EARLY-ONSET SCHIZOPHRENIA

Introduction

Schizophrenia is a pervasive, devastating, neuropsychiatric disorder associated with extreme deficits in cognition, behavior, and social functioning (McClellan & Werry, 2001). Estimates indicate that schizophrenia occurs in one percent of populations worldwide and in all known cultural and ethnic groups (McDonell & McClellan, 2007). Onset of schizophrenia typically occurs between age 16 and 30; the rate of onset increases during adolescence, peaking at age 30 (Mueser & McGurk, 2004; McClellan & Werry). Schizophrenia in youth is extremely rare, and most information used to diagnose and treat this population has been garnered from adult studies (Brown et al., 2008). Schizophrenia with onset in youth accounts for approximately one percent of all individuals with schizophrenia (Kumra, 2008).

Onset before age 18 is commonly categorized as early-onset schizophrenia (EOS), having either an acute or insidious, i.e., a gradual onset without obvious symptoms. Onset before 13 years of age is considered childhood-onset schizophrenia (COS) and almost always has an insidious onset (McClellan & Werry, 2001). Males are two times more likely to be diagnosed before 18, and most youth with EOS maintain the diagnosis over time (McClellan & Werry; Asarnow, Tompson & McGrath, 2004). The diagnostic process has been defined for youth ages eight and older (McClellan & Werry). Pursuant to the American Academy of Child & Adolescent Psychiatry (AACAP), the diagnosis of EOS is made using the same diagnostic criteria as those used for adults (McClellan & Werry). Studies have shown that the most common criteria in EOS are hallucinations, formal thought disorder, and flattened affect, with systematic delusions and catatonic symptoms being less common (McClellan & Werry; Pavuluri, Herbener & Sweeney, 2004). Although these criteria are consistently found in EOS, it is important to note that EOS is a phasic disorder with much individual variability (Werry, McClellan & Chard, 1991; Asarnow & Tompson, 1999).

Causes and Risk Factors

It is likely that genetic, behavioral, and environmental factors impact the development of EOS (Kodish & McClellan, 2008). Developmental and/or behavioral abnormalities are common with EOS; some reports indicate incidence as high as 90 percent (McClellan & Werry, 2001; McDonell & McClellan, 2007). The association between greater premorbid abnormalities, i.e., abnormalities preceding the disease, and EOS reflects a greater neurodevelopmental insult (McDonell & McClellan). Environmental factors can intensify genetic or neurodevelopmental deficiencies, thus findings point to a combination and interaction between genetic and environmental influences (U.S. Department of Health and Human Services, 1999).

Research has indicated that early central nervous system lesions have been shown to affect the normal maturational processes of the brain in youth having schizophrenia (McClellan & Werry, 2001). The initial findings of a National Institute of Mental Health (NIMH, 2001) study of EOS showed that youth who had psychotic episodes before puberty demonstrated evidence of progressively abnormal brain development. Major changes occur in the brain during puberty, which could trigger symptoms of

schizophrenia (NIMH, 2007). This study revealed that the ventricles enlarged abnormally in youth ages 14 to 18, suggesting a shrinking of brain tissue volume. This shrinking is significant because losses in the rear of the brain are influenced primarily by environmental factors and suggests that a non-genetic cause may play a role in the initial progression of the disorder. The brain loss pattern in youth is consistent with that seen in adults with schizophrenia.

The literature shows no evidence that psychosocial factors cause schizophrenia (McClellan & Werry, 2001). There is evidence that the onset, course, and severity of schizophrenia are due to the interaction between environmental and biological risk factors. Psychosocial factors play a part by influencing the onset, episode intensity, and relapse rate. Expressed emotion (EE), which is characterized by high levels of criticism, emotional over-involvement, or hostility in the family, is one such mediating factor that has been shown to have a strong influence in the course of the disorder. A study in adults showed that 65 percent of those returning to families characterized by high EE relapsed within one year, compared to 35 percent who returned to low EE families (Butzlaff & Hooley, 1998).

Studies have shown that schizophrenia is twice as prevalent among first-degree relatives of EOS youth (U.S. Department of Health and Human Services, 1999). Compared to the general population, the risk is five times higher for second-degree relatives of persons having schizophrenia, ten- to fifteen-fold higher for first-degree family members, as well as dizygotic (fraternal) twins, and forty to fifty times higher for monozygotic (identical) twins or for someone with both parents having schizophrenia (Carpenter, 2004). Environmental factors associated with schizophrenia include maternal malnutrition, infections during critical periods of fetal development, fetal hypoxia (a lack of oxygen to the brain), and other birth and obstetric complications (Carpenter).

EOS is linked to poorer outcomes and increased negative symptoms in adulthood (McClellan & Werry, 2001). Earlier age of onset has been associated with more severe impairments (Kodish & McClellan, 2008).

Diagnostic Issues and Categories

According to the AACAP Practice Parameters, the diagnosis of EOS is made using the same *Diagnostic and Statistical Manual of Mental Disorders*, *Fourth Edition, Text Revision (DSM-IV-TR)* criteria as those for adults. Evidence has shown that EOS and adult-onset schizophrenia are most likely the same disorder (McClellan & Werry, 2001). The diagnosis of schizophrenia, according to the *DSM-IV-TR*, requires at least a one-month duration of at least two of the following:

1. delusions;
2. hallucinations;
3. disorganized speech;
4. grossly disorganized or catatonic behavior; or
5. negative symptoms (APA, 2000).

Symptoms can be divided into two groups: positive and negative symptoms (Murphy, Cowan & Sederer, 2001). Positive symptoms are those which are in addition to normal experiences and which youth without schizophrenia will rarely experience (U.S. Department of Health and Human Services, 1999). Negative symptoms are those that involve a loss of normal function or experience (U.S. Department of Health and Human Services). Both categories are described in Table 1.

Only one symptom is needed if the hallucinations or delusions are especially bizarre (e.g., auditory hallucination providing a running commentary on the youth's behavior or thinking). Another criterion for the diagnosis of EOS is marked impairment of social, occupational and self-care functioning. In youth, this could be the failure to achieve age-appropriate levels of interpersonal, academic or occupational development (McDonell & McClellan, 2007). Disturbances must be present for at least six months, a criterion which can be difficult to assess since most youth first seek care when they are acutely psychotic and may not have experienced symptoms for six months (McClellan & Werry, 2001). In such a case, longitudinal assessment is essential for confirming a tentative EOS diagnosis. Clinicians will want to rule out other disorders (e.g., schizoaffective disorder, mood disorders with psychotic features) before an EOS diagnosis can be made.

Table 1

Positive and Negative Symptoms of Schizophrenia

Positive Symptoms	Description
Delusions	Persecutory, referent, grandiose, somatic, or religious. May also involve thought withdrawal or insertion, or the belief that one is controlled by an outside force.
Hallucinations	Auditory, visual, tactile and/or olfactory (smell)
Disorganized speech	Loosening of associations; tangential or incoherent speech
Disorganized behavior	Difficulty in sustaining goal-oriented behavior
Catatonic behavior	Lack of response to one's environment. Motor immobility, mutism, posturing or stereotyped behavior, excessive motor behavior, echolalia (unconventional verbal behaviors), or echopraxia (imitation of movements of others)
Negative Symptoms	**Description**
Avolition	Difficulty initiating and maintaining motivation to complete tasks
Alogia	Poverty in the content and amount of speech
Affective flattening	Limited facial affective expression, eye contact, and body language

Sources: APA, 2000; McDonell & McClellan, 2007.

The most common criteria for EOS are hallucinations, formal thought disorder and flattened affect, with systematic delusions and catatonic symptoms being less common (McClellan & Werry, 2001; Pavuluri, Herbener & Sweeney, 2004). Psychotic symptoms are the hallmark of the disorder and overt psychotic symptoms (active phase) must be present for a diagnosis to be made (McDonell & McClellan, 2007; McClellan & Werry). Because misdiagnosis is a major issue in the assessment and diagnosis of EOS, clinicians should take care to differentiate true psychotic symptoms from overactive imaginations, idiosyncratic thinking, and perceptions caused by developmental delays and/or exposure to traumatic events. Symptoms must represent a marked change in mental status or level of functioning (McClellan & Werry). Also youth with EOS display three characteristic communication deficits: illogical thinking, loose associations, and impaired discourse skills (Caplan, 1994; Caplan, Guthrie, Gish, Tanguay & David-Lando, 1989). Symptoms tend to shift over time from positive to negative (Brown et al., 2008).

Studies show that 10 to 20 percent of youth with EOS have an IQ in the borderline range or below (Brown et al., 2008). Bettes and Walker found that positive symptoms were associated with IQs greater than 85; negative symptoms were found to be associated with brain damage (1987). Deficits in communication and language are also common in youth with EOS (McDonell & McClellan, 2007). Research shows that youth with EOS have difficulty with tasks requiring greater capacity for information processing (Asarnow et al., 1994).

The *DSM-IV-TR* recognizes five subtypes of schizophrenia (McDonell & McClellan, 2007):

- Paranoid Type–Characterized by hallucinations and persecutory delusions, without substantial disorganized behavior or speech.
- Catatonic Type–Rare, especially in EOS; it is marked by unresponsiveness to one's environment.
- Disorganized Type–Disorganized behavior and/or thought. May be too confused to provide descriptions of organized delusions and hallucinations.
- Undifferentiated Type–Meet criteria for schizophrenia but do not meet criteria for paranoid, disorganized, or catatonic types.
- Residual Type–Persons with schizophrenia who no longer manifest symptoms consistent with an active phase of illness, but still manifest negative symptoms, and other symptoms of the illness in a milder form.

Since EOS is a phasic disorder, individual variability must be considered when working with youth. Differences in clinical presentation of EOS across the phases must be taken into account during assessment and diagnosis. These phases and corresponding descriptions are listed below (McClellan & Werry, 2001; McDonell & McClellan, 2007):

- Prodromal Phase–Prior to developing overt psychotic symptoms, most youth will experience some period of deteriorating function, which may include social isolation, idiosyncratic or bizarre preoccupations, unusual behaviors, academic problems and/or deteriorating self-care skills. However, while the presence of these problems should raise concerns, psychotic symptoms must be present before a diagnosis of schizophrenia can be made.
- Acute Phase–This is the phase in which youth often present, and is dominated by positive psychotic symptoms (i.e., hallucinations, delusions, formal thought disorder, bizarre psychotic behavior) and functional deterioration.
- Recovery Phase–This follows the acute phase, as the active psychosis begins to remit. This phase often has some on-going psychotic symptoms and may be associated with confusion, disorganization and dysphoria (state of anxiety and/or unease).
- Residual Phase–During this phase, positive psychotic symptoms are minimal. However, youth will still generally have on-going problems with "negative symptoms", i.e., social withdrawal, apathy, and/or flat affect.
- Chronic Impairment–Some youth remain chronically impaired by persistent symptoms if they have not responded adequately to treatment.

Assessment

Proper assessment of EOS in youth is essential in early diagnosis, intervention, and treatment. Although no information on early intervention is available in the EOS literature, research has shown that the duration of untreated psychosis predicts poorer outcomes in adults with schizophrenia (Harrigan, McGorry & Hrstev, 2003). Unfortunately, EOS is often misdiagnosed because of its rarity and because its symptoms being similar to other mood disorders (McClellan & Werry, 2001). To prevent misdiagnosis and increase the chance for a better prognosis in youth, a complete, multi-informant, multi-method assessment is key (McDonell & McClellan, 2007). The AACAP practice parameter recommends that the assessment also incorporate an understanding of the youth's developmental, social, educational, and psychological needs (McClellan & Werry).

A comprehensive diagnostic assessment should include interviews with both the youth and his family, a review of past records and other pertinent information, and a detailed evaluation of the psychotic symptoms (McClellan & Werry, 2001). Symptom presentation, course of illness, confounding factors, family psychiatric history, and a mental status examination are important issues that should be addressed during the assessment. During the initial assessment period, the clinician should choose both broadband (general screening tools) and narrowband (specific to disorder) measures in order to rule in/rule out other possible diagnoses or comorbid disorders.

One of the first steps in assessing EOS should be an examination by a primary care provider to rule out a medical reason for the youth's change from normal behavior. Many medical conditions, such as delirium, seizure disorders, central nervous system lesions, neurodegenerative disorders, and developmental disorders, can cause organic psychosis (McClellan & Werry, 2001). Psychotic symptoms brought on by substance abuse should also be ruled out. Other conditions that should be ruled out prior to a diagnosis of schizophrenia include psychotic mood disorders, behavioral/emotional disorders, schizoaffective disorder, Autism Spectrum Disorder, obsessive-compulsive disorder, and delusional disorders. Since most youth with psychotic symptoms do not have a psychotic disorder, there are three ways to differentiate typical from atypical psychotic symptoms (McDonell & McClellan, 2007). To discern one symptom from another, clinicians should consider the following:

1. reports by youth are inconsistent, with no other documented evidence of a psychotic process;
2. qualitative reports which are not typical of psychotic symptoms; and
3. reported symptoms which occur only in specific situations.

Suggested assessment tools for schizophrenia are outlined in Table 2.

Table 2

Suggested Assessment Tools

Measure Type	Name of Measure	Who Completes	Data Generated
Clinical Interview	Schedule for Affective Disorders and Schizophrenia for School-Age Youth present and lifetime (K-SADS-P/L)	Clinician with Youth and Parent	Diagnosis
Clinical Interview	Structured Clinical Interview for *DSM-IV*, Childhood Diagnoses (KID-SCID)	Clinician with Youth and Parent	Diagnosis
Symptom Rating Scale	Scale for the Assessment of Positive Symptoms (SAPS)	Clinician with Youth	Symptom ratings
Symptom Rating Scale	Scale for the Assessment of Negative Symptoms (SANS)	Clinician with Youth	Symptom ratings
Symptom Rating Scale	Positive and Negative Syndrome Scale	Clinician with Youth	Symptom ratings
Behavior Checklist	Youth Self-Report (YSR)	Youth	Syndrome scale scores; competence scores
Behavior Checklist	Child Behavior Checklist (CBCL)	Parent	Syndrome scale scores; competence scores

Source: McDonell & McClellan, 2007.

In addition, clinicians must acknowledge developmental, cultural, and intellectual factors which may impact assessment and diagnosis. This will allow the clinician to interpret clinical data correctly and to differentiate between appropriate and inappropriate behavior. It is also imperative that the clinician assesses not only for symptoms, but also for functional impairment and the degree to which the youth functions at home, school and in play.

Personality and projective tests are not indicated as a method of diagnosing schizophrenia in youth; research indicates no demonstrated ability to increase the diagnostic accuracy of EOS when using tools such as the Rorschach (McDonell & McClellan, 2007).

Individuals having schizophrenia are at high risk for suicide. Although available statistics apply to the adult population, the high prevalence rate for suicide should be considered in assessing and treating youth. Studies have shown that 90 percent of youth who commit suicide have a mental disorder and up to 30 percent of the schizophrenic population will make an attempt in their lifetime (Murphy, Cowan & Sederer, 2001), making monitoring youth with EOS for risk of suicide extremely important. A review of suicide assessment tools is provided in the *Collection*'s "Youth Suicide" section.

Comorbidity

Youth suffering from EOS also have high rates of comorbid conditions (McDonell & McClellan, 2007). These disorders include depression, anxiety, and externalizing disorders, such as attention deficit disorder (ADHD), conduct disorder, and oppositional defiant disorder (McClellan, Breiger, McCurry & Hlastla, 2003). In addition, developmental delays and cognitive difficulties are found at a high rate in youth with EOS; Autism Spectrum Disorder is a common first diagnosis and/or comorbid disorder (McDonell & McClellan). In adolescents with EOS, comorbid substance abuse is also a major issue (Kumra, Thaden & Kranzler, 2005). While no research has been conducted with youth diagnosed with schizophrenia, research in adults with the disorder has shown that nicotine use is the most common form of substance abuse (NIMH, 2007).

Evidence-based Treatments

The AACAP Practice Parameter for treatment of EOS recommends a comprehensive, multimodal combination of both psychopharmacology and psychosocial therapies (McClellan & Werry, 2001). The AACAP also advises that treatment should be several factors, including treatment setting, the age of

the youth, and the family environment. The focus of therapy, as set out by the AACAP, is to alleviate symptoms, reduce long-term mortality, and prevent relapse, while maintaining youth in their homes and communities (McClellan & Werry).

Currently, there are no pharmacological or psychosocial therapies with enough evidence in youth samples to meet the standards for empirically-supported treatments as defined by Chambless & Hollon (1998; Brown et al., 2008; McClellan & Werry, 2001). Thus, research on treatment of EOS is recent and sparse.

For this review, evidence-based treatments are divided into two categories: What Works and What Seems to Work. These treatments are discussed in the paragraphs which follow.

Pharmacological Treatment

Pharmacological treatment of youth diagnosed with EOS is modeled after treatment studies with adults since there are few controlled trials or studies of the efficacy and safety of psychopharmacological medications for youth with EOS (McClellan & Werry, 2001; Brown et al., 2008; Kodish & McClellan, 2008). In adults with schizophrenia, the use of antipsychotic medication is well-established and is considered a necessity in treatment (Mueser & McGurk, 2004). In youth and adults, traditional neuroleptics and atypical antipsychotics are most often the first medications used in treatment (McClellan & Werry; Mueser & McGurk). Compared to first-generation antipsychotics, atypical antipsychotic medications are at least as effective for positive symptoms in studies with adults and may be more helpful for negative symptoms (McClellan & Werry).

According to Brown et al., randomized double-blind studies in youth are limited to haloperidol, clozapine, risperidone, and olanzapine (2008). One of the largest studies to date indicated treatment response over an eight-week period was 53 percent for haloperidol, 74 percent for risperidone, and 88 percent for olanzapine (Sikich, Hamer, Bashford, Sheitman & Lieberman, 2004). Clozapine has documented efficacy in over 15 studies for treatment of schizophrenia in youth (Brown et. al., 2008; McClellan & Werry, 2001). However, it is not considered a first-line agent in youth due to its considerable potential for adverse effects. Serious side effects include seizures and neutropenia, a blood condition in which the neutrophils—cells that defend the body against bacterial infections—are significantly reduced (McClellan & Werry; Godwin & Braden, 2009). These adverse side effects have been shown to occur at a higher rate in youth than in adults (McClellan & Werry). The AACAP Practice Parameters recommend that clozapine be considered only after two trials of other antipsychotic medications because of the adverse affects associated with the medication (McClellan & Werry). Ziprasidone and molindone have also been shown to improve symptoms in youth with EOS (Meighan, Shelton & McDougle, 2004; Sikich et al., 2008).

Long-term monitoring of side effects is an essential component for any treatment regimen requiring antipsychotic agents (McClellan & Werry, 2001). A common side effect of atypical antipsychotics is weight gain, which can result in many general metabolic disorders in youth (Kowatch et al., 2005). Cognitive side effects, such as problems with word retrieval, working memory, and cognitive dulling, can also occur. Other side effects for both first and second generation antipsychotics include abnormal involuntary movements and neuroleptic malignant syndrome (McClellan & Werry; Brown et al., 2008). Youth may be at higher risk than adults for extrapyramidal side effects, i.e., repetitive, involuntary muscle movements or an undeniable urge to be moving. Because these medications may have serious side effects, parents and clinicians must have as much information as possible to make informed decisions about the risks of side effects and potential adverse reactions.

Preliminary data from a recent large-scale, multicenter trial, Treatment of Early Onset Schizophrenia Spectrum Disorders (TEOSS), found that second-generation/atypical antipsychotic medications did not demonstrate superior efficacy over traditional neuroleptic medications (i.e., molindone) (Sikich et al., 2008). This new evidence indicates that there may not be a difference in response rates for these two medications. Table 3 lists the pharmacological treatments for EOS.

Table 3

Pharmacological Treatments for EOS

What Works	Description
Currently no medication meets the criteria for a drug that works.	Not applicable.
What Seems to Work	**Description**
Traditional neuroleptics/first-generation antipsychotics	Molindone Haloperidol
Second-generation (atypical) antipsychotics	Clozapine Risperidone Olanzapine Ziprasidone

Sources: Brown et al., 2008; McClellan & Werry, 2001.

Psychological Treatment

Although no psychological treatments for EOS are considered evidence-based (Chambless & Hollon, 1998), evidence from adult studies has shown that family psychoeducation and support interventions (McDonell & Dyck, 2004) and Cognitive Behavioral Therapy (CBT) (Rector & Beck, 2001) have promise as adjunctive treatments to pharmacological treatment. In limited studies, these interventions have also been shown to be effective in reducing symptoms, increasing functioning, and decreasing cost of care in youth with EOS (Penn et al., 2005).

Family involvement in treatment for EOS is especially important because youth are usually dependent on their families (Brown et al., 2008). Evidence shows that family involvement can decrease the amount of time a youth spends in institutional care by ten months (Lenior, Dingemans, Linszen, de Haan & Schene, 2001). The AACAP Practice Parameters state that the goal of therapy is both to help the youth return to a premorbid level of functioning, i.e., prior to the development of the disorder, and to promote the mastery of age-appropriate developmental tasks (McClellan & Werry, 2001).

Table 4 lists the psychological treatments for EOS.

Table 4

Psychological Treatments for EOS

What Works	Description
Currently no psychological treatments meet criteria.	Not applicable
What Seems to Work	**Description**
Family psychoeducation and support	Helps to improve family functioning, problem-solving and communication skills, and decrease relapse rates.
Cognitive Behavioral Therapy (CBT)	Includes social skills training, problem-solving strategies, and self-help skills.

Sources: Brown et al., 2008; McClellan & Werry, 2001.

Treatment Considerations

Treatment protocols may vary, depending on the phase of illness (McClellan & Werry, 2001). Follow-up studies have shown that family acceptance, appropriate medication management and appropriate school placement are predictors of good response to treatment (Findling, Boorady & Sporn, 2007).

Specialized educational programs and/or vocational training programs may be indicated for some youth to address related cognitive and functional deficits (McClellan & Werry, 2001). Some youth will likely require more intensive community support services. There are some cases where the severity of symptoms necessitate long-term placement in a residential facility. However, as in treatment for all disorders in youth, the least restrictive setting option should always be utilized as appropriate. In

addition to those treatments provided specifically for schizophrenia, other treatments may be needed to address comorbid conditions or other treatment implications, such as substance abuse, depression, and thoughts of suicide (McClellan & Werry).

Overall, a combination of pharmacological and psychosocial treatment is recommended (McClellan & Werry, 2001). Limited research has shown that combination treatment can reduce the risk of early transition to psychosis (McGorry et al., 2002).

Unproven Treatments

Psychodynamically-oriented therapies are considered to be potentially harmful for this population, thus their use is not recommended (U.S. Department of Health and Human Services, 1999). Case studies have described the use of electroconvulsive therapy (ECT) for youth with treatment-refractory schizophrenia. However, ECT does not appear to be as effective for schizophrenia as it is for mood disorders and should therefore be used for cases where several trials of medication therapy (including clozapine) have failed (McClellan & Werry, 2001). Social skills training and cognitive remediation are also not currently supported as treatments for EOS (Asarnow et al., 2004; Penn et al., 2004). In addition, because only the two psychological treatments listed in Table 4 have been studied for this population, any other psychological treatment for EOS would be considered unproven at this time.

Cultural Considerations

When assessing, diagnosing, and treating youth with mental health disorders, a clinician should take into consideration the youth's cultural background. Unfortunately, little is known about cultural differences in the prevalence or presentation of EOS. However, research has shown that minority youth have a higher chance of being misdiagnosed with a behavior disorder or schizophrenia (DelBello, Lopez-Larson, Soutullo & Strakowski, 2001). Also, in some cultures and religious groups, certain delusions and hallucinations (e.g., hearing or seeing religious figures or spirits) are part of a standard religious practice. When taken out of context, cultural or religious beliefs could be misinterpreted as possible psychosis (McClellan & Werry, 2001). To avoid misdiagnosis, a clinician should carefully assess minority youth, especially when the presenting complaint involves psychotic symptoms (Youngstrom, 2007). Garb suggests that, when assessing minority youth, clinicians should gather family history data at the symptom level, if possible, and be cautious about face value interpretation due to the potential for cultural bias (1998).

Clinicians treating youth with EOS should acknowledge family dynamics in developing treatment plans. One cultural difference noted in EOS research is the role of expressed emotion as a risk factor for EOS. Unlike in Caucasian households, where a lower level of expressed emotion may buffer the consequences of schizophrenia, a higher level of expressed emotion in African American families is not shown to be a predictor of relapse (Kodish & McClellan, 2008).

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Organizations

American Academy of Child & Adolescent Psychiatry (AACAP)
Schizophrenia in children—Facts for Families
http://www.aacap.org/cs/root/facts_for_families/schizophrenia_in_children

Mental Health America (MHA)
2000 N. Beauregard Street, 6th Floor — Alexandria, VA 22311
703-684-7722 or 800-969-6642; Helpline: 800-273-TALK
http://www.mentalhealthamerica.net

National Alliance for Mental Illness (NAMI)
http://www.nami.org

Brain & Behavior Research Foundation *(formerly National Alliance for Research on Schizophrenia and Depression, NARSAD)*
http://bbrfoundation.org

U.S. Department of Health and Human Services
National Institute of Mental Health (NIMH)
http://www.nimh.nih.gov/index.shtml

Substance Abuse and Mental Health Services Administration (SAMHSA)
National Mental Health Information Center
http://www.samhsa.gov