar disorder: manic or mixed episodes

Major Depressive Disorder

Medical Conditions
- Hyper-hypothyroidism, euthyroid autoimmune thyroiditis, Addison disease, infections, electrolyte imbalances, pathogenic variants in *SCN2A* gene, systemic lupus erythematosus

Neurologic Conditions
- Epilepsy, strokes, traumatic brain injury, multiple sclerosis, infectious and autoimmune encephalitis, acute disseminated encephalomyelitis, neuromyelitis optica spectrum

Drugs
- Withdrawal: benzodiazepines, L-dopa, gabapentin
- Overdose: LSD, PCP, cocaine, MDMA (Ecstasy), disulfiram, levetiracetam

LSD, Lysergic acid; MDMA, 3,4-methylenedioxy-*N*-methylamphetamine; PCP, phencyclidine. Adapted from Weder ND, Muralee S, Penland H, Tampi RR. Catatonia: A review. *Ann Clin Psychiatry*. 2008;20(2):97–107:Table 2.

Table 47.11 DSM-5 Criteria for Catatonia Due to Another Medical Condition

A. The clinical picture is dominated by three (or more) of the following symptoms:
   1. Stupor (i.e., no psychomotor activity; not actively relating to environment).
   2. Catalepsy (i.e., passive induction of a posture held against gravity).
   3. Waxy flexibility (i.e., slight, even resistance to positioning by examiner).
   4. Mutism (i.e., no, or very little, verbal response [*Note:* not applicable if there is an established aphasia]).
   5. Negativism (i.e., opposing or not responding to instructions or external stimuli).
   6. Posturing (i.e., spontaneous and active maintenance of a posture against gravity).
   7. Mannerism (i.e., odd, circumstantial caricature of normal actions).
   8. Stereotypy (i.e., repetitive, abnormally frequent, non–goal-directed movements).
   9. Agitation, not influenced by external stimuli.
   10. Grimacing.
   11. Echolalia (i.e., mimicking another's speech).
   12. Echopraxia (i.e., mimicking another's movements).

B. There is evidence from the history, physical examination, or laboratory findings that the disturbance is the direct pathophysiologic consequence of another medical condition.
C. The disturbance is not better explained by another mental disorder (e.g., a manic episode).
D. The disturbance does not occur exclusively during the course of a delirium.
E. The disturbance causes clinically significant distress or impairment in social, occupational, or other areas of functioning.

Coding note: Include the name of the medical condition in the name of the mental disorder (e.g., F06.1 catatonic disorder due to hepatic encephalopathy). The other medical condition should be coded and listed separately immediately before the catatonic disorder due to the medical condition (e.g., K71.90 hepatic encephalopathy; F06.1 catatonic disorder due to hepatic encephalopathy)

Adapted from Weder ND, Muralee S, Penland H, Tampi RR. Catatonia: A review. *Ann Clin Psychiatry*. 2008;20(2):97–107:Table 2.

The exact pathophysiology of catatonia is unknown, but neuroanatomic, neuroendocrine, immunologic, and neurotransmitter-based theories have all been proposed based on the various underlying etiologies of catatonia. Morbidity and mortality are high in adults who have experienced catatonia and are presumed to be high in pediatric populations based on limited data primarily because of the severity of an underlying illness that could cause catatonia. Patients with schizophrenia spectrum disorders and catatonia tend to be more impaired than those who do not experience catatonia, and suicide rates are estimated to be 500-fold higher than in the general population.

Catatonia is defined as 3 or more of the 12 symptoms listed in Table 47.11 and can be described by both etiology and presentation. The DSM-5 broadly splits etiology into presentations related to mental disorders and presentations related to another medical condition, the diagnosis of which must be supported by the patient's history, physical exam, and any accompanying laboratory findings. Pediatric prevalence rates range from 0.6–17% in child psychiatric inpatients and up to 17% in medically hospitalized children, but rates are difficult to determine due to underdiagnosis of the condition. Catatonia can be further subdivided into three presentation categories: stuporous, excited, and malignant. **Stuporous** presentations are characterized by immobility, mutism, staring, and rigidity, whereas **excited** presentations include prolonged periods of psychomotor agitation. **Malignant catatonia** is an emergent condition, presenting with hyperthermia, hypertension, rhabdomyolysis, and psychomotor agitation in addition to the psychiatric and motor

Table 47.12 Standard Examination of Catatonia

The method described here is used to complete the 23-item Bush-Francis Catatonia Rating Scale (BFCRS) and the 14-item Bush-Francis Catatonia Screening Instrument (BFCSI). Item definitions on the two scales are the same. The BFCSI measures only the presence or absence of the first 14 signs.

Ratings are based solely on observed behaviors during the examination, with the exception of completing the items for "withdrawal" and "autonomic abnormality," which may be based on directly observed behavior or chart documentation.

As a general rule, only items that are clearly present should be rated. If the examiner is uncertain as to the presence of an item, rate the item as "0."

PROCEDURE

1. Observe the patient while trying to engage in a conversation.
2. The examiner should scratch his or her head in an exaggerated manner.
3. The arm should be examined for cogwheeling. Attempt to reposture and instruct the patient to "keep your arm loose." Move the arm with alternating lighter and heavier force.
4. Ask the patient to extend his or her arm. Place one finger beneath his or her hand and try to raise it slowly after stating, "Do not let me raise your arm."
5. Extend the hand stating, "Do not shake my hand."
6. Reach into your pocket and state, "Stick out your tongue. I want to stick a pin in it."
7. Check for grasp reflex.
8. Check the chart for reports from the previous 24-hour period. Check for oral intake, vital signs, and any incidents.
9. Observe the patient indirectly, at least for a brief period each day, regarding the following:
   - Activity level
   - Abnormal movements
   - Abnormal speech
   - Echopraxia
   - Rigidity
   - Negativism
   - Waxy flexibility
   - Gegenhalten
   - Mitgehen
   - Ambitendency
   - Automatic obedience
   - Grasp reflex

Gegenhalten, Resistance to movements that is equal and opposite to the pressure exerted by examiner; *mitgehen*, extreme mitmachen where even slightest pressure moves limb; mitmachen, passive movement of extremity despite instruction not to move.

From Bush G, Fink M, Petrides G, Dowling F, Francis A. Catatonia. I. Rating scale and standardized examination. *Acta Psychiatr Scand.* 1996;93(2):129–136.

symptoms seen in catatonia. The differential diagnosis for this type includes neuroleptic malignant syndrome or serotonin syndrome (see Chapter 33). Most children will present with a stuporous clinical picture, whereas the remaining cases present as excited or malignant, 19% and 5%, respectively. The severity of symptoms can be measured and tracked using the Bush-Francis Catatonia Rating Scale, a validated tool that accompanies a standardized physical examination and observation of patient behavior (Table 47.12). The diagnostic approach is driven by the search for the underlying cause for catatonia and the monitoring of its potentially dangerous effects on the body.

Beyond supportive care and discontinuation of any precipitating agents, treatment of catatonia should be expeditious to reduce the medical sequelae of prolonged symptoms. Benzodiazepines, in particular lorazepam, are typically first-line pharmacologic treatment for catatonia. Low-dose lorazepam is often trialed as a confirmatory "challenge" for patients with suspected catatonia, where a positive result is improvement or even resolution of symptoms within hours of administration of the medication. If the initial challenge test does reverse symptoms, increasing doses of lorazepam are indicated, with careful monitoring to avoid side effects (Fig. 47.2). Rapid withdrawal of benzodiazepines can, in turn, precipitate catatonia in those who are susceptible. The use of antipsychotics in catatonia is controversial, as they have been associated with an increased incidence of malignant catatonia or neuroleptic malignant syndrome. ECT has also been used in both adults and children, though it is underutilized due to caretaker and ethical concerns. Its use is typically recommended when other viable treatment options have either not been successful or cannot be safely administered. It has been successful in treating refractory catatonia in children with autism.

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47.4 Hallucinations of Childhood

Jennifer A. Zaspel and Rosa K. Kim

Hallucinations are perceptions that occur in the absence of identifiable external stimuli. Nondiagnostic hallucinations are those that fall within the realm of normal human experience, such as hearing footsteps, knocking, or one's name being called. **Hypnogogic** and **hypnopompic** hallucinations are experienced as one transitions into and out of sleep, respectively, and on their own carry no psychopathologic implications. In younger children, reported hallucinations can reflect a developmentally appropriate blurring between fantasy and reality, especially regarding dreams and imaginary friends. Children are also more susceptible to perceptual distortions or **illusions** (misinterpretations of external stimuli) but may communicate these phenomena to adults in a way that most would interpret as hallucinations. The first clinical task in evaluating youth who report hallucinations is to sort out those associated with severe mental illness from those derived from other causes (Fig. 47.3).

Acute phobic hallucinations are benign, common, and typically occur in otherwise healthy preschool children. The hallucinations are often visual or tactile, last 10-60 minutes, and most often occur at night. The children are quite frightened and might complain that bugs or snakes are crawling over themselves and attempt to remove them. The child's fear is not alleviated by reassurance by the parents or physician, and the child is not amenable to reason. Findings on physical and mental status examinations are otherwise normal, and the cause is unknown. Symptoms can persist for 1-3 days, slowly abating over 1-2 weeks.

In children with nonpsychotic hallucinations, all other symptoms of psychosis are absent. Nonpsychotic hallucinations typically occur in the context of severe traumatic stress, developmental difficulties, social and emotional deprivation, parents whose own psychopathology promotes a breakdown in the child's sense of reality, cultural beliefs in mysticism, and unresolved mourning. Auditory hallucinations of voices telling the child to do "bad things" may be associated with disruptive behavior disorders in an unconscious attempt to distance oneself from undesirable behaviors. Hearing a voice invoking suicide is often associated with depression. Trauma-related hallucinations are commonly associated with posttraumatic stress disorder and are likely a representation of flashbacks. Auditory and visual hallucinations may similarly be endorsed in complex bereavement. The content of the hallucinations is often relevant in understanding the underlying psychopathology and developmental issues.

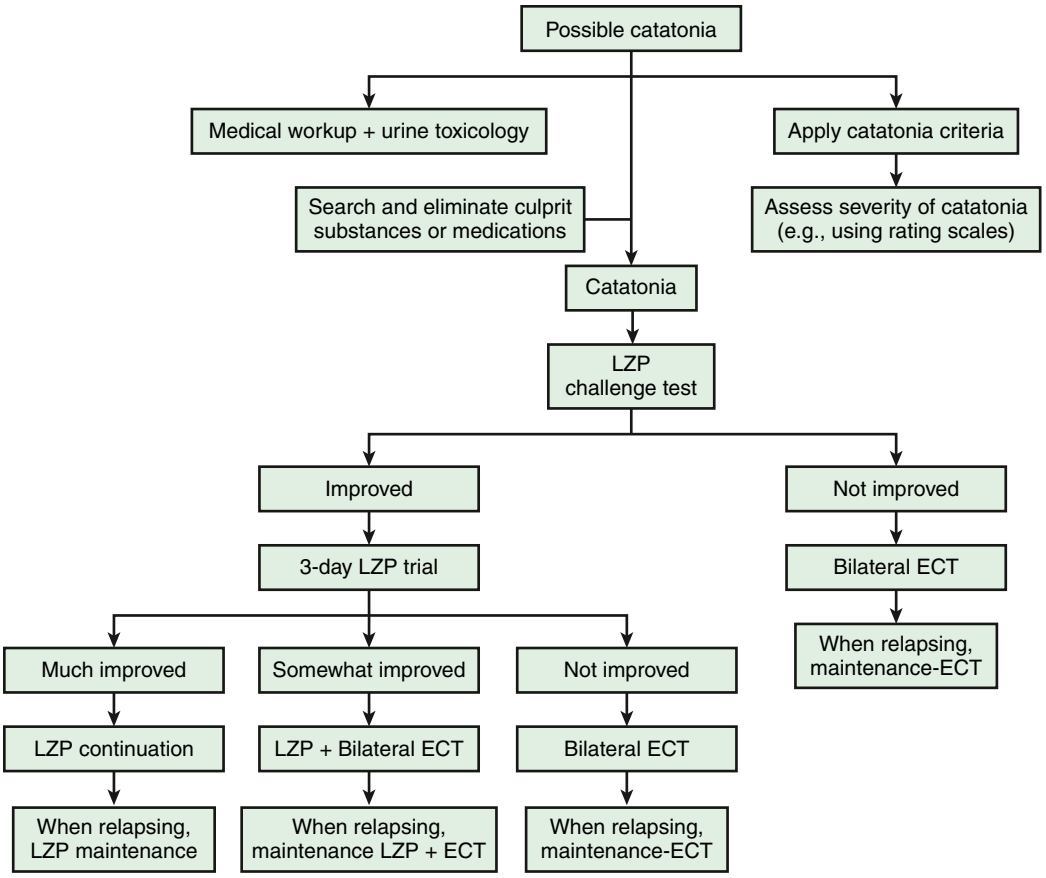

Fig. 47.2 Algorithm for the evaluation, diagnosis, and treatment of catatonia in children and adolescents. ECT, Electroconvulsive therapy; LZP, lorazepam. (*From Dhossche DM, Wilson C, Wachtel LE. Catatonia in childhood and adolescents: Implications for the DSM-5. Prim Psychiatry. 2010;17:23–26.*)

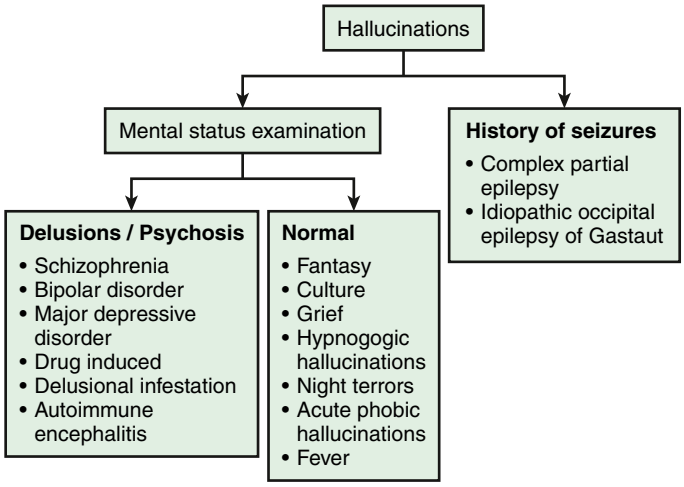

Fig. 47.3 Algorithm for the evaluation of hallucinations.

The evaluation of the underlying condition directs the type of treatment needed. Diagnostic nonpsychotic hallucinations suggest the need for disorder-specific psychotherapy and adjunctive medication, if indicated. CBT focused on helping the youth understand the origin of the hallucinations and on developing coping strategies for stressful situations may be helpful for older children and adolescents.

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Chapter 48

Delirium

Colleen K. Manak and Rosa K. Kim

Delirium is defined as a disorder of **awareness** and **attention** and is characterized by its waxing and waning nature. It is not a primary psychiatric diagnosis and instead occurs secondary to an underlying medical condition, though at the time of initial presentation the underlying cause is often unknown. The symptoms of delirium are similar between adults and children. Delirium in children carries risks of adverse outcomes, including death, if it is not treated. Untreated delirium can serve to prolong the recovery course of comorbid and underlying conditions; the clinical features of delirium, including agitation, aggression, and confusion, can often interfere with necessary medical care. Delirium in children and adolescents is associated with a 12.5–29% mortality rate. Quick recognition, diagnosis, and treatment of delirium and its underlying cause is essential in ensuring the best outcome for patients.

DIAGNOSIS

Criteria for the diagnosis of delirium are included in the DSM-5 under Neurocognitive Disorders (Table 48.1). Delirium presents with an **acute onset**, developing quickly over the course of hours to days and symptoms tend to **wax and wane.** This fluctuation of symptoms can be dramatic over the course of a day, with a patient appearing

Table 48.1 DSM-5 Diagnostic Criteria for Delirium

A. A disturbance in attention (i.e., reduced ability to direct, focus, sustain, and shift attention) and awareness (reduced orientation to the environment).
B. The disturbance develops over a short period of time (usually hours to a few days), represents a change from baseline attention and awareness, and tends to fluctuate in severity during the course of a day.
C. An additional disturbance in cognition (e.g., memory deficit, disorientation, language, visuospatial ability, or perception).
D. The disturbances in Criteria A and C are not explained by another preexisting, established, or evolving neurocognitive disorder and do not occur in the context of a severely reduced level of arousal, such as coma.
E. There is evidence from the history, physical examination, or laboratory findings that the disturbance is a direct physiologic consequence of another medical condition, substance intoxication or withdrawal (i.e., due to a drug of abuse or to a medication), or exposure to a toxin, or is due to multiple etiologies.

From the *Diagnostic and Statistical Manual of Mental Disorders*, 5th ed. p. 596. Copyright 2013. American Psychiatric Association.

Table 48.2 DSM-5 Delirium Subtypes

Hyperactive delirium	Increased psychomotor activity and mood lability • Confusion • Psychosis • Disorientation • Agitation • Hypervigilance • Hyper-alertness • Combativeness • Loud, pressured speech • Behavioral dysregulation • Pulling at lines/catheters
Hypoactive delirium	Decreased psychomotor activity • Sluggishness • Lethargy • Stupor • Confusion • Apathy
Mixed delirium	Normal level of psychomotor activity • Poor attention • Decreased awareness • Rapid fluctuation of activity level

Adapted from Meagher D, Moran M, Raju B, et al. A new data-based motor subtype schema for delirium. *J Neuropsychiatry Clin Neurosci.* 2008;20(2):185–193:Fig 1.

relatively well from a cognitive perspective during one assessment, and then seeming acutely altered at the next. At the core of delirium is an alteration in attention and awareness, and a disturbance in cognition. Patients with delirium will struggle to focus and sustain attention. They are often disoriented, showing confusion about where they are, poor orientation to time, and sometimes disorientation to self. In addition to these core features, delirium often presents with symptoms that have the potential to be mistaken for psychosis or mania. People with delirium may hallucinate, engage in bizarre or purposeless movements, and show alterations in their sleep–wake cycles.

Delirium can be further categorized into subtypes (Table 48.2). The **hyperactive** subtype is characterized by increased motor activity, loss of control of activity, restlessness, and wandering. The **hypoactive** subtype presents with reduction in activity, speed of actions, awareness of surroundings, quantity and speed of speech, and alertness. It is possible for patients to present with both hyperactive and hypoactive symptoms over the course of 24 hours, classified as having a **mixed motor subtype**. There has been emerging evidence of a fourth group, identified as the **no motor subtype**, in which they do not show characteristics of either hyper- or hypoactive subtypes.

Although these subtypes are often seen in both pediatric and adult delirium, diagnosing delirium in children can pose challenges not present in adult populations. Developmental differences, especially in young children, necessitate alternative approaches to assessing and diagnosing delirium. Bedside staff and caregivers can provide helpful insight into behaviors and cognitive changes, such as changes in attention, increased fussiness over baseline, and difficulty soothing, which might be missed by clinicians who are unable to evaluate symptoms of delirium using traditional methods (Fig. 48.1).

EPIDEMIOLOGY

The prevalence rate of pediatric delirium is an estimated to be 13–44% among *hospitalized* children, with higher rates seen in patients who are admitted to the intensive care unit (ICU) and/or those being mechanically ventilated. Increased risk for delirium may be associated with the underlying medical condition, prolonged hospitalization (especially ICU admission), young age, neurocognitive and developmental disorders, and a personal history of delirium. Potentially modifiable risk factors include polypharmacy, deep sedation, the use of benzodiazepines and anticholinergic medications, disrupted sleep, pain, sensory deprivation, and lack of familiar environment or caregivers. Delirium can occur at any age and has been observed in infants in the NICU.

ETIOLOGY

Although nearly any medical condition that requires hospitalization can lead to delirium, there are diagnoses that are more commonly associated with delirium (Table 48.3). Similarly, there are several drugs that are associated with the development of delirium in children including benzodiazepines, anticholinergic medications, sedatives, opiates, steroids, and some illicit substances (synthetic cathinone, synthetic cannabinoids).

ASSESSMENT

A thorough review of the medical record helps to identify predisposing and precipitating factors including exposures, changes in behavior, recent illness, and surgeries. If a reasonable cause is unable to be found on history, a further medical work-up is usually indicated.

It is possible for children with known psychiatric illnesses to develop delirium in response to medical stress. Having a comorbid psychiatric diagnosis should not delay the diagnosis of delirium. Psychiatric illnesses that can be confused with delirium include psychosis, mania, depression, and catatonia (Table 48.4). Key factors to look for in the history of patients with delirium are an acute onset without prodrome or other previous concern for worsening behavioral functioning, variable symptoms from moment to moment, and deficits in attention and orientation.

One of the factors that complicates assessment of delirium in children is the developmental level of the child. A young child will be unable to answer some of the standard assessment questions (e.g., questions about orientation), which means that a fair amount of the assessment will come from the bedside staff and the child's primary caregivers. More standard assessment strategies can be utilized in older children and adolescents.

In the patient interview, a good assessment will strive to evaluate affect, thought process, thought content, attention, and orientation to make the diagnosis of delirium. Because the nature of delirium is waxing and waning, it would not be atypical to have a seemingly normal exam in a patient one suspects to have delirium. Performing multiple assessments over the course of time is important to making an accurate diagnosis. In delirium, patients can have a disruption in their normal affect and may appear restricted or dysthymic.

Cornell Assessment of Pediatric Delirium (CAPD)

RASS score _____ (if –4 or –5 do not proceed)

Please answer the following questions based on your interactions with the patient over the course of your shift:

	Never 4	Rarely 3	Sometimes 2	Often 1	Always 0	Score
1. Does the child make eye contact with the caregiver?						
2. Are the child's actions purposeful?						
3. Is the child aware of his/her surroundings?						
4. Does the child communicate needs and wants?						
	Never 0	**Rarely 1**	**Sometimes 2**	**Often 3**	**Always 4**	
5. Is the child restless?						
6. Is the child inconsolable?						
7. Is the child underactive–very little movement while awake?						
8. Does it take the child a long time to respond to interactions?						
					TOTAL	

A

The Preschool Confusion Assessment Method for the ICU (psCAM-ICU)

1 Acute change or fluctuating course of mental status
- Is there an **acute change** from mental status baseline? (Y or N)
- Has the patient's mental status **fluctuated** during the past 24 hours? (Y or N)

If *"YES"* to *EITHER* question then Feature 1 is present → Move on to **Feature 2**

No → **STOP Delirium absent**

Yes ↓

2 Inattention → Show alternating pictures/mirrors and give verbal prompts
- Attends to **7 or less** pictures/mirrors?
- Patient does **not** maintain spontaneous eye opening in between verbal prompts

If *"YES"* to *EITHER* question then Feature 2 is present → Move on to **Feature 3**

No

Yes ↓

3 Altered level of consciousness (LOC)
- Does the patient currently have an **altered LOC**? (i.e. not alert and calm)

If *"YES"* then Feature 3 is present → **DELIRIUM PRESENT**

If *"NO"* then Feature 3 is **not** present → Move on to **Feature 4**

Yes → **Delirium present**

No ↓

4 Disorganized brain
- Does the patient have a **sleep-wake cycle disturbance**? (Any of the following)
  - Sleeps mostly during the day
  - Has difficulty getting to sleep
  - Does not awaken easily to stimulation
  - Sleeps little at night

If *"YES"* then Feature 4 is present → **DELIRIUM PRESENT**

Yes → **Delirium present**

No → **Delirium absent**

B

Fig. 48.1 Screening tools for the assessment of delirium. A, Cornell Assessment of Pediatric Delirium (CAPD). B, The Preschool Confusion Assessment Method for the ICU (psCAM-ICU). The short-form (clinical) psCAM-ICU is used to assess for delirium in infants and children who are at least responsive to voice. RASS, Richmond Agitation and Sedation Scale. (A *from Traube C, Silver G, Kearney J, et al. Cornell Assessment of Pediatric Delirium: A valid, rapid, observational tool for screening delirium in the PICU*. Crit Care Med. 2014;42:656–663;* B *from Smith HA, Gangopadhyay M, Goben CM, et al. The Preschool Confusion Assessment Method for the ICU: Valid and Reliable Delirium Monitoring for Critically Ill Infants and Children. Crit Care Med. 2016;44:592–600:Fig. 2.*)

Table 48.3	Etiologies of Pediatric Delirium (CRITICAL CARE mnemonic)
Cardiovascular	Anemia, shock, vasculitis, hypertensive encephalopathy
Respiratory	Respiratory insufficiency, respiratory failure, pneumothorax
Infection	Sepsis, encephalitis, urinary tract infection, meningitis, fever, pneumonia, tracheitis, cellulitis, surgical site infection, COVID-19
Toxins	Polypharmacy, heavy metals, drug:drug interactions
Inflammatory process	Autoimmune and rheumatologic disease
CNS pathology	Stroke, seizure, head trauma, intracranial bleed, tumor, anoxic brain injury
Abuse, withdrawal, sedation	Alcohol, benzodiazepines, opioids, barbiturates, prolonged/excessive sedation
Liver	Liver insufficiency, hepatic failure, hyperammonemia
Catheters, central line infections	Invasive device or procedure complications
Alimentation	Electrolyte imbalance, nutritional deficiencies, dehydration
Renal	Renal insufficiency or failure
Endocrinopathies	Glycemic disturbance, thyroid disease, parathyroid disease, adrenal disease

Adapted from Malas N, Brahmbhatt K, McDermott C, Smith A, Ortiz-Aguayo R, Turkel S. Pediatric delirium: Evaluation, management, and special considerations. *Curr Psychiatry Rep*. 2017;19(9):65.

Thought processes are often disorganized, tangential, or circumstantial and may seem loosely associated with, or not at all related to, the reality of what is going on in the moment. Patient with delirium may also be perseverative in their thought content, with difficulty moving away from a subject or becoming highly fixated on, or preoccupied with, one thing. They may have altered thought content, with hallucinations. Visual hallucinations especially are one of the hallmark alterations of thought content associated with delirium. Attention is frequently impacted in delirium, with patients demonstrating decreased attention, with an impaired ability to attend to a conversation or a situation. Orientation in people with delirium is often altered, especially with regards to orientation to place and time. Although all of these changes are observed to wax and wane during the course of delirium, changes in orientation can be the most striking, with patients sometimes going from being fully oriented to quite confused in the span of hours.

RATING SCALES

There are multiple rating scales that have been created to help to screen for delirium, particularly in critical care or intensive care setting (see Fig. 48.1). The Cornell Assessment for Pediatric Delirium (CAPD), Pediatric Confusion Assessment Method for the Intensive Care Unit (pCAM-ICU), Preschool Confusion Assessment Method for the ICU (psCAM-ICU), and Richmond Agitation Sedation Scale (RASS) are all scales that are frequently used to help monitor for delirium. The CAPD, pCAM-ICU, and psCAM-ICU have all been validated for use in the pediatric population. Rating scales are not diagnostic on their own but can be useful for identifying patients at risk for delirium and for following response to treatment.

MEDICAL EVALUATION

Delirium is a clinical diagnosis and can be made with history and physical exam alone. There are no tests that are routinely recommended in

Table 48.4	Differential Diagnosis of Delirium			
CLINICAL FEATURE	**DELIRIUM**	**PSYCHOSIS**	**DEPRESSION**	**CATATONIA**
Course	Acute onset, hours, days or more	Insidious onset over many months, prodrome	Insidious onset, at least 2 wk, often over months	Onset variable
Attention	Markedly impaired attention and arousal	Normal to mild impairment	Mild impairment	Variable difficulty with attention and arousal
Fluctuation	Characterized by a waxing and waning course; disturbed day/night cycle	Absent	Absent	Less likely to fluctuate, motor signs may show more fluctuation
Perception	Misperceptions; hallucinations (visual, fleeting); paramnesia	Hallucinations, auditory with personal reference	May have mood-congruent hallucinations	May have hallucinations, especially if secondary to primary psychosis
Speech and language	Abnormal clarity, speed and coherence; disjointed and dysarthric; misnaming; characteristic dysgraphia	Disorganized with bizarre theme	Decreased amount of speech	Mutism; echolalia
Other cognition	Disorientation to time, place; recent memory and visuospatial abnormalities	Disorientation to person; concrete interpretations	Mental slowing; indecisiveness; memory retrieval difficulty	Global disorientation
Behavior	Lethargy; nonsystematized delusions; emotional lability	Systematized delusions; paranoia; bizarre behavior	Depressed mood; anhedonia; lack of energy; sleep and appetite disturbance	Stupor; catalepsy; negativism; posturing; stereotypy; agitation not influenced by external stimuli; grimacing; echopraxia
Electroencephalogram	Diffuse slowing; low voltage fast activity; specific patterns	Normal	Normal	Normal, focal abnormalities or generalized slowing

the evaluation for delirium, rather clinicians should be guided by the history and medical concerns. There are times when laboratory, imaging, and other testing modalities can be helpful particularly in patients with suspected delirium when the underlying medical etiology of delirium is unknown.

Central nervous system imaging may be recommended to help identify underlying processes that may be contributing to delirium; brain imaging on its own is not a tool that can diagnose delirium and is not recommended for the sole purpose of diagnosis.

Electroencephalogram (EEG) is one of the few tools that can be used to help confirm a delirium diagnosis if there is diagnostic ambiguity or uncertainty. Various studies have found 65–86% of children with delirium have *abnormal* EEGs. Findings associated with delirium typically include some degree of diffuse background slowing and disorganization. This EEG finding has been shown to effectively discriminate between children with delirium and healthy controls. However, these EEG findings are nonspecific and are not sufficient to diagnose delirium. Another caveat when utilizing EEG in the evaluation of delirium is the reality that several of the underlying causes of delirium, including metabolic derangement, seizures, infections, and intoxication, can also lead to EEG changes in the absence of delirium (see Table 48.3).

DIFFERENTIAL DIAGNOSIS

Both medical and psychiatric disorders may share or mimic some of the symptoms of delirium and can sometimes lead to complications when trying to make the diagnosis. **Catatonia**, **depression**, and **psychosis** are some of the more frequently occurring diagnoses that can be confused for delirium in children and especially adolescents (see Table 48.4; see Chapter 47). In particular, catatonia can be difficult to separate from delirium, especially because the two can co-occur. It is important to attempt to clarify the diagnosis because treatment of delirium and catatonia is different; the treatment for one can exacerbate the other. To help distinguish between the two, it is often helpful to assess for motor signs seen in catatonia that are not typically present in delirium (see Chapter 47.3). Additionally, catatonia is less likely to present with a waxing and waning course. The Bush-Francis Rating Scale can be used to help diagnose catatonia (see Table 47.12).

Delirium can also mimic psychosis, frequently presenting with hallucinations and sometimes delusions. One of the most profound differences between the two is the onset; delirium has an acute onset compared with the prodromal nature of a first episode of psychosis. It would be unusual for primary psychosis to develop over the course of days. However, this is characteristic of delirium. Hallucinations in delirium are often visual, whereas primary psychotic illnesses typically present with predominantly auditory hallucinations. Delusional thought content in delirium often lacks any internal structure or interconnectedness, while delusions in primary psychotic disorders are frequently structured around a common theme.

Patients with depression may have some characteristics of delirium. The course and onset can help to distinguish depression from delirium; with depression the timing of onset is often closer to that of delirium. Depression does not demonstrate a waxing and waning course, and while cognition can be affected, it is often slowed with some memory problems, whereas orientation remains intact.

TREATMENT

Nonpharmacologic Interventions

Nonpharmacologic interventions are a mainstay in both delirium treatment and prevention. The goal behind these interventions is to provide a supportive environment and to provide sensory and environmental modifications to help offset the challenges posed by the need for hospital-based care and treatment. Strategies such as frequent reorientation, adherence to normal routines, clustering care, and maintaining a normal sleep–wake cycle are all frequently implemented to prevent or manage delirium (Table 48.5)

Table 48.5 Nonpharmacologic Management of Delirium

Environmental modifications	• Maintain lighting consistent with the time of day • Minimize noise • Familiar objects • Visible clock, calendar
Sensory modifications	• Have appropriate sensory aides available (glasses, hearing aids) • Soft, calming music • Minimize lines, catheters, restraints • Maintain comfortable position and body alignment
Caregiver interventions	• Frequent reorientation • Fewer care team providers/different faces • Cluster cares to minimize interruptions • Promote normal sleep/wake schedule • Presence of familiar caregivers

Pharmacologic Treatment

Pharmacologic management of delirium focuses on both utilizing medications to help manage the symptoms of delirium while the underlying process is being treated and removing medications that may precipitate or worsen delirium.

Antipsychotics

Medications for the behavioral symptoms of delirium target disruptive behaviors that pose a danger to the patient and caregivers and interfere with necessary medical care. Although these medications do not treat the underlying cause of delirium, they can help to decrease distress and lead to a shorter overall course. Antipsychotic medications are the mainstay of treatment for the behavioral and psychiatric symptoms of delirium. Both first- and second-generation antipsychotics are effective, and the choice of medication is based on what other medical needs are co-occurring. It is recommended to "start low and go slow" to arrive at an effective dose. Although typically used only for a short course (days to weeks), it remains important to consider adverse effects of antipsychotic medications (see Chapter 33). All antipsychotics can cause QTc prolongation; thus it is recommended that electrocardiogram (ECG) monitoring be considered at the onset of and throughout the treatment. For a patient who is unable to take medications by mouth, intramuscular (IM) or intravenous (IV) haloperidol can be used. IV haloperidol is more potent than IM or oral haloperidol; switching between formulations and modes of administration must be done carefully. For patients who can take medications by mouth, second-generation antipsychotics are typically the preferred choice. Risperidone, quetiapine, and olanzapine have all been shown to be effective in treating children and adolescents with delirium. Risperidone and olanzapine are available in an oral disintegrating tablet, and quetiapine is available in a liquid solution, which makes them easy to administer for patients who are dependent on a nasogastric tube for nutrition. Choice of medication is often dependent on what is available in the treatment setting, and the preferred route of administration. In chronically ill medical patients, inquiring about a past history of delirium and treatment can be helpful in guiding medication choices.

Other Medications

Melatonin has some utility in the management of delirium as it can help to promote a normal circadian rhythm and the return to a healthy sleep–wake cycle. Trazodone has also been shown to have some benefit for patients who are struggling with nocturnal sleep maintenance.

Medications to Avoid

In addition to adding medications for the treatment of delirium, eliminating unnecessary or potentially deliriogenic medications is equally important. *Benzodiazepines worsen delirium and should be avoided as much as possible in patients at risk of developing delirium.* They should not be used to treat agitation in delirious patients. Anticholinergic medications are also known to potentiate delirium and should also be avoided. Minimizing polypharmacy to the extent possible can help to

eliminate potentially deliriogenic medications and aid in the *prevention of delirium*.

Pain Medications

Opiate pain medications can be associated with worsening delirium and should be used with care in patients at risk for delirium. Complicating this is the reality that untreated or undertreated pain can also be associated with the development and perpetuation of delirium, so ensuring adequate pain control will help to manage, and in some cases, prevent delirium.

Course and Sequelae

Course

The resolution of delirium can be variable. Some patients improve quickly once the underlying cause is identified and treated, while others may take weeks to months to show full resolution of symptoms. Patients who have delirium related to complex medical issues, such as autoimmune encephalitis, or prolonged hospital stays, may have longer lasting delirium. When symptoms improve, antipsychotic medications can be weaned; patients do not need to be on them long term.

Sequelae

Patients who have delirium are more likely to have subsequent episodes of delirium. There is evidence that patients with delirium go on to have impaired cognitive functioning compared to patients who have never had an episode of delirium.

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