



PSYCH TLC
DEPARTMENT OF PSYCHIATRY
DIVISION OF CHILD & ADOLESCENT PSYCHIATRY
UNIVERSITY OF ARKANSAS FOR MEDICAL SCIENCES
PSYCHIATRIC RESEARCH INSTITUTE

Psychosis in Children and Adolescents

Written by:

Jody L. Brown, M.D.
Assistant Professor
D. Alan Bagley, M.D.
Chief Resident

Department of Psychiatry
Division of Child & Adolescent Psychiatry
University of Arkansas for Medical Sciences

Initial Review by:

Laurence Miller, M.D.
Clinical Professor,
Medical Director,
Division of Behavioral Health Services
Arkansas Department of Human Services

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Updated 3-31-2014 by:

Angela Shy, MD
Assistant Professor
Department of Psychiatry
Division of Child & Adolescent Psychiatry
University of Arkansas for Medical Sciences

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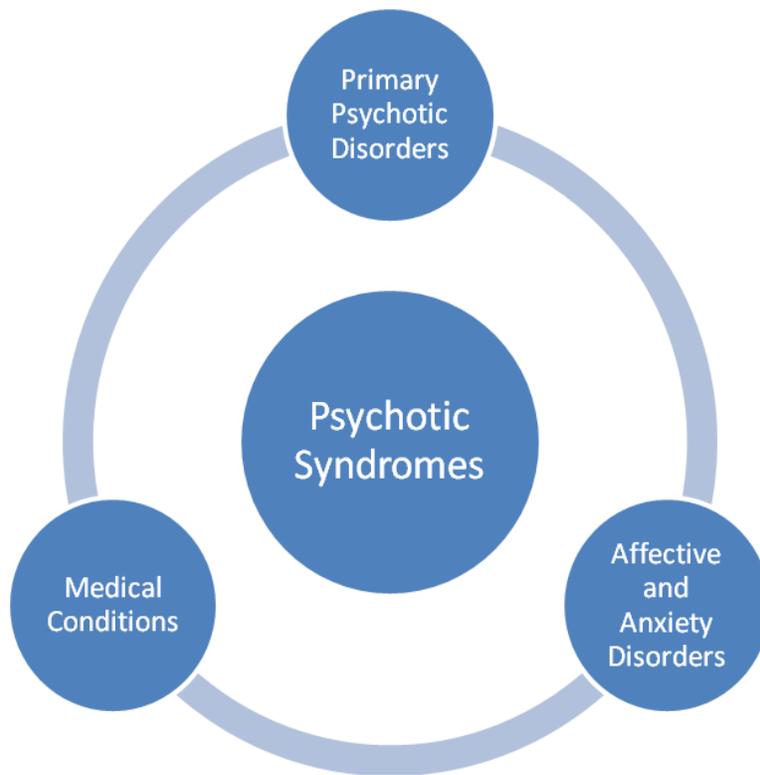
1. Context

- There is a prevalence of mental health concerns in pediatric populations.
- 10% to 11% of children have both a mental health disorder and functional impairment.
- 20% of children receive care for their mental health problems.
- Psychotic disorders are rare in children but are usually more severe if present.
- Transient psychotic phenomena can occur in healthy and mildly disturbed children.
- Most children with hallucinations do not have schizophrenia.
- Youth with schizophrenia often have a family history of the disorder.
- Psychotic symptoms such as hallucinations and delusions may be present in a number of disorders including schizophrenia, schizoaffective disorders, and more common disorders such as depression, bipolar disorder, and severe anxiety.
- Half of adults in the U.S. with a mental health disorder have symptoms by 14 years-old.
- Five percent of adults with schizophrenia report onset of psychosis before 15 years-old.
- **A person with psychosis may experience:**
 - Hearing voices that no one else hears
 - Seeing things that aren't there
 - Beliefs that others can influence their thoughts or that they can influence the thoughts of others
 - Beliefs that they are being watched, followed or persecuted by others
 - Feeling their thoughts have sped up or slowed down
- **Often there are other signs that family members or friends might notice if a psychotic disorder is present, such as:**
 - Changes in behavior
 - Social withdrawal
 - Loss of energy or motivation
 - Problems with memory and concentration
 - Deterioration in work or study
 - Lack of attention to personal hygiene
 - Confused speech or difficulty communicating
 - Apathy
 - Suspiciousness
 - Sleep or appetite disturbances

2. Highlights of Changes to Psychotic Disorders: DSM-IV TR TR to DSM-5

- Two changes were made to Criterion A for Schizophrenia: 1) at least two Criterion A symptoms (delusions, hallucinations, disorganized speech, disorganized or catatonic behavior, flat affect/avolition) are now required for any diagnosis of schizophrenia, and 2) at least one of the Criteria A symptoms be delusions, hallucinations, or disorganized speech.
- The DSM-IV TR subtypes of schizophrenia were eliminated. DSM 5 Section III includes a dimensional approach to rating severity for the core symptoms of schizophrenia.
- Schizoaffective disorder has been reconceptualized as a longitudinal diagnosis (vs cross-sectional) and requires a major mood episode be present for a majority of the total disorder's duration after Criterion A for schizophrenia has been met.
- Criterion A for Delusional Disorder no longer has the requirement that the delusions must be nonbizarre (believable).
- Catatonia may be diagnosed with a specifier (for depressive, bipolar, and psychotic disorders) in the context of a known medical condition or as an 'other specified diagnosis.'

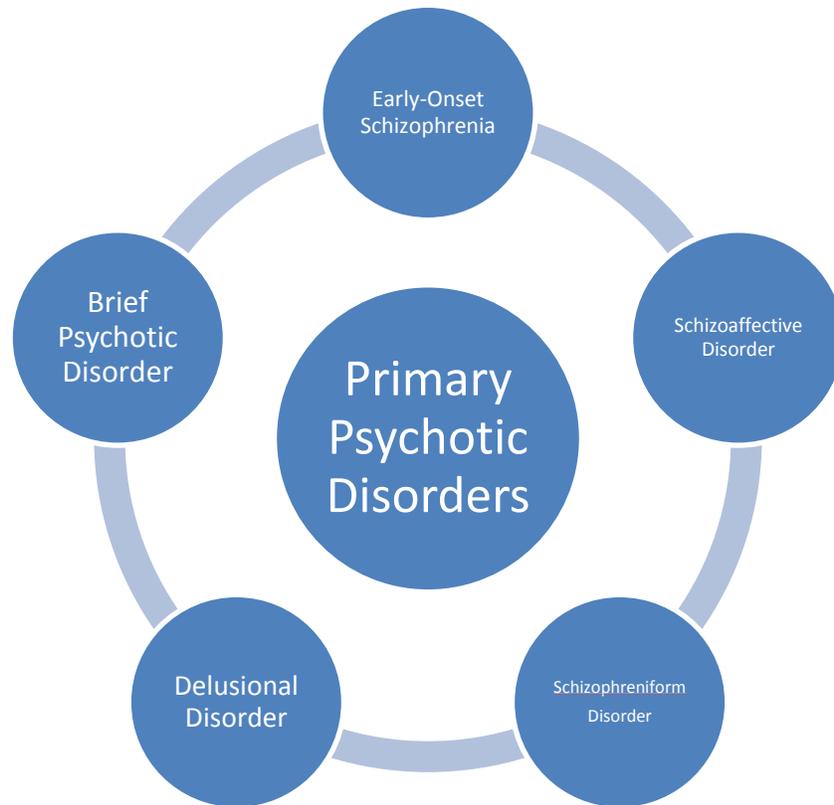
2. Psychotic Syndromes and Symptomatology



Note: Please see Appendix 12.1 for Clinical Case Examples of each Disorder/Syndrome/Condition

2.1 Primary Psychotic Disorders

The Major Psychotic Disorders Included in the DSM 5



Early Onset Schizophrenia

- Early-onset schizophrenia (EOS) is defined as schizophrenia with onset prior to 18 years of age. Schizophrenia with onset between ages 13 and 18 is also referred to as adolescent onset. Onset of schizophrenia prior to age 13 is referred to as very early onset or childhood onset schizophrenia.
- Early-Onset Schizophrenia is characterized by hallucinations and delusions (fixed, false, beliefs) and sometimes results in incoherent speech and changes in behavior.
- Children with schizophrenia will sometimes have social isolation, poor self-care, and blunted affect.
- Most will develop schizophrenia in late teens to early adulthood and males develop symptoms more often and earlier than females.
- Youth often see, hear, or feel hallucinations, and will frequently name the hallucination “angel,” “devil,” or “monster.” It is important to ask children directly about experiencing hallucinations. It is also often helpful to ask family members if the child asks about being called when no one has

done so. Children may also feel “everyone is out to get me”, which may be a manifestation of paranoia. It is important to seek collateral information from teachers and parents.

Schizoaffective Disorder

- Schizoaffective Disorder is characterized by periods of mania (decreased need for sleep, impulsivity, increased goal-directed activity, fast and loud speech, grandiosity), or depression and associated with psychotic symptoms.
- For at least two weeks during the course of the illness, there are no mood symptoms and only psychotic symptoms.
- In children, this diagnosis should be made over a significant period of time because manic episodes in this age group frequently include hallucinations and delusions at onset.

Schizophreniform Disorder

- Schizophreniform Disorder is characterized by having symptoms of schizophrenia of short duration (1 to 6 months) and generally evolves into either Schizophrenia or Schizoaffective Disorder.
- Schizophreniform Disorder is characterized by hallucinations and delusions (fixed, false, beliefs) and sometimes results in incoherent speech and changes in behavior.
- Children with Schizophreniform Disorder will sometimes have social isolation, poor self-care, and blunted affect.

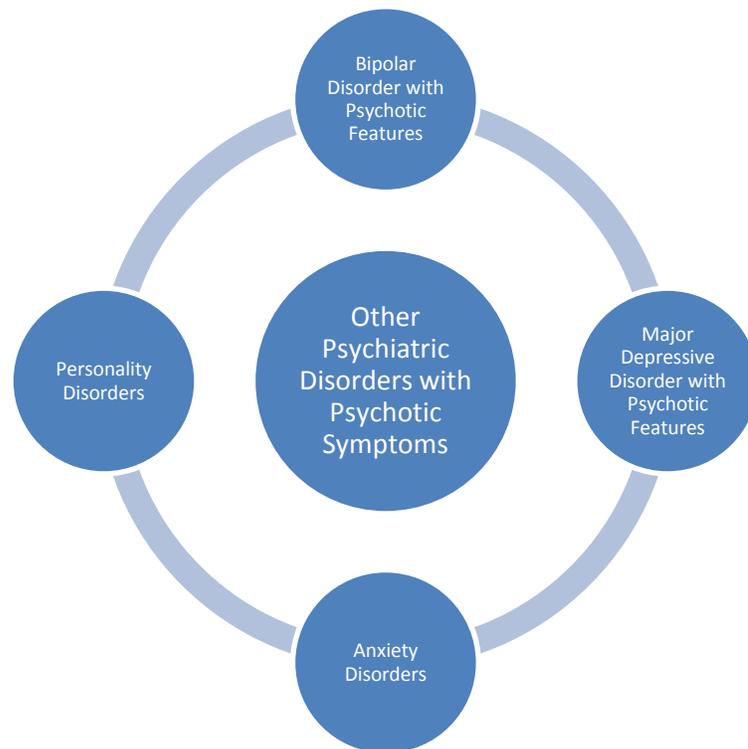
Delusional Disorder

- Delusional Disorder is characterized by fixed, false beliefs which have occurred for one month or longer. There are several types of delusions:
 - Persecutory: Delusion that one is being attacked, harassed, or conspired against.
 - Erotomanic: Delusion that another person, usually of higher status, is in love with the individual.
 - Grandiose: Delusion of inflated worth, power, or knowledge.
 - Jealous: Delusion that the individual’s sexual partner is unfaithful.
 - Somatic: Delusion involve bodily functions or sensations.
 - Mixed: Delusion has no one predominating theme.
- If Delusions are bizarre in content (clearly not possible, not understandable, not derived from ordinary life experiences), must specify.
- In contrast to schizophrenia, there is not deterioration in most areas of functioning and general behavior is typically not odd or bizarre.
- Age of onset is 18-80 with mean onset of 34-45, so Delusional Disorder is not likely seen in children and younger adolescents.

Brief Psychotic Disorder

- Brief Psychotic Disorder is defined by psychotic symptoms for at least one day but less than one month with an eventual full return to prior levels of functioning.
- Age of onset is most commonly reported to be in the late 20's or early 30's and is not common in children.
- An example of a Brief Psychotic Disorder is when an overwhelmed 18 year old male college student begins to isolate in his room, becomes more agitated and irritable and thinks that the FBI is after him (paranoia).

2.2 Other Psychiatric Disorders with Psychotic Symptoms



Bipolar Disorder with Psychotic Features

- The essential feature of Bipolar I Disorder (most severe form) is a clinical course that is characterized by the occurrence of one or more Manic Episodes. Often individuals have also had one or more Major Depressive Episodes or Hypomanic Episodes.
- Mania is characterized by decreased need for sleep, hypersexuality, grandiosity, racing thoughts, and increased rate and volume of speech. It can be extremely difficult to distinguish mania from

schizophrenia or schizoaffective disorder in children and adolescents because hallucinations, delusions, irritability, and agitation are common to all three disorders. The primary distinguishing factors are the presence of decreased need for sleep and hypersexuality in bipolar disorder versus apathy and withdrawal in schizophrenia spectrum disorders. Psychotic symptoms in bipolar disorder only occur in the presence of mood symptoms.

- If psychotic symptoms are present, must specify “with psychotic features.”
- Additional specifiers: with anxious distress, with mixed features (replaces the ‘mixed episode’ described in DSM-IV TR TR), with rapid cycling, with melancholic features, with atypical features, with mood congruent psychotic features, with mood incongruent psychotic features, with catatonia, with peripartum onset, with seasonal pattern.
- Both genders appear equally affected by bipolar disorder. Younger individuals tend to present with ‘mixed features’ (depressive symptoms during a primarily manic or hypomanic episode or manic/hypomanic symptoms during primarily depressive episode).

Major Depressive Disorder with Psychotic Features

- Children with depression are often sad rather than apathetic which may be seen in schizophrenia. Insomnia, inability to enjoy activities, social withdrawal, no motivation, cognitive slowing, and suicidality may be present. Weight loss may accompany other symptoms.
- Although hallucinations and delusions may occur in major depression, they are not common and when present are often congruent with mood symptoms such as negative beliefs about oneself.
- Psychotic symptoms are only present if mood symptoms are present.
- Major depression is more common in female adolescents than in male adolescents.

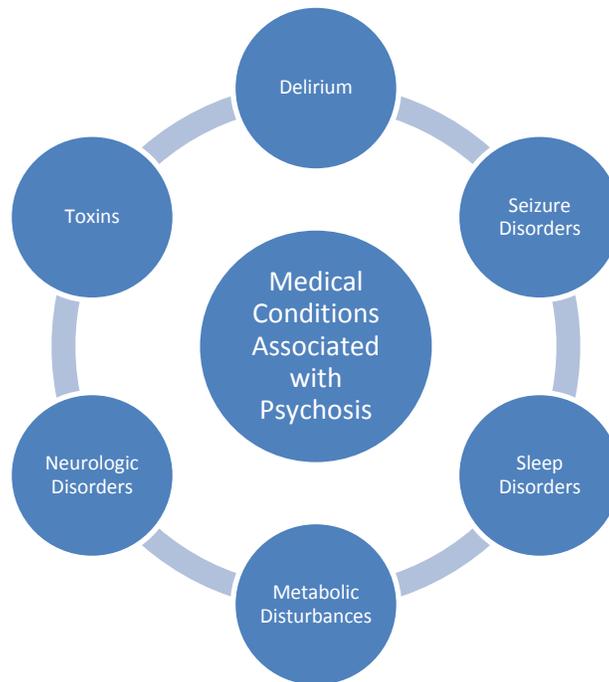
Anxiety Disorders, Trauma & Stress Related Disorders, and Obsessive-Compulsive & Related Disorders

- Anxiety symptoms in children and adolescents are quite variable and can include separation anxiety symptoms, generalized anxiety symptoms, phobias, panic symptoms, acute stress symptoms, social anxiety, posttraumatic symptoms and obsessive-compulsive symptoms.
- Specific manifestations of anxiety include constant thoughts and intense fears about the safety of parents and caretakers, school avoidance, frequent stomachaches and other physical complaints, being overly clingy, tantrums upon separating from parents, trouble sleeping, nightmares, fear about a specific thing or situation (e.g., dogs, insects or needles), fears about meeting or talking to people, avoidance of social situations, few friends outside of the family, anticipatory worry about things before they happen, excessive concerns about school/family/friends/activities, obsessions, compulsions, fear of embarrassment or making a mistake, low self-esteem, etc.
- Transient hallucinations may occur in youth with severe anxiety disorders and usually these children do not have delusions. Their thoughts are not disorganized like those in schizophrenia. In individuals with PTSD the psychotic symptoms are mostly related to reliving events that occurred during the trauma.
- The diagnosis of a psychotic disorder should not be ruled out on the basis of a history of trauma.

Personality Disorders

- Patients with personality disorders sometimes present with transient psychotic symptoms that often respond to situational changes and structured environments.
- Schizotypal personality disorder is characterized by ideas of reference (can be talked out of belief thus not a delusion), odd beliefs or magical thinking (in children or adolescents – bizarre fantasies or preoccupations), bodily illusions, odd thinking/speech, suspiciousness/paranoid ideation, constricted affect, eccentric behavior, lack of close friends other than family members, social anxiety that has more to do with paranoid fears (vs negative self-esteem).
- Borderline personality disorder is characterized by rapid mood shifts, fears of being abandoned or alone, a poor sense of self, and impulsivity during stressful periods. At times they can develop brief psychotic symptoms that resolve when they perceive they are no longer alone or abandoned. Other personality disorders may also have transient psychotic symptoms or odd, magical beliefs at times.
- Of note, the formal diagnosis of a personality disorder is typically not made until the patient is 18 years-old. Although a personality disorder is not usually fully consolidated until adulthood, personality disorder symptoms can usually be seen during adolescence.

2.3 Medical Conditions with Psychotic Symptoms



- Laboratory and neuroimaging procedures are not helpful in making a diagnosis of schizophrenia but are used to rule out neurological or medical problems.
- As part of a basic medical evaluation, consider complete blood cell count, serum chemistries, thyroid function, urinalyses, and toxicology screens. If risk factors are present, test for human immunodeficiency virus.
- Chromosomal analysis may be indicated for patients with developmental syndromes.
- Neurological dysfunction may warrant neuroimaging studies, electroencephalogram, and/or neurology consultation.

Delirium

- Delirium is a neuropsychiatric condition associated with an acute confusional state secondary to a general medical condition, for example infection, cancer, and sometimes due to medications. It develops quickly over hours to days and is characterized by a fluctuating level of consciousness and awareness of surroundings, inattention, and sometimes hallucinations.
- Delirium improves when the underlying physical condition is treated and can vary in duration based on the severity of illness and age of the child. The etiology should be sought as it can be an emergent condition.
- It can be caused by fever, operations, heart/lung disease, infection, metabolic disorders, cancer, neurologic disorders and other medical conditions.

Seizure Disorders

- Psychiatric disturbances are two to three times more common in patients with complex partial seizures. Symptoms such as irritability, depression, headache, confusion, and hallucinations can occur before seizures, after seizures, or during seizure activity. Prolonged confusion may particularly follow complex partial seizures.
- Psychotic symptoms often worsen with increasing seizure activity. Psychosis can occur in patients who have complex partial seizures as well as other types of seizures such as tonic-clonic seizures. Psychosis following a seizure may emerge after a lucid interval and can last hours to days. Symptoms can include grandiose or religious delusions, elevated moods or sudden mood swings, agitation, paranoia, and impulsive behaviors. The postictal psychoses typically remit spontaneously or with the use of low-dose psychotropic medication.

Sleep Disorders

- Sleep-related hallucinations are usually visual in nature occurring when going to sleep (hypnagogic hallucinations) or upon awakening (hypnopompic hallucinations). These can sometimes be difficult to distinguish from dreams but they are common in patients with narcolepsy. These can also be seen in other sleep disorders such as obstructive sleep apnea. Hallucinations can be very vivid and/or frightening and may persist for several minutes.

Metabolic Disturbance

- Various metabolic and hormonal conditions can be responsible for psychotic symptoms in children. Endocrinopathies may include disorders of the adrenal, thyroid or parathyroid glands, as well as Wilson disease, lipid storage disorders. Exogenous metabolic disturbances leading to psychotic symptoms can include exposure to heavy metals.
- Wilson's Disease is an autosomal recessive disorder involving chromosome 13. Enzyme malfunction results in excessive copper deposition and can result in cirrhosis, hemolytic anemia, optic pigmentary changes, and neurological damage. Neurological symptoms often present in the second decade of life and can include tremor, motor rigidity, dysphagia, drooling and speech changes. Psychiatric symptoms can include impulsivity, hallucinations, and social withdrawal.

Neurologic Disorders

- In addition to seizure disorders (as described above), psychotic symptoms have been described in children who have Huntington chorea, as well as *deteriorative and degenerative neurologic disorders* such as subacute sclerosing panencephalitis. Additionally, central nervous system lesions such as brain tumors, congenital malformations and head trauma can lead to psychotic symptoms. These neurologic disorders are usually differentiated from childhood-onset schizophrenia by the presence of neurologic findings on physical examination of the child, further corroborated by abnormal findings on laboratory testing and imaging. Children suffering from such neurologic deterioration often have a gradual, persistent, but global decline in their neurologic condition.

- Fewer than ten percent of patients with Huntington’s Disease develop symptoms before age 20. They will have a positive family history, often in the father, and can have motor rigidity, cognitive decline, behavioral disturbance, seizures, choreiform movements of upper and lower extremities, and changes in oral motor function. The rate of decline in younger patients is generally more rapid. It is inherited in an autosomal dominant fashion.

Toxins

- Legal and illegal drugs can result in psychotic symptoms. Illicit drugs typically associated with psychosis include cocaine, methamphetamine, marijuana, LSD, and PCP. Prescription medications that can typically cause psychosis, especially when taken inappropriately include stimulants, corticosteroids, and dextromethorphan.

2.4 Symptomatology According to Developmental Stage

- It is clear that the peak onset of the most common psychotic disorders, schizophrenia and bipolar disorder, is in adolescence. This points directly toward developmental events in biological, social, and psychological domains of late childhood and adolescence that set the stage for activating psychotic disorders. However, in addition, it appears increasingly likely that certain early childhood characteristics and developmental deficits may herald psychosis and are related to the outcome of psychotic disorders.
- Psychotic symptoms in children present distinctive diagnostic and clinical challenges because of the powerful influences of immaturity and the moving target produced by development.
- One problem is distinguishing true psychotic phenomena in children from nonpsychotic idiosyncratic thinking, perceptions caused by developmental delays, exposure to disturbing and traumatic events, and overactive and vivid imaginations. There are major developmental differences in the perception of reality and developmentally or culturally appropriate beliefs (e.g., imaginary playmates and fantasy figures) that are not, of themselves, suggestive of psychosis.
- The influences of development, environment, and cognition are greater for young or developmentally immature patients than for adults.
- Clinical manifestations of psychotic symptoms vary upon each developmental stage. Please see Appendix 12.2 for a table detailing symptomatology according to developmental stage.

3. Level of Dysfunction

- The DSM 5 has moved to a ‘nonaxial’ documentation of diagnosis (formerly Axes I, II, and III), with separate notations for psychosocial factors (formerly Axis IV) and disability (formerly Axis V).
- Individual diagnoses include specifiers for severity and symptoms specific to a particular diagnosis.

4. Epidemiology

- Onset of primary psychotic disorders prior to age 13 is quite rare, typically 1 per 40,000.
- Onset of primary psychotic disorders prior to age 18 typically occurs 1 per 10,000.
- Peak age of onset ranges from 15-30 years of age.
- Primary psychotic disorders occur predominantly in males with a ratio of male to female of 2:1.
- In adults, average age of onset in males is 5 years earlier than females.
- Although there are reported cases of primary psychotic disorders such as schizophrenia in youth younger than 6 years of age, the diagnostic validity of the illness in preschoolers has not been established.

5. Etiology / Risk Factors

- Family, twin, and adoption studies support a strong genetic component for schizophrenia, the quintessential primary psychotic disorder. The lifetime risk of developing the illness is 5–20 times higher in first-degree relatives when compared to the general population. The rate of concordance among monozygotic twins is 40%–60%, whereas the rate of concordance in dizygotic twins and other siblings ranges from 5% to 15%.
- Numerous environmental exposures have been hypothesized to contribute to the development of schizophrenia. To date, the best replicated risk factors include paternal age and in utero exposure to maternal famine.

6. Untreated Sequelae

- Impaired relations with peers.
- Repeated school absences or an inability to finish school.
- Low self-esteem.
- Alcohol or other drug use.
- Problems adjusting to work situations.

7. Diagnosis

- Diagnosis is made using criteria from the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM 5).
- The Brief Psychiatric Rating Scale for Children (BPRS-C) and the Prodromal Questionnaire Brief Version (PQ-B) could be considered in screening for psychotic symptoms.

8. Differential Diagnosis

Differential Diagnosis of Early-Onset Schizophrenia

Psychiatric

Psychotic disorder due to a general medical condition
Bipolar disorder
Major depressive episode with psychotic features
Schizoaffective disorder
Posttraumatic stress disorder
Obsessive-compulsive disorder
Pervasive developmental disorder

Psychosocial

Abuse
Traumatic stress
Chaotic family environment

Medical

Substance intoxication, both legal and illegal drugs
Delirium
Brain tumor
Head injury
Seizure disorder
Meningitis
Porphyria
Wilson's disease
Cerebrovascular accident
AIDS
Electrolyte imbalance
Blood glucose imbalance
Endocrine imbalance

8.1 Other Psychiatric Conditions that may Resemble Psychotic Syndromes

- Autism spectrum disorders and early onset schizophrenia are distinguished by their developmental course and the presence of hallucinations and thought disorder in schizophrenia.
- Although autism spectrum disorders may not be diagnosed until late childhood, onset of symptoms (speech delay, poor social interaction, circumscribed interests, etc.) prior to 3 years of age is required to diagnose an autism spectrum disorder.
- These symptoms may be present in individuals with early onset schizophrenia and schizoaffective disorder, but additional symptoms should present later in life that lead to the psychotic disorder diagnosis.
- Inception of early onset schizophrenia prior to age 10 is extremely rare.
- Children with autism spectrum disorders solely may be extremely concrete and rigid in thinking and verbal responses, but they do not exhibit a formal thought disorder. However, it is possible for children with autism spectrum disorders to also develop a primary psychotic disorder, and the individual must demonstrate clear hallucinations or delusions.
- Negative symptoms (apathy and withdrawal, for example) alone cannot be used to satisfy diagnostic criteria of a psychotic disorder such as schizophrenia.
- Language and communication deficits are common in autism spectrum disorders and can appear to be a thought disorder.

8.2 Comorbid/Confounding Disorders

- **Mental Retardation**
 - At least 10% to 20% of children with primary psychotic disorders such as Early Onset Schizophrenia have IQ's in the borderline to mentally retarded range.
- **Substance Abuse and Schizophrenia**
 - In some studies, rates of comorbid substance abuse in adolescents with primary psychotic disorders are as high as 50%.
 - In adolescents, it is not uncommon for the first psychotic break to occur with comorbid substance abuse.
- **Severe Obsessive-Compulsive Disorder**
 - Children have intrusive thoughts and repetitive behaviors (fear of being contaminated may be an obsession or a paranoid delusion).
 - Patients with Obsessive-Compulsive Disorder generally recognize their symptoms as unreasonable.

8.3 Red Flags for Acute Safety Issues

- Suicidal ideation, suicidal gestures, and suicide attempts.
- Comorbid substance abuse.
- Auditory or visual hallucinations.
- Poor parental supervision and poor family support.
- Abuse (physical, sexual or emotional).

9. Treatment

9.1 Treatment of Psychotic Disorders

- Clinicians should be aware of the limited research base in treatment of early-onset psychotic syndromes.
- Most youth will need multiple interventions to address symptoms and comorbidities.
- Treatment should include interventions for biopsychosocial stressors and developmental sequelae associated with the illness.
- Youth may need comprehensive community programs, medications, psychotherapy, case management, family support, vocational and rehabilitative assistance, specialized educational programs, inpatient treatment, and/or residential treatment.

9.2 Assessment Recommendations

- Misdiagnosis of primary psychotic disorders such as early onset schizophrenia is a concern and children often have difficulty describing psychotic symptoms.
 - It is important to recognize that some psychotic symptoms may be transient and there is a high prevalence of psychotic symptoms in child psychiatric disorders other than early onset schizophrenia.
 - However, failure to recognize early onset schizophrenia may slow implementation of appropriate treatments and worsen long-term prognosis.
- **Recommendation I:** Patients with risk factors for psychosis (family history, other psychiatric disorders, substance abuse, trauma, psychosocial adversity, etc.) should be identified through questioning about risk factors by primary care and specialty care providers who come into contact with the patient and monitored for the development of psychotic symptoms.
- **Recommendation II:** Assessment for psychosis should include interviews with the patients and families and should include an assessment of functional impairment in different domains.
 - Evaluation of a child or adolescent who may have psychotic symptoms should always include separate evaluations of the child and their guardian.
 - Interview should clarify the child's development, determine any changes in functioning, and explore for any past exposure to trauma.
 - Family history, including information about psychiatric hospitalizations and suicides should also be obtained.
- **Recommendation III:** Ask about changes in functioning and behavior that have occurred over the past 3 to 4 years.
 - Ask about hallucinations and delusions using language that the child understands, and encourage the child to describe experiences using his or her own words.
 - It is important to determine if the child is in control of the symptoms, which is not seen with true hallucinations.
 - It is also important to determine the frequency and severity of symptoms.

- **Recommendation IV:** Physical examination of youth suspected of having early onset schizophrenia should include a careful neurologic exam and further tests as warranted.
 - If there is a focal neurological finding or impairment of consciousness, brain imaging may be indicated.
 - If there is episodic psychosis with confusion following psychotic behaviors, an EEG should be obtained to rule out a seizure disorder.
 - Exposure to illicit substances should be assessed with at least a urine toxicology screen.
- **Recommendation V:** Blood work may include screening for thyroid abnormalities, ceruloplasmin, and urinary copper (using a penicillamine test in children) for Wilson's disease, heavy metals, and serum organic and amino acids to rule out a metabolic disorder.
- **Recommendation VI:** Genetic testing should also be considered, particularly if the youth has a dysmorphic appearance or any congenital abnormalities, given the high prevalence of reported genetic abnormalities in early onset schizophrenia.

9.3 Initial Management Recommendations

- **Recommendation I:** Clinicians should educate and counsel families and patients about psychotic disorders and options for the management of the disorder.
- **Recommendation II:** Clinicians should develop a treatment plan with patients and families and set specific treatment goals in key areas of functioning including home, peer, and school settings.
- **Recommendation III:** Establish links with community mental health resources, which may include patients and families who have dealt with psychotic disorders.
- **Recommendation IV:** Establishment of a safety plan, which includes restricting access to lethal means, engaging a concerned third-party, and an emergency communication mechanism.

9.4 Treatment Recommendations

- **Recommendation I:** In cases of transient, brief, symptoms that do not interfere with functionality, consider a period of active support and monitoring before starting other evidence-based treatment.
- **Recommendation II:** If a Primary Care (PC) clinician identifies an adolescent with moderate or severe symptoms or complicating factors such as co-existing substance abuse, consultation with a mental health specialist should be considered.
- **Recommendation III:** If referral to a child psychiatrist is not available, consider initiation of medication and follow-up tests after a thorough physical exam.
 - Baseline and follow-up laboratory tests, including renal and liver function tests, complete blood cell counts, fasting lipids, fasting glucose, Hemoglobin A1C, and medication levels, and electrocardiograms may be indicated for specific agents.
- **Recommendation IV:** Primary care (PC) clinicians should actively support children and adolescents who are referred to mental health by sharing care with mental health agencies/professionals when possible.

9.5 Working with Mental Health Liaisons

- Appropriate roles and responsibilities for ongoing management by the PC clinician and mental health clinicians should be explicitly communicated and agreed upon.
- The patient and family should be consulted and approve the roles of the PC clinician and mental health professionals.

9.6 FDA Approved Antipsychotics in Children and Adolescents

- *Due to the significant health risks when prescribing these medications, it is recommended to consult with a psychiatrist before prescribing.*

Trade name	Generic Name	FDA Approved Age and Indication	Lab Monitoring
Abilify	aripiprazole	13 and older for schizophrenia 6-17 for irritability associated with autism	Fasting lipids; fasting blood glucose/HbA1c; liver function tests at baseline, 3mos, 6mos, then annually
Fanapt	iloperidone	18 and older	Same as above
Geodon	ziprasidone	18 and older	Same as above
Invega	paliperidone	18 and older	Same as above
Latuda	lurasidone	18 and older	Same as above
Risperdal	risperidone	13 and older for schizophrenia 5 to 16 for irritability associated with autism	Same as above
Seroquel	quetiapine	13 and older for schizophrenia	Same as above
Zyprexa	Olanzapine	18 and older; ages 13-17 as second line treatment	Same as above

9.7 FDA Approved Mood Stabilizers in Children and Adolescents

- *Due to the significant health risks when prescribing these medications, it is recommended to consult with a psychiatrist before prescribing.*

Trade name	Generic Name	FDA Approved Indication(s) and Age	Lab Monitoring
Abilify	aripiprazole	10 and older for bipolar mania and mixed episodes of bipolar disorder 13 to 17 for bipolar disorder	Fasting lipids; fasting blood glucose/HbA1c; liver function tests at baseline, 3mos, 6mos, then annually
Latuda	lurasidone	18 and older for monotherapy and adjunctive therapy in bipolar depression	Same as above
Risperdal	risperidone	10 and older for bipolar mania and mixed episodes	Same as above
Seroquel	quetiapine	18 and older for bipolar disorder; 10-17 for treatment of manic and mixed episodes of bipolar disorder	Same as above
Zyprexa	olanzapine	18 and older for bipolar disorder; 13-17 as second line treatment for manic or mixed episodes of bipolar disorder and schizophrenia.	Same as above
Depakote	divalproex sodium (valproic acid)	2 and older (for seizures)	CBC, LFTs, valproic acid level, B-hcg, amylase and lipase
Eskalith	lithium carbonate	12 and older for Bipolar Disorder	BMP, Lithium level, TSH, CBC, B-hcg
lithium citrate (generic only)	lithium citrate	12 and older for Bipolar Disorder	BMP, Lithium level, TSH, CBC, B-hcg
Lithobid	lithium carbonate	12 and older for Bipolar Disorder	BMP, Lithium level, TSH, CBC, B-hcg
Lamictal	lamotrigine	18 and older for maintenance in Bipolar Disorder	CBC, B-hcg
Tegretol	carbamazepine	18 and older for Bipolar Disorder; any age (for seizures)	CBC, LFTs, Tegretol level, B-hcg

Topamax	topiramate	2 and older (for seizures)	Consider LFTs, B-hcg
Trileptal	oxcarbazepine	4 and older (for seizures)	Consider LFTs, Na, B-hcg

9.8 FDA Approved Antidepressants

Trade name	Generic Name	FDA Approved Indication(s) and Age	Starting doses
Prozac	fluoxetine	8 and older	See Depression guidelines
Zoloft	sertraline	6 and older (for OCD)	See Depression guidelines
Luvox	Fluvoxamine	8 and older	See Depression guidelines
Lexapro	escitalopram	12 and older	See Depression guidelines
Celexa	citalopram	18 and older	See Depression guidelines
Cymbalta	duloxetine	18 and older	See Depression guidelines
Effexor	venlafaxine	18 and older	See Depression guidelines
Wellbutrin	Bupropion	18 and older	See Depression guidelines
Pristiq	desvenlafaxine	18 and older	See Depression guidelines
Tofranil*	imipramine	6 and older	See Depression guidelines
Anafranil*	clomipramine	10 and older (for OCD)	See Depression guidelines
Viibryd	vilazodone	18 and older	See Depression guidelines
Brintellix	vortioxetine	18 and older	See Depression guidelines
Fetzima	Levomilnacipran	18 and older	See Depression guidelines

*Clomipramine and imipramine not used often due to their **side effect profile**.

9.9 Adverse Effects

Antipsychotic Adverse Effects

- Atypical antipsychotic medications can cause weight gain and can alter metabolism, increasing risk for diabetes and hyperlipidemia.
- A person's weight, glucose levels, and lipid levels should be monitored regularly while taking an atypical antipsychotic medication.
- Typical antipsychotic medications can cause side effects related to physical movement, such as:
 - Rigidity
 - Persistent muscle spasms
 - Tremors
 - Restlessness

- Long-term use of antipsychotic medications may lead to a condition called tardive dyskinesia (TD). TD causes muscle movements a person can't control. The movements commonly happen around the mouth. TD can range from mild to severe, and in some people the problem cannot be cured. Sometimes people with TD recover partially or fully after they stop taking medication.
- Neuroleptic malignant syndrome (NMS) is a serious adverse reaction and is associated with mental status changes, muscular rigidity, hyperthermia, psychomotor changes, signs of autonomic instability and elevated creatinine phosphokinase (CPK). It is considered a rare but dangerous reaction. Symptoms of neuroleptic malignant syndrome usually appear abruptly and can be of long duration.

Mood Stabilizer Adverse Effects

The following is a list of major adverse effects and does not include all possible adverse events

- **Depakote:** Neural tube defects, liver dysfunction, thrombocytopenia, increased levels with other medications, and pancreatitis.
- **Lithium:** Thyroid disease, leukocytosis, polyuria, diarrhea, disturbances in renal function, increased levels with use of NSAIDs and ACE inhibitors.
- **Lamictal:** Stevens Johnson Syndrome.
- **Tegretol:** Auto-induction of liver enzymes leading to a decrease in level of Tegretol and other medications, agranulocytosis.

Antidepressant (SSRI/SNRI) Adverse Effects

- *Serious Adverse Effects*
 - Serotonin Syndrome (muscle rigidity, tremulousness, myoclonus, autonomic instability, agitated confusion, rhabdomyolysis)
 - Akathisia (uncontrollable internal motor restlessness)
 - Hypomania
 - Discontinuation syndromes (nausea, vomiting, headache, tremor, dizziness, fatigue, irritability, palpitations, rebound depression/anxiety)
- *Common Adverse Effects*
 - GI effects (dry mouth, constipation, diarrhea)
 - Sleep disturbance
 - Irritability
 - Disinhibition
 - Agitation/jitteriness
 - Headache

9.10 What to Do After Starting a Medication

- Antipsychotics
 - AIMS (Abnormal Involuntary Movement Scale)
 - Fasting Lipid profile
 - Fasting Glucose
 - Hemoglobin A1c
 - Liver Function Tests
 - Urine pregnancy

- Mood stabilizers
 - Urine pregnancy
 - See lab monitoring above

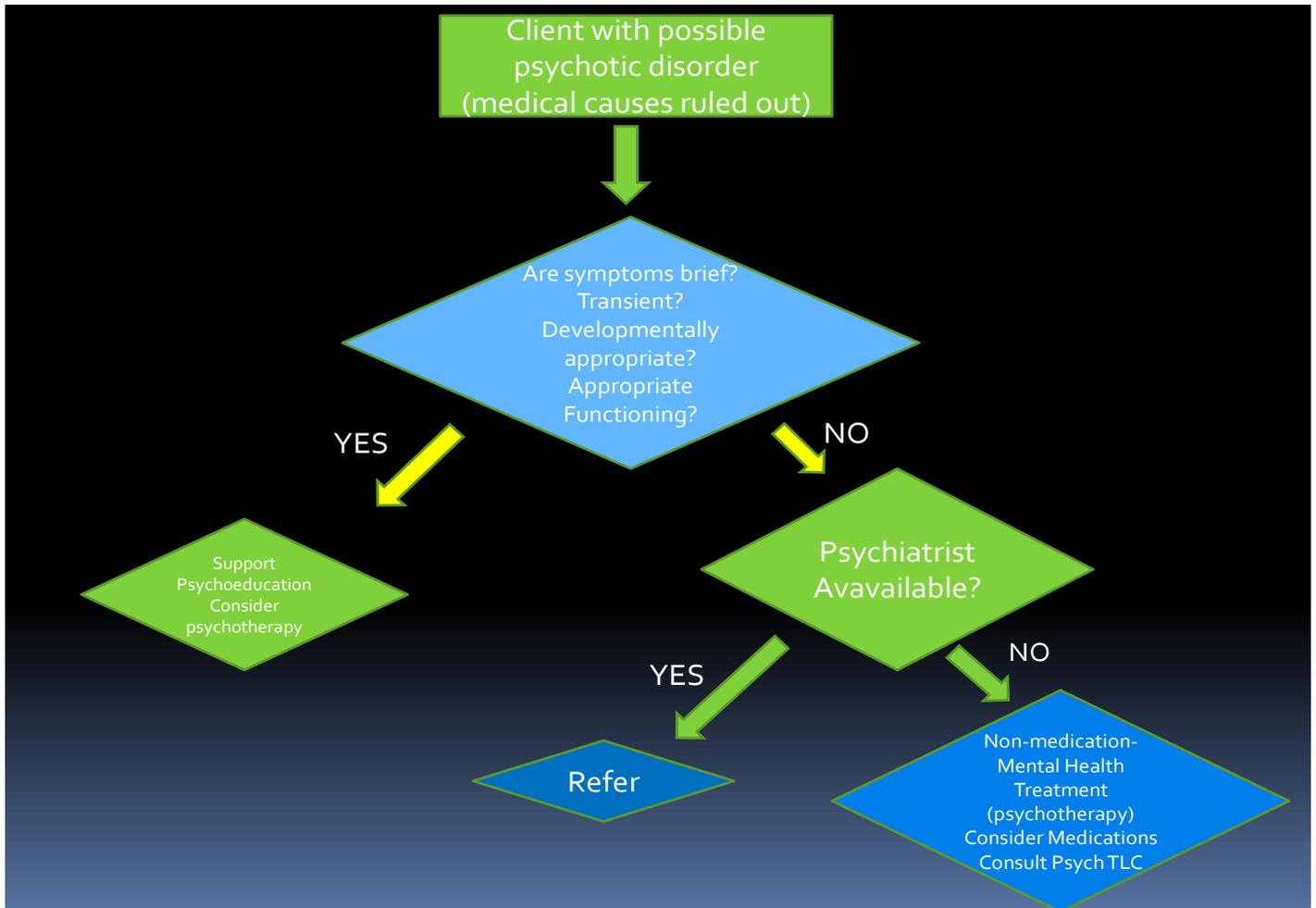
- Antidepressants
 - Monitor for side effects (see list above)
 - Urine pregnancy
 - See Depression Guidelines

9.11 What to Do While Waiting for a Referral

- *Parent Recommendations*
 - Affected youth and their families should be educated that the diagnosis will be re-evaluated over time as additional information becomes available.
 - Parents should observe for noticeable persistent changes in hygiene, social functioning, and academic functioning. Talk to friends and teachers if there is concern.
 - See below (Section 10) for family resources that can be sought while waiting for a referral.

- *School Recommendations*
 - With permission, involve teachers in assessing function. Determine whether there are any school-related stressors.
 - The school may assess for learning disabilities or special education needs that may be contributing to the child's distress.

9.11 Algorithm for Assessing Patients with a Possible Psychotic Disorder



10. Family Resources

10.1 AACAP Facts for Families:

- American Academy of Child and Adolescent Psychiatry (AACAP) Facts for Families: <http://aacap.org/page.wv?name=Schizophrenia+in+Children§ion=Facts+for+Families>
- American Academy of Child and Adolescent Psychiatry (AACAP) Bipolar Disorder Resource Center: <http://aacap.org/cs/BipolarDisorder.ResourceCenter>
- American Academy of Child and Adolescent Psychiatry (AACAP) Depression Resource Center: <http://aacap.org/cs/Depression.ResourceCenter>
- American Academy of Child and Adolescent Psychiatry (AACAP) Anxiety Disorders Resource Center: <http://aacap.org/cs/AnxietyDisorders.ResourceCenter>

10.2 Other Family Resources

- **Arkansas Division of Behavioral Health Services (DBHS):** (501) 686-9465
<http://humanservices.arkansas.gov/dbhs/Pages/default.aspx>
- **Arkansas Teen Crisis Hotline:** (888) 798-8336 or (479) 872-8336
- National Alliance on Mental Illness: <http://www.nami.org/>
- PTSD in Children and Teens: Web Resource Link: <http://ptsd.va.gov/public/web-resources/web-children-adolescents.asp>

10.3 Arkansas Building Effective Services for Trauma

The Psychiatric Research Institute and the Department of Pediatrics collaborate to serve children who have experienced abuse.

- **Clinical Care** - Implement evidence-based assessment and treatment practices throughout the state to create a comforting and safe environment for children and adolescents who are traumatized and optimize their physical and mental health outcomes.
- **Training** - Provide state-of-the-art training, supervision and learning environments that will maximize the adoption of quality interventions for traumatized children and adolescents.
- **Advocacy** - Enhance awareness, expand knowledge and promote collaboration among all individuals working with traumatized children and adolescents and their families.
- **Research** - Constantly monitor, assess the effectiveness of, and develop and test new models of interventions for traumatized children and adolescents to provide the safest and most effective care available.

Arkansas Building Effective Services for Trauma (AR BEST) has developed a comprehensive list of the names and contact information of clinicians who are trained to provide treatment for children who had been exposed to severe trauma: <http://uams.edu/arbest/map.asp>

For more information regarding AR BEST: arbest_info@uams.edu

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12. Appendix

12.1 Clinical Case Examples

12.1.1 Early Onset Schizophrenia

- A 13 year old male reported that cars going by his home honking the horn signaled that God was sending him a special message. This has been occurring for the past year. He believes that this is real and will not entertain other possibilities. Recently he has been hearing the voice of a tiger “inside” his head that says “mean” things about him. He is often frightened, confused, and puzzled by this voice. Parents have been unable to reassure him and he has become more aggressive with his siblings. He has been more withdrawn at school and grades have declined. He has had very poor hygiene and parents report he rarely takes a shower.
- His physical exam and laboratory studies are normal, including a negative drug screen.
- There is a history of paranoid schizophrenia in his family.

12.1.2 Schizoaffective Disorder

- A 16 year old adolescent girl is brought to the emergency room because she has not slept for four days, is very irritable, has been cleaning the house and painting numerous paintings, and is quoting Bible verses repeatedly. She had been seen one month ago when she was very withdrawn, and was hearing a male voice that was telling her to “be quiet” and not to trust anyone. She also believed at that time that her neighbors were installing cameras in her home and were listening to her.
- Her drug screen is negative and physical exam is WNL.
- She has a family history of paranoid schizophrenia.

12.1.3 Schizophreniform Disorder

- A 17 year old girl presents for a regular check-up. Her mother reports that for the past two months she has been isolating from others, believes that others have been stealing from her, and has not been sleeping well. She has been mumbling to herself. Her teachers have noticed that she seems distracted in the classroom. During interview, she reports that she has heard God talking to her and she also hears "God's enemy sometimes." She denied any suicidal or homicidal ideation.
- She did not have any physical problems and did not exhibit any signs or symptoms of depression or of elations or euphoria. She did not take any drugs or alcohol and did not have evidence of trauma. Electrolytes, thyroid profile, and drug screen findings were unremarkable.

12.1.4 Delusional Disorder

- Mrs. K is a 19-year-old woman who was brought to the emergency room by police after being arrested for trespassing. Upon arrival, Mrs. K stated she was going to see her husband. She talked about how much the two of them loved each other. She talked about their wedding and plans for future children. Upon gaining collateral information, the man who owned the home was her former boss who had terminated her employment because of inappropriate sexual advances. She denied having had a relationship with her former husband who lived in California.

12.1.5 Brief Psychotic Disorder

- An 18 year old male started college two weeks ago. He reported feeling overwhelmed with the amount of homework he had been given and began to isolate in his room. His roommate noticed he had become more agitated and irritable and when he started saying that the FBI was after him, his roommate notified campus authorities and he was subsequently taken to an emergency room and then a psychiatric hospital. He was started on an atypical antipsychotic after medical clearance and responded within several days. Months later, after starting psychotherapy, he tapered off of medications and had resumed school and work with no further psychotic symptoms.

12.1.6 Bipolar Disorder with Psychotic Features

- A 10 year old male presented to the clinic with his parents for an urgent evaluation. He was giddy and distractible and had been so for the past 4-5 days. He was no longer sleeping and parents reported that he had not seemed tired. He also was impulsive and attempting to jump from his two story bedroom window, claiming that he had superpowers and that the voice of God was telling him that he could never be hurt. He had stripped off all of his clothes. He had previously been in psychotherapy for depressive symptoms the past year. He had a family history of bipolar disorder in his paternal aunt who had been hospitalized numerous times.
- His physical exam was normal, and thyroid, urine drug screen, and other laboratory studies were normal.

12.1.7 Major Depressive Disorder with Psychotic Features

- A 14 year old female presents to clinic reporting sadness, feelings of worthlessness, loss of interest in gymnastics, insomnia, poor concentration, and irritability. Grades have fallen the past two weeks and she has started to report hearing a voice outside her head telling her “You are terrible.” She is frightened by the voice and says she cannot make it go away, though she has tried by listening to music. She believes that she has become possessed by the devil.

12.1.8 Anxiety Disorders

- A 7 year old female presents for initial evaluation and is accompanied by her foster parents. She had been sexually abused several months ago and now is very fearful of adults and avoids people

and places that remind her of what happened to her. For the past week she has been hearing the voice of the perpetrator saying “I will get you.” She is very difficult to console and says the voice seems outside of her head. She continues to have nightmares with monsters.

12.1.9 Personality Disorders

- A 15 year old female presents to the emergency room. Her boyfriend of one week has just broken up with her. She has used a razor blade to make superficial cuts on her arm and says “My life is over.” She says that since the break-up she has been hearing a voice inside her head that says “You are a worthless piece of crap.” She can make the voice go away if she talks to someone, especially if they “care” about her and are willing to listen.

12.1.10 Delirium

- A 7 year old male is being treated for burns and 24 hours prior began to have visual hallucinations of seeing “an elephant” in his room. He had insomnia at night and would fall asleep during conversation during the day. In the morning he seemed to be less confused, but in the afternoon, he did not know where he was and didn’t recognize staff who talked with him earlier in the day. He could not remember that family had visited and talked with him that morning. He became agitated at times and would pull his IV and other lines. This continued for the next two days until his medical status was more stable.

12.1.11 Seizure Disorders

- A 12 year old adolescent girl is brought to the emergency room because she had an episode of smacking her lips and then becoming confused. She later started having hallucinations and believed her family was trying to harm her. She was subsequently diagnosed with complex partial seizures.

12.1.12 Sleep Disorders

- You recently referred a 10 year old female patient to a neurologist for evaluation of narcolepsy. While waiting for a referral she and her mother report that as she goes to sleep she “sees a tall giant” in her room. She has also had times where she saw someone in her room upon awakening. She has no hallucinations during the day and other than the frequent, extreme urge to fall asleep is otherwise healthy.

12.1.13 Metabolic Disturbance

- A 16 year old female was referred for follow-up after being seen in an emergency room for changes in behavior. She had become more withdrawn at school and her parents noticed that she was beginning to walk differently. Upon arrival, she is hearing voices and talking incoherently.

She is drooling and has an abnormal facial expression. Upon eye exam there are dark circles surrounding the iris of both eyes.

12.1.14 Neurologic Disorders

- A 17 year old male presents to the emergency room with his family. He has been aggressive and threatening to hurt his family. He has also hit his mother but says this was accidental, and upon exam you find that he has clumsiness of his arms and legs and looks like he is “dancing.” His grades have fallen and at times he has had trouble walking. His father, age 46, was recently diagnosed with a medical condition and is now in a nursing home but his family doesn’t know what the name of the condition is.

12.1.15 Toxins

- A 13 year old female patient is brought to the emergency room from her middle school due to “acting funny.” There is no family present, and when you talk with her, she appears anxious and is staring at different things in the room, and she says that she sees spiders. She says that you are her uncle and that you are going to hurt her. You obtain a urine drug screen and it is positive for cocaine.

12.2 Table of Symptomatology According to Developmental Stage

	Infant	Early Childhood	Middle Childhood	Adolescent
Early-Onset Schizophrenia	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> Rarely diagnosed May have more visual and tactile hallucinations and this could indicate greater severity Progressive decline in overall function 	<ul style="list-style-type: none"> Rarely diagnosed May have more visual and tactile hallucinations and this could indicate greater severity Progressive decline in overall function 	<ul style="list-style-type: none"> Males develop earlier than females Auditory Hallucinations Delusions Disordered Thinking Social withdrawal Isolation from peers Decline in cognitive abilities Progressive decline in overall function
Schizoaffective Disorder	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> See Schizophrenia, Bipolar Disorder, and Major Depressive Disorder 	<ul style="list-style-type: none"> See Schizophrenia, Bipolar Disorder, and Major Depressive Disorder 	<ul style="list-style-type: none"> See Schizophrenia, Bipolar Disorder, and Major Depressive Disorder
Brief Psychotic Disorder	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> Rarely diagnosed 	<ul style="list-style-type: none"> Rarely diagnosed 	<ul style="list-style-type: none"> Not commonly diagnosed until late 20's or early 30's Symptom duration less than one month
Delusional Disorder	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> Rarely diagnosed until late teens Delusions of persecution are more common 	<ul style="list-style-type: none"> Uncommon until late teens and early twenties and more often present with delusions of persecution such as being attacked or harassed
Bipolar Disorder with Psychotic Features	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> Not commonly diagnosed Persistently irritable mood is described more often than a euphoric mood Aggressive and uncontrollable outbursts, agitated behaviors (may look like Attention-Deficit/Hyperactivity Disorder [ADHD] with severe hyperactivity and impulsivity) Extreme fluctuations in mood reckless behaviors, dangerous play, grandiosity, and inappropriate sexual behaviors 	<ul style="list-style-type: none"> Persistently irritable mood is described more often than a euphoric mood Aggressive and uncontrollable outbursts, agitated behaviors (may look like Attention-Deficit/Hyperactivity Disorder [ADHD] with severe hyperactivity and impulsivity) Extreme fluctuations in mood, reckless behaviors, dangerous play, grandiosity, and inappropriate sexual behaviors 	<ul style="list-style-type: none"> Markedly labile mood Agitated behaviors, pressured speech, racing thoughts, sleep disturbances Reckless behaviors (e.g., dangerous driving, substance abuse, sexual indiscretions) and grandiosity Illicit activities (e.g., impulsive stealing, fighting), spending sprees Psychotic symptoms (e.g., hallucinations, delusions, irrational thoughts)

	Infant	Early Childhood	Middle Childhood	Adolescent
Major Depressive Disorder with Psychotic Features	<ul style="list-style-type: none"> Not diagnosed 	<ul style="list-style-type: none"> Loss of learned skills, temper tantrums, irritability, destructive behaviors, separation anxiety Mood congruent hallucinations are rare 	<ul style="list-style-type: none"> Somatic complaints, school refusal, anxiety related issues Mood-congruent hallucinations (rare) Depressed mood (what child reports) and/or affect (non-verbal communication), self-esteem issues, boredom, apathy Substance use Change in weight, appetite changes Insomnia, excessive sleep Aggression/anti-social behavior Suicidal thoughts, self-injurious behaviors 	<ul style="list-style-type: none"> Depressed/sad/irritable mood lasting most days for two weeks Feelings of hopelessness, worthlessness or guilt Poor concentration Decreased energy Poor appetite and weight lost Aggression Suicidal thoughts May have mood congruent hallucinations
PTSD	<ul style="list-style-type: none"> Not commonly diagnosed, but may take the form of failure to thrive, feeding problems, or extra fears or aggression in response to stress 	<ul style="list-style-type: none"> Distressing dreams of the events may change to generalized nightmares of monsters or other threats to self and others Persistent re-experiencing of the traumatic event through repetitive play, drawing, or storytelling; possible constriction of other play Physical symptoms (recurrent abdominal pain, headaches) 	<ul style="list-style-type: none"> Increased arousal or hypervigilance; sleep problems Avoidance of activities related to the traumatic event Failure to progress or regression in developmental skills, such as toilet learning, language development, socializing, and learning in school Difficulty concentrating In young children, disturbed patterns of social relatedness (e.g., indifference, extreme ambivalence, failure to show preference for parents and caregivers) 	<ul style="list-style-type: none"> Distressing dreams of the traumatic events or flashbacks to the traumatic event Persistent re-experiencing of the traumatic event, sometimes through risk-taking behavior Physical symptoms (e.g., recurrent abdominal pain, headaches) Increased arousal or hypervigilance; sleep problems Avoidance of activities related to the traumatic event Failure to progress, or regression in academic skills Difficulty concentrating

