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AN EVIDENCED-BASED APPROACH  
TO THE CARE AND TREATMENT OF INDIVIDUALS WITH  
SCHIZOPHRENIA FOR THE  
ADVANCED PRACTICE NURSE

Developed by:  
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## Goals of White Paper on Schizophrenia

The goal of this white paper on schizophrenia is to provide advance practice psychiatric nurses with a clear and concise evidence-based educational resource to help inform and guide their care and treatment of individuals with the disorder of schizophrenia as well as their families and communities. It is intended to provide a reference for everyday clinical practice that addresses assessment, treatment, outcome measures, and resources regarding the disorder of schizophrenia. Additional references, bibliographies, and web sites are provided in order to provide a more comprehensive review of the materials presented here. The ultimate goal is to ensure increased knowledge, awareness, and positive outcomes regarding the disorder of schizophrenia.

An evidence-based approach to the treatment of persons who have schizophrenia is presented. Decisions made and actions taken concerning an individual patient's care must use the best available research. This involves the integration of individual clinical expertise, along with known best practice standards and clinical guidelines derived from systematic reviews of current research regarding the disorder. See Appendix A for a discussion of evidence-based practice. Evidence-based care is necessary in order to provide the appropriate best care practices in clinical situations involving individuals with the disorder of schizophrenia.

The authors of this paper have reviewed systematic literature reviews, meta-analyses, and clinical practice guidelines developed to guide the treatment of patients with schizophrenia. The professional practice guidelines for the treatment of patients with schizophrenia reviewed for this white paper (APA, 2004; PORT, 1998a) were developed based on extensive reviews of empirical research and expert opinion based on practice. A summary of the literature reviewed is included in this paper.

Advanced practice nurses are advised to go to the appropriate primary sources cited in the paper for specific details and to review updates to the guidelines referenced regarding the treatment and care of the disorder of schizophrenia. An extensive list of websites (Appendix B) is also included to facilitate access to updated information.

### Understanding Schizophrenia from Diagnosis Through Treatment and Recovery

Schizophrenia remains one of the most devastating, challenging, and costly psychiatric disorders. The overall incidence worldwide is 0.5% to 1.5%. Schizophrenia affects a range of individual domains such as cognition, insight, judgment, motivation, affect, and behavior as well as family, social, and community systems.

For centuries, schizophrenia has been considered one of the most intractable of the mental disorders and the least comprehensible in terms of its genetic, neurobiological, neurochemical, neuropharmacological, and rehabilitative processes. Recently, however, this discouraging picture has started to significantly change; and the future no longer seems as bleak. The concept of recovery in relation to schizophrenia is now being introduced as a possible outcome with this disorder.

According to the American Academy for the Advancement of Science (Weinberger, 2004), the second most important scientific breakthrough of 2003 was the beginning of the identification of the

genes for mental illness, especially those for schizophrenia. Understanding the roles that biology and genes play in the risks for developing schizophrenia will help to define the basic underpinnings and causes of schizophrenia and will help guide the search for new and more efficacious treatment. Yet, the reality remains that schizophrenia is a complex disorder with extensive personal as well as family and societal consequences. Individuals with the disorder of schizophrenia are stigmatized by the lack of public understanding about the disorder. Therefore, our approach in assessment, treatment, and recovery strategies must involve and reach across all these affected domains in order to adequately address the needs and demand created by this disorder.

### Definition of Schizophrenia

Schizophrenia is a chronic brain disorder that is usually associated with four primary symptom domains: positive symptoms, negative symptoms, cognitive impairment, and affective/mood disturbances:

Positive symptoms are considered “added on” or excess in relation to normal functioning and are synonymous with active psychosis including hallucinations, delusions, thought disturbances, and thought disorganization along with bizarre or unusual or ritualized behaviors. Positive symptoms are prominent during acute exacerbations of the illness and often precipitate hospital admission if not alleviated. Negative symptoms are symptoms that “take away” or a loss of normal life functioning and include flattened or blunted affect, asociality (social withdrawal), anhedonia (loss of ability to experience pleasure), apathy, ambivalence, alogia (paucity of thought), and avolition (inability to initiate focused, goal directed activity). Cognitive symptoms can include all four major areas of neuropsychological functions such as memory, attention, language, and executive function. Mood and affective symptoms common in schizophrenia can include depression, anxiety, agitation, and behavioral decontrol. Often negative, cognitive, and affective symptoms can cause significant functional impairment long after the positive symptoms have been resolved.

This disorder is generally diagnosed in late adolescence into early adulthood but can also rarely occur in childhood and continue throughout the remainder of the person’s life resulting in lasting morbidity, disability, and often earlier than average mortality. The onset may be abrupt or insidious. Schizophrenia is characterized by persistent or recurrent periods of active psychosis, accompanied by progressive deterioration in social, occupational, self-care, and family functioning. Complete remission of the disorder is not common. There is, however, some variability in the course and stability of the illness and its outcome. Typically, there are periods of relapse and remission, which can be associated with persistent residual symptoms and a continued progressive deterioration in functioning. See Appendix C for diagnostic criteria for the subtypes of schizophrenia and schizoaffective disorders.

According to the DSM-IV-TR (2000), schizophrenia is expressed differently in men and women. The model age at onset for men is between 18-25 years and for women between age 25 and the mid 30s. Approximately 3%-10% of women have an age onset of schizophrenia after 40 whereas late onset is much less common in men. Women have better premorbid functioning than men and tend to express more affective symptoms, paranoia, delusions, and hallucinations. Men tend to express more negative symptoms such as a flat affect, avolition, and social withdrawal. A slightly higher incidence of schizophrenia has been observed in men than in women. Women have been found to have a better prognosis (short- to medium-term outcome) than men as defined by number of rehospitalizations, length

of hospital stay, overall duration of illness, time to relapse, response to neuroleptics, and social and work functioning. The long-term outcome for women, especially postmenopausal period, becomes better than that for men.

### Background Information

According to the National Institute of Mental Health, approximately 2.2 million adults in the U.S or about 1.1% of the population age 18 and older in a given year have the disorder of schizophrenia. Rates of schizophrenia are very similar from country to country, about 1% of the population, and schizophrenia ranks among the top 10 causes of disability in developed countries worldwide. The risk of suicide is serious in people with schizophrenia

According to the DSM-IV-TR (APA, 2000), the diagnosis of schizophrenia is made when the symptoms include

- At least one month of active phase symptoms of two or more of the following:
  - o Delusions
  - o Hallucinations
  - o Disorganized speech
  - o Grossly disorganized or catatonic behavior
  - o Negative symptoms
- With at least some signs of the disorder persisting for at least six months
- Involves dysfunction in one or more major areas of functioning:
  - o Interpersonal relations
  - o Work or education
  - o Self-care
- The disturbance is not better accounted for by Schizoaffective Disorder or a Mood Disorder with psychotic features.
- Is not due to the direct physiological effects of a substance or general medical condition.

### Theories of Causation

There are many theories on the cause of schizophrenia. Almost any possible etiology of this illness has been studied. Several factors have been identified as having a high association with the development of schizophrenia. The most accepted theories are presented here.

Brain structure and functioning model. This model includes the structure and function and functioning of the brain. We know that people diagnosed with schizophrenia have overactive basal ganglia. There is evidence of enlarged ventricles, especially the third ventricle, cerebral atrophy, decreased cerebral blood flow, decreased brain volume and reduced glucose metabolism in both the frontal and temporal lobes of the brain. These findings can be identified today with imaging studies provided by the CT, MRI, PET and SECT scan. Most researchers believe that dysfunctions are present in brain circuitry rather than in one or two localized areas of the brain. There is also an imbalance between dopamine and serotonin neurotransmitter system of the brain. Researchers are unsure if this difference is a cause or result

dysfunction. This usually presents itself as an excess of dopamine. There is also some recent evidence that some people diagnosed with schizophrenia have unusual cortical laterality, with dysfunction in the left hemisphere. To explain this finding, a prenatal injury or insult at the time the left hemisphere development has been proposed.

Genetics model. There is a great deal of research today surrounding the genetic causes of schizophrenia. According to the NIMH the research is promising but as of yet inconclusive. Recently, a number of damaged genes or gene segments have been identified and associated with schizophrenia. These genes include the dysbindin, neuregulin, COMT and G72 genes. Data have shown that there is a 15% risk of having the disease if first degree relatives have been diagnosed. Most geneticists suggest that genes maybe a predisposing factor for schizophrenia rather than the cause. This would put schizophrenia into the same category as rheumatoid arthritis, insulin dependent diabetes mellitus and many cancers such as breast, colon. In each case the person is genetically predisposed to get the disease if they are exposed to a causative agent. But the diseases are not truly genetic because the disease itself is not transmitted via genes. As we unfold the mystery of DNA, the future may hold more answers in this area. With this comes the promise of more effective treatment and prevention all together.

Psychological stress model. There is no specific study that shows a correlation with stress and schizophrenia. Studies do show that stress does affect relapse and exacerbation of schizophrenia. According to the literature, there is evidence of a correlation among several factors such as genetic predisposition to schizophrenia with the presence of stressful events may contribute to the development of schizophrenia.

Environmental model. There are many studies that identify that exposure to infectious agents such as viruses in utero and early infancy contributes to the development of schizophrenia. These findings are of great distress given the onset of viral epidemiology and society.

Vulnerability stress model. The most widely accepted theory is that of the Vulnerability Stress Model, in which schizophrenia is viewed as occurring in persons with neurologically based vulnerabilities. Vulnerabilities included are genetic predisposition, viral CNS infections, intrauterine, birth or post natal complications. Other significant stresses are maternal deficits in nutrition, influenza in the second trimester and Rh incompatibility in a second or subsequent pregnancy are associated with an increase risk. Following the 1957 flu epidemic, children born to mothers infected with the flu in the second month were found to have twice likely developed schizophrenia.

### Schizophrenia Across the Life Span

Schizophrenia occurs in all cultural groups, countries, and across the life span and affects about 1.5% of the population and is most prevalent in the late teenage to young adult years. Following is a more detailed description of the illness across the life span in children and adolescents, adults, and in the geriatric population.



## Child/Adolescent

Early-onset schizophrenia (EOS) is defined as onset before age 18 years of age. A subgroup of the early-onset category is the very-early-onset (VEOS), which is defined as onset before age 13 (McClellan & Werry, 1997).

Although schizophrenia has been diagnosed as early as age 5, it is rare for schizophrenia to occur before age 12. It is very rare for young children to present with a symptomatic picture that meets full DSM criteria for schizophrenia (Russell, Bott, & Sammons, 1989). The incidence of schizophrenia shows a dramatic increase in the adolescent years and especially toward late adolescence. Evidence shows many adolescents experience prodromal symptoms a year or more before the first episode. As age increases, both hallucinations and delusions become more complex and elaborate. The earlier the onset and the higher the residual level of positive and negative symptoms, the poorer the functioning and the prognosis. Poor functioning is also noted in social relationships and in independent living skills (Hollis, 2000; Ho, Nopoulos, Flaum, & Arndt, 1998; McClellan, Breiger, McCurry, & Hlastala, 2003).

The rate of onset increases during adolescence and reaches the adult rate of .1% new cases each year (McClellan & Werry, 1997). The disorder occurs more frequently in males at a ratio of 2:1. As age increases, more females are diagnosed with schizophrenia. The age of onset in males tends to be 5 years earlier than in females (McClellan & Werry). In adolescents, both acute onset with symptoms occurring within the past year and insidious onset are noted (McClellan, Werry, & Ham, 1993; Werry, McClellan, & Chard, 1991).

The diagnostic criteria for schizophrenia in children and adolescents are the same as for adults. However, due to the age-related characteristics, it is often difficult to determine if the child's thinking is truly psychotic or whether it is the child's imagination at work. The duration of six months, which is one of the diagnostic criteria for schizophrenia for adults, also poses a challenge when evaluating a child or adolescent for schizophrenia. The symptoms may resolve before six months especially if medication is given so it may be difficult to know if the psychotic symptoms would be present for that length of time. Even though developmental behavior is difficult to differentiate from pathology, the symptoms most indicative of schizophrenia in the VEOS age group as well as in the EOS age group are the positive symptoms, which are the hallucinations and delusions. The most prominent hallucinations for children and adolescents are hearing voices.

Differential diagnosis. Even though symptoms may be indicative of schizophrenia, other conditions may have similar symptomatology. Bipolar Disorder often has similar symptoms as that of schizophrenia. Approximately one half of the adolescents with Bipolar Disorder may be originally diagnosed with schizophrenia (McClellan et al., 1993; Werry et al., 1991). Observing the symptom pattern over time may help to differentiate the disorder. Organic psychosis due to substance abuse, seizure disorders, central nervous system lesions, or infectious diseases may present similar symptoms to schizophrenia so need to be ruled out. Autism is seen in children less than five years of age, and schizophrenia is seen in children after five years of age. Childhood disintegrative disorder and Asperger's syndrome may also resemble schizophrenia but lack hallucinations and delusions.

Treatment for children over 12 and adolescents with schizophrenia is basically the same as for adults. The psychotropic medications and psychoeducational support for the families are

essential and described in greater detail elsewhere. As for adults, treatment for children over 12 and adolescents with schizophrenia is basically psychotropic medications and psychoeducational support for the families. Both are essential. The psychotropic medication information for children and adolescents is provided in Appendix F. Doses of medications are generally reduced for children and adolescents. The atypical psychotropic medications are not yet shown to be safe and efficient for children. (Trigoboff, Wilson, Shannon & Stang, 2005). However, randomized clinical trials are under way to establish their efficacy with youth. Information on psychoeducational support for families is described in greater detail elsewhere.

The most promising advances in the treatment of Early-Onset schizophrenia are evidenced by the latest research supporting early treatment and aggressive use of psychotropic medications coupled with psychosocial family interventions. The less time between the onset of the first psychotic symptoms and the first adequate treatment, referred to as the duration of untreated psychosis (DUP), the better the short term outcome is noted to be (Lee & McGlashan, 2003, Zipursky & Schulz, 2002). Individualized therapy with psychotropic medications is another promising advance in the treatment as more becomes known about the neural mechanisms of schizophrenia and the efficacy of the atypical psychotropic medications (Tamminga, 2001).

Current research is also indicating that it may be possible to identify and treat and potentially improve the outcome for those who are at highest risk for developing schizophrenia. Three groups found to be at highest risk are those who have experienced 1) attenuated, positive psychotic symptoms during the past year, 2) brief intermittent episodes of frank psychotic symptoms but not lasting longer than a week, and 3) those who have a relative with a psychotic disorder or who themselves have a schizotypal personality with decreased functioning over the course of the past year (Yung & McGorry, 2004).

### Adult

Adult onset schizophrenia typically occurs in late adolescence or early adulthood before the age of 25 for males and after the age of 25 for females. Females tend to experience more affective psychotic symptoms. The natural course of schizophrenia over a period of 15 years shows two-thirds will have at least one relapse and one out of six of those who do relapse will remain severely impaired by the illness. Others report that 25% first-episode patients have a very poor outcome (Hafner, Hambrecht, Loffler, Munk-Jorgensen, & Riecher-Rossler, 1998; McGlashan, 1988). Fifty percent consider suicide while 10% commit suicide (Wiersma, Niehuis, Sloof, & Giel, 1998). Both positive and negative symptoms are noted in adult onset schizophrenia, and lifestyle changes are common due to the inability to function in typical roles such as at work or school. Stress in the environment is known to aggravate the symptoms in adult-onset just as in very-early-onset or early-onset in children and adolescents. Several studies report the functional deterioration from schizophrenia tends to plateau at about five years and functional deterioration may remit even after 10 years of manifest illness (McGlashan, 1988; Carpenter & Strauss, 1991). Treatment for adult-onset schizophrenia is described in greater detail elsewhere.

## Geriatric

Late-onset schizophrenia is defined by the DSM IV as schizophrenia with onset at age 50 or later (Brodaty, Schdev, Koschera, Monk, & Cullen, 2003). Very-late-onset schizophrenia is defined as having an onset at 60 years of age or older (Barak, Aizenberg, Mirecki, Mazeh, & Achiron, 2002).

The prevalence of late-onset and very-late-onset schizophrenia in the geriatric population is much less than the 1% noted for adult-onset prevalence rates (Barak et al., 2002). Likewise, the number of geriatric people with schizophrenia, either late-onset or very-late-onset or chronic, is less than in the adult non-geriatric age groups. This difference may be due to a number of factors. Geriatric persons who have had schizophrenia may have died at an earlier age, they may have recovered sufficiently from their symptoms so they may be difficult to detect, or they may have dropped out of sight and are not actively seeking treatment.

Schizophrenia in late-onset or very-late-onset schizophrenia must be differentiated from delusional disorder or dementia. Some studies suggest late-onset or very-late-onset schizophrenia may be an early presentation of dementia (Brodaty et al., 2003; Tune & Salzman, 2003). Schizophrenia in a geriatric population may be in complete remission or the symptoms may not be overt (Copeland et al., 1998; Torgalsboen & Rund, 1998). Therefore, the disorder tends to be more stable in this age group than in the earlier onset age groups. It must be noted that there is no universal acceptance that schizophrenia with onset in late life is actually schizophrenia (Andreasen, 1999; Jeste et al., 2003). Treatment for elderly individuals with schizophrenia includes psychotropic medications and psychoeducational family support. Information on psychotropic medication use is provided in Appendix G. In general, medications are reduced for older adults (Trigoboff et al., 2005).

### Co-Morbid Conditions Occurring with Schizophrenia

#### Substance Use

Approximately 50% of people with schizophrenia have co-occurring substance use disorders. Goals for persons with co-occurring schizophrenia and substance use disorders include harm reduction, abstinence, relapse prevention, and rehabilitation (APA, 2004). Integrated mental health and substance use treatment is recommended for this population (APA; Drake, Mercer-McFadden, Mueser, McHugo, & Bond, 1998). An integrated approach shows potential for engaging people in services and decreasing substance use. Specific program aspects associated with effectiveness of an integrated approach include assertive outreach, case management, and a long-term, stage-wise, motivational approach to substance abuse treatment (Drake et al., 1998; Drake et al., 2004). Additional evidence based aspects of an integrated approach to co-occurring schizophrenia and substance use disorders include development of skills and supports needed to manage both illnesses and to pursue identified goals, cultural sensitivity, and cultural competence (Drake et al., 2004).

Motivational interviewing (Miller & Rollnick, 2002) has been identified as an especially promising intervention for individuals with co-occurring schizophrenia and substance use disorders (Bellack & DiClemente, 1999; Graeber, Moyers, Griffith, Guarjardo, & Tonigan, 2003). In one randomized, single-blind controlled comparison of routine care with a program of routine care integrated

with motivational interviewing, cognitive behavior therapy, and family or caregiver intervention, the integrated treatment program resulted in significantly greater improvement in overall functioning and abstinence from drugs or alcohol at 12-month follow-up (Barrowclough et al., 2001). A second evidence-based application of motivational interviewing has been in the area of treatment adherence for people with schizophrenia (Ruesch & Corrigan, 2002; Zygmunt, Olfson, Boyer, & Mechanic, 2002).

### Anxiety Disorders

Obsessive-compulsive disorder may occur in as many as 20-60% of persons with schizophrenia (Berman, Chang, & Klegon, 2000; Bermanzohn, 2000), and the prevalence for co-occurring panic disorder in persons with schizophrenia ranges from 11-63% (Bermanzohn, 2000). These co-occurring disorders may account for some of the clinical heterogeneity in schizophrenia (Bermanzohn, 2000) and may actually constitute a different subtype of schizophrenia altogether (Berman et al., 2000). The comorbidity of these disorders with schizophrenia is associated with increased cognitive deficits and with poorer outcomes (Bermanzohn, 2000; Berman et al., 2000). Bermanzohn (2000) noted that the side effects of antipsychotic medications such as akathisia may mimic anxiety, making diagnosis of anxiety disorders more difficult in persons who are taking antipsychotic medications.

### Depression

The modal prevalence rate of depression in persons with schizophrenia is 25% with 60% of persons with schizophrenia experiencing at least one lifetime episode of depression (Bermanzohn, 2000). Again, the side effects of antipsychotic medication (e.g., akathisia) may mimic depression, making diagnosis of actual depression more difficult. Distinguishing between the negative symptoms of schizophrenia and depression may also be difficult; although, a stronger association has been found between the positive symptoms of schizophrenia and depression (Herbener, Harrow, & Sands, 2000).

The “temporal course” of depression in schizophrenia has been described as follows (Herbener et al., 2000): (1) depression may present concurrently with psychosis and resolve with the psychotic symptoms; (2) depression may continue after the psychosis has resolved (results in poorer prognosis or increased severity of illness); (3) depression may occur immediately following acute psychosis; or (4) depression may be persistent and ongoing, essentially independent of psychosis (related to stressful life events or family history of depression, as in others with depression in the general population). A compelling reason to treat depression in persons with schizophrenia is that 10-13% of this population commit suicide, a rate that is six times higher than in the general population (Herbener et al., 2000).

### Assessment

The American Psychiatric Association (2004) recommends that every patient with schizophrenia receive as comprehensive an initial evaluation as allowed by the presenting clinical status. In addition to a complete examination of physical and mental status (all four domains: positive and negative symptoms, cognitive impairment and disruption in mood), an assessment of depression, suicidal ideation and behaviors, substance use disorders, medical comorbidities and post-traumatic stress disorders is critical to the identification of targets for treatment. Assessment goals are to evaluate the reason for recurrence of symptoms, determine or verify the patient’s diagnosis, identify comorbid or medical conditions and to identify strengths and limitations.

It is important to determine and address the factors that led to the occurrence of an acute episode. An accurate history of past and current treatments and clinical responses to them is essential for treatment planning. It will facilitate adherence to treatment if the patient's perspective of past experiences with antipsychotic medications (symptom response, side effects, preferred route of administration) is considered. Additional assessment of psychosocial factors, including living situation, family involvement, sources and amount of income, legal status, and relationships with significant others can have profound effects on adherence and response to treatment. These should be periodically explored by the clinician. Interviews with family members or other persons knowledgeable about the patient are helpful (unless the patient refuses to grant permission) to obtain a reliable history (APA, 2004).

Appropriate laboratory, electrophysiological, and radiological assessments should be ordered to help in the evaluation of the general medical health as well as medical conditions that could contribute to symptoms exacerbation (See Appendix C). Routine measurements include a CBC, blood electrolytes, glucose, cholesterol, and triglycerides; tests of liver, renal, and thyroid function; a syphilis test; and when indicated HIV status and a test for Hepatitis C. An evaluation of substance use with a toxicology screen is recommended as is a pregnancy test for women with childbearing potential (APA, 2004).

Assessment of potential harm to self and/or others is especially critical during an initial assessment since suicide is the leading cause of premature death among persons with schizophrenia. Similar to the general population, risk factors include: male gender, Caucasian, single, social isolation, unemployment, family history of suicide, previous suicide attempts, substance use disorders, depression or hopelessness, and a significant stressful life event. Specific risk factors for suicide among persons with schizophrenia are young age, high socioeconomic status, high IQ with high premorbid scholastic achievement, high goals and expectations, early age at onset of illness or first hospitalization, a chronic and deteriorating course of illness with frequent relapses, and greater insight into the illness. It is important to evaluate suicide risk during the initial assessment and as a part of ongoing psychiatric evaluation during all phases of the illness. Special attention should be given to the presence of command hallucinations and if there is any question about a patient's suicidal intent, precautions should be taken (APA, 2004).

Some individuals with schizophrenia, although a minority, have increased risk for aggressive behavior. The risk for aggressive behavior is greater if there is co-occurring substance use/abuse, antisocial personality, or neurological impairment. Identifying risk factors for aggressive behavior and assessment of potential for dangerousness are part of a standard psychiatric evaluation (APA, 2004).

Development of the nurse/patient relationship is a central concept for psychiatric nursing. A supportive therapeutic relationship facilitates the assessment process and allows the client to develop trust and a desire to cooperate with treatment. Identifying the client's strengths and goals and integrating these in treatment outcomes fosters the therapeutic relationship and contributes to treatment adherence (APA, 2004).

## Illness Management

It is now recognized that people with mental illness can participate actively in their own treatment. An illness management approach involves forming partnerships between clinicians and persons with mental illness to help people collaborate in the treatment of their mental illness. Interventions are designed to reduce their susceptibility to relapses and to help them cope more effectively with their symptoms. The process goes beyond basic education about mental illness and treatment to helping people develop skills to cope with symptoms and the stresses of daily life while pursuing their personal goals (Mueser et al., 2002).

Much is now known about mental health interventions that are effective in helping persons with schizophrenia attain better outcomes in terms of symptoms, functional status, and quality of life. While evidence-based practices do not provide all of the answers, the use of prescription medications within specified parameters and the psychosocial interventions of training in illness self-management, assertive community treatment, family psychoeducation, supported employment, and integrated treatment for co-occurring substance use disorders have been scientifically grounded (Drake et al., 2000). A combination of psychosocial and pharmacological treatment may improve outcomes for persons with schizophrenia (APA, 2004; Lenroot, Bustillo, Lauriello, & Deith, 2003; Mojtabai, Nicholson, & Carpenter, 1998). Although the importance of combining approaches is well-established, less research has been explored how these approaches might interact and affect each other (Lenroot et al., 2003).

### Goals for Treatment

To facilitate the discussion of illness management for persons with schizophrenia, the course of treatment can be divided into three phases: acute, stabilization, and stable. New onset or acute exacerbation of symptoms begins an acute phase and spans until these symptoms are reduced to the patient's expected baseline. This is followed by the stabilization period that is a time-limited transition to continuing treatment in the stable phase. These two phases generally span a period of six months. As symptoms become under adequate control, the patient moves into the stable phase for continuing treatment and rehabilitation (APA, 2004).

Throughout the management of the illness, the goal should be to minimize the fragmentation of services and treatment and to avoid gaps in service delivery. The patients are particularly vulnerable to relapse after an acute episode and need support during transitions for example, from inpatient to outpatient services. Goal setting must be realistic to the phase of the illness to instill a sense of hope and progress for the patient and family. The treatment plans must be continually assessed with the patient and periodically modified as clinical circumstances change and new treatments become available (APA, 2004).

Acute phase. The goals for treatment during the acute phase, defined by an acute psychotic episode, include: prevention of harm, reduction of disturbing symptoms such as agitation and aggression, identification/management of precipitating factors, facilitation of return to best level of functioning, development of alliance with client and family, formulation of treatment plan, and connection of client and family with appropriate community resources. Pharmacological treatment should be initiated promptly in the acute phase. Psychosocial interventions are aimed at reducing over stimulating or stressful situations through simple, clear, coherent communications and expectations. A

structured predictable environment that is non-demanding and supportive is recommended. Providing information to the family and significant others about coping strategies and community resources, such as the National Alliance for the Mentally Ill (NAMI) is recommended during the acute phase to address their needs (APA, 2004).

Stabilization phase. During the stabilization phase, the goals are to reduce client stress and to provide support to minimize the potential for relapse, facilitate client adaptation to life in the community, continue symptom reduction/remission of illness, and promote recovery. Medications are monitored, assessing for side effects and adjusting as indicated. The psychosocial interventions are mainly supportive at this phase, but may be less structured and directive than in the acute phase. It is appropriate to begin education about the course and outcome of the illness in this phase (APA, 2004).

Stable phase. Goals of treatment during the stable phase are to ensure that symptom remission or control is maintained, to maintain or improve client's level of functioning and quality of life, to effectively treat symptoms and/or relapses, and to monitor for adverse treatment effects. Indefinite maintenance antipsychotic medication is recommended for patients who have had multiple prior episodes or two episodes within five years. In addition to antipsychotic medications, psychosocial interventions are recommended during the stable phase. Psychosocial treatments that have demonstrated effectiveness during the stable phase include family intervention, supported employment, assertive community treatment, skills training, and cognitive behaviorally oriented psychotherapy. Realistic goal setting is important related to vocational and social functioning since excessively high expectations can be stressful and increase the risk of relapse. It is important to work with the client and family toward achieving realistic goals related to vocational and social functioning in the community and to instill a sense of hope in ongoing progress and achievements. During this phase, it is important to educate the patient and family members about early signs of relapse and helping them to develop plans for action should these signs appear (APA, 2004).

### Pharmacological Management

Mellman and colleagues (2001) suggest that to reflect evidence-based principles, pharmacologic treatment of persons with severe mental illness need to conform to six basic guidelines:

1. An accurate diagnosis must be made, specifying target symptoms and their initial severity.
2. The medication and dosage range chosen should be supported by the research evidence for the condition and target symptoms.
3. Changes in symptoms and the occurrence and tolerability of side effects should be monitored.
4. If medications are not tolerated well or symptoms do not respond after a trial of adequate duration, strategies recommended by the illness-specific guidelines should be considered. These may include raising the dosage, changing to another efficacious medication, or using an augmentation strategy.
5. Co-occurring syndromes should be addressed using similar approaches.

6. The patient's response to co-administered medication treatments must be critically evaluated and an attempt made to discontinue medications that have not improved the therapeutic response.

In the past 15 years there has been a proliferation of new antipsychotic agents. With this increase in potential medication combinations it becomes critical that the clinician continually review updated evidence-based psychopharmacologic practices. Generally recommendations made with high confidence are those that are based on evidence supporting the efficacy of first-line acute treatment. For schizophrenia the newer atypical antipsychotic medications (with the exception of clozapine because of safety concerns and monitoring requirements) are preferred as first-line agents principally because of their safety and tolerability profiles. As experience with these newer agents have been accumulating, unforeseen risks such as weight gain are being identified, thus their advantages are being debated (Mellman et al., 2001).

The selection an antipsychotic medication is guided by the patient's previous experience with antipsychotic medications. Antipsychotic medications are associated with a variety of side effects including neurological, metabolic, sexual, endocrine, sedative, and cardiovascular side effects. In choosing among the many options, one should consider the patient's previous experience with antipsychotic drugs, including the degree of symptom response and side effects. The patient's preference for a particular medication including the route of administration should be taken into account. It is important to routinely continue to monitor patients for extrapyramidal side effects, weight gain and obesity-related health problems and symptoms of diabetes. The goal is to attain maximum symptom control while avoiding medications or doses that cause side effects that are subjectively difficult for the patient to tolerate (APA 2004).

Antipsychotic medications. There are two main classifications of medications for the treatment of schizophrenia: the typical/first generation antipsychotics and the atypical/second generation antipsychotics. See Appendix E for the recommended dosage range for commonly used antipsychotic medications.

The typical antipsychotics, which include Prolixin, Trilafon, Haldol, Navane, Thorazine, Mellaril, and Stelazine were introduced in the mid 1950's and the late 1960's. At that time, these medications became the first effective approach to the management of symptoms specifically positive symptoms. However, the typical antipsychotics had significant side effects such as extrapyramidal symptoms, tardive dyskinesia, neuroleptic malignant syndrome, and the development of hyperprolactinemia. Other side effects included drowsiness, dry mouth, blurred vision, photosensitivity, sexual dysfunction, and constipation.

In comparison, the atypical antipsychotics: Abilify, Clozaril, Geodon, Risperdal, Seroquel, and Zyprexa introduced after 1990 have a lower risk of extrapyramidal symptoms. They are effective in treating both positive and negative symptoms of schizophrenia and have little or no effect on prolactin (Nemeroff, 1999). Weight gain, hyperglycemia, Type II diabetes, and cardiac problems, specifically prolongation of the QTc interval, are the major safety concerns. (Nemeroff, p. 10).

Typical and atypical antipsychotics are distinguished by their unique receptor binding profiles primarily with dopamine and serotonin receptors. Typical antipsychotic agents have been the first-line



treatment for schizophrenia. New atypical antipsychotics, however, are challenging this first-line position because of their greater tolerability and increased efficacy (Albers, Hahn, & Reist, 2004, p. 35).

The efficacy of typical antipsychotic agents is primarily related to their binding to dopamine D2 receptors. Typical antipsychotic agents may be divided into high, moderate, and low potency categories based on their level of dopamine receptor antagonism (Albers et al., 2004, p. 35).

1. High potency typical medications are less sedating but include symptoms of muscle spasms, tremors, rigidity, and restlessness. Examples of the more common high potency medications are thiothixene (Navane), trifluoperazine (Stelazine), fluphenazine (Prolixin), haloperidol (Haldol).
2. Moderate potency can include any of the side effects associated with typical antipsychotic medications. Examples of the more common moderate potency medications are loxapine (Loxitane), molindone (Moban), perphenazine (Trilafon), prochlorperazine (Compazine). Potency levels can be a guide to correct dosage when changing medications.
3. Low potency medications are more sedating and associated with hypotension, dizziness, dry mouth, and blurred vision. Examples of the more common low potency medications are chlorpromazine (Thorazine), thioridazine (Mellaril), promazine (Sparine), mesoridazine (Serentil).

“All agents within the typical antipsychotic category are equally effective. High potency agents have the highest affinity for D2 receptors and are effective at lower doses. Low potency agents have lower D2 affinity and require larger doses to elicit an antipsychotic effect” (Albers et al., 2004, p. 35).

“Atypical agents (serotonin-dopamine antagonists) are distinguished by their prominent antagonism at the serotonin 2A receptor in addition to D2 blockade. The ratio of serotonin to dopamine blockade is generally high for these agents. These agents are also unique in that there appears to be more selectivity for the mesolimbic dopamine pathway, which is thought to be a site of antipsychotic action. There is relatively less action on the nigrostriatal pathway where extrapyramidal side effects are thought to originate. As a group, these drugs have a therapeutic dose range that allows for the antipsychotic effect without inducing significant extrapyramidal symptoms” (Albers et al., 2004, p. 35).

A study on evidence-based estimates of equivalent doses of the atypical antipsychotics based on chlorpromazine 200 mg/day found the following:

risperidone	4mg/day	aripiprazole	15mg/day
olanzapine	10 mg/day	quetiapine	150mg/day
ziprasidone	120 mg/day		

(Woods, 2003, p. 665)

There have been tremendous advances in the pharmacological treatment of schizophrenia with the development of the newer second generation atypical antipsychotics. “The current analysis of available data suggests that risperidone, olanzapine, quetiapine, ziprasidone and

aripiprazole are of equivalent efficacy in the treatment schizophrenia and schizoaffective disorders. There is also no compelling evidence to suggest that there are differences in their effect on either positive or negative symptoms.” (Jibson & Tandon, 2003, p., 12)

Adjunctive medications. Mood stabilizers, antidepressants, anti-anxiety, and anti-parkinsonian medications that control extrapyramidal symptoms can all be used in conjunction with antipsychotics. Patients with schizophrenia can experience mood disorders and are vulnerable to suicide. Mood stabilizers can assist with impulsivity and the potential for suicide. Anti-anxiety medications, primarily the benzodiazepines, can diminish agitation and acathisia. Anticholinergic and antihistamine medications assist with the extrapyramidal side effects.

Choosing an antipsychotic. The American Psychiatric Association’s Practice Guideline for the Treatment of Patients with Schizophrenia (2004) states that antipsychotic medication is indicated for nearly all episodes of acute psychosis in patients with schizophrenia. The literature recommends that pharmacological treatment be implemented as soon as clinically feasible and that the clinician engage the patient in a discussion regarding the risks and benefits of medication, target symptoms that need to be alleviated and the possible side effects of medication as well as completion of a thorough physical and laboratory assessment (See Assessment Section). Given that only 58% of patients remain on antipsychotics for up to two years after initiation, clinicians should find medications that patients are willing to take (Marder, S., 2005, p. 123).

The selection an antipsychotic medication is guided by the patient’s previous experience with antipsychotic medications. Antipsychotic medications are associated with a variety of side effects including neurological, metabolic, sexual, endocrine, sedative, and cardiovascular side effects. In choosing among the many options, one should consider the patient’s previous experience with antipsychotic drugs, including the degree of symptom response and side effects. The patient’s preference for a particular medication including the route of administration should be taken into account. It is important to routinely continue to monitor patients for extrapyramidal side effects, weight gain and obesity-related health problems and symptoms of diabetes. The goal is to attain maximum symptom control while avoiding medications or doses that cause side effects that are subjectively difficult for the patient to tolerate (APA 2004).

According to a study by Robinson and coworkers, patients with first episode schizophrenia and schizoaffective disorder treated with typical antipsychotic medications had a relapse rate of 16% at one year, 54% at two years, and 82% at five years. It is now recommended that an atypical antipsychotic medication be offered to all patients with schizophrenia who have not been previously treated (Nemeroff, 1999, p. 9). Atypical antipsychotics have gained acceptance as first-line medications for treatment of psychosis and are indicated if a patient develops significant side effects with typical antipsychotics.

According to the recommendations of the American Psychiatric Association Guidelines (2004), the following medications should be considered when choosing medication in the acute phase of schizophrenia:

- First episode – risperidone, olanzapine, quetiapine, ziprasidone, or aripiprazole

- Acute agitation – Short-acting parenteral formulations of first and second generation antipsychotics (e.g., haloperidol, ziprasidone, and olanzapine). If the patient will take oral medication, rapidly dissolving forms of olanzapine and risperidone can be used for quicker effect and to reduce nonadherence.
- Persistent suicidal ideation or behavior – clozapine
- Persistent hostility and aggressive behavior – clozapine
- Tardive dyskinesia – risperidone, olanzapine, quetiapine, ziprasidone, or aripiprazole. All medications may not be equal in their lower or no tardive dyskinesia liability. (History of sensitivity to extrapyramidal side effects – risperidone {except in higher doses}, olanzapine, quetiapine, ziprasidone, or aripiprazole).
- History of sensitivity to prolactin elevation – Olanzapine, Quetiapine, Ziprasidone, or Aripiprazole.
- History of sensitivity to weight gain, hyperglycemia, or hyperlipidemia – Ziprasidone or Aripiprazole.
- Repeated non-adherence to pharmacological treatment – long acting injectable antipsychotic medications.

Influence of culture. There is a growing awareness that one's ethnicity and culture greatly influence a person's response to medications. Studies have shown that psychiatric medication interacts with a patient's ethnicity in many ways, the response to the same medication and dose vary by a patient's ethnicity. It is known that Asians and Hispanics who have schizophrenia may require lower doses of medications than Caucasians to obtain the same blood level. Racial and ethnic variations likely stem from a combination of genetic and psychosocial factors, such as diet and health behaviors.

It is possible that the different medication responses are the result of biological mechanisms of mental illness related to ethnicity, culture and gender. Also the effects of psychotropic medications may be interpreted differently by different cultures. Even with the limited knowledge and research in this area, it is important to recognize cultural patterns when dosing decisions and medication management, as well as the risks of side effects. It is important to note that research studies have suggested that medication differences among Afro Americans who are diagnosed with schizophrenia may more likely be a reflection of the clinicians' prejudices in diagnosing and prescribing practices than a true difference in the metabolism or health practices alone.

Maintenance. Studies have shown that continuous antipsychotic medication provides significantly better protection from psychotic relapse than no antipsychotic maintenance therapy or so called intermittent treatment. Ongoing and consistent monitoring during the maintenance phase of treatment is important in order to assess changes in the patient's symptoms and signs of medication side effects. Maintenance pharmacological therapy will often be long term if not life

long. Although all approved antipsychotic medications similarly reduce relapse rates, atypicals may be more effective than typicals as maintenance pharmacological therapy for schizophrenia (Kane 2005, p. 123).

The minimum effective dose that gives the best efficacy and the lowest levels of side effects should be used during the maintenance phase of treatment. “In general specific medication trials should be within recommended duration in order to ensure that the patient has had an adequate trial and that ineffective medications are discontinued in a timely fashion. Recommended trial durations are 4-12 weeks for atypical antipsychotics, 4-12 weeks for typical antipsychotics and 3-12 months for clozapine.” (Lindenmayer, & Cosgrove, 2002, p. 34). If there is no improvement in symptoms after this period, a change to another medication should be made.

If the patient has achieved an adequate therapeutic response with minimal side effects or toxicity with a particular medication regime, he or she should be monitored while taking the same medication and dose for the next six months. Premature lowering of dose or discontinuation of medication during this phase may lead to a relapse. It is important to assess side effects and if necessary adjust medication(s) accordingly to minimize adverse side effects that may otherwise lead to medication nonadherence.

Any other medications that have been used during the acute phase should be further evaluated for continuation (APA, 2004). “When relapse occurs in a patient whom the clinician believes to be compliant based on all available evidence (e.g., family report, plasma levels), some clinicians have recommended either switching to a different oral antipsychotic or increasing the dose of the current medication. Another option would be to switch to a long-acting injectable antipsychotic” (Kane et al., 2003, p. 12).

Promoting medication adherence. “It is not uncommon that patients with schizophrenia stop taking medications, miss clinic appointments, fail to report essential information to their clinician, and otherwise choose to not participate in recommended treatments” (APA, 2004). In order to address medication adherence the clinician needs to develop a therapeutic alliance with the patient and work together to assess contributing factors. Frequent causes of poor medication adherence can include lack of insight, ambivalence about taking medications, side effects, expense of medications, and lack of support from families and friends to take medications.

The following are possible strategies for improving adherence in patients with schizophrenia:

1. Educating patients about their illness and the importance of taking medications to assist them with their symptoms.
2. Educating patients about the benefits of treatment.
3. Encouraging patients to report their side effects in an attempt to decrease or eliminate them.
4. Exploring with patients, programs available to assist them with the high cost of various psychiatric medications.

5. Providing family education and support.
6. Providing information regarding simple approaches to taking medications including using environmental supports to cue and reinforce medication taking, asking families to regularly monitor medication adherence, etc.
7. Changing medications or switching patients to long-acting antipsychotics.

To overcome obstacles experienced by patients who do not have medical insurance, many drug manufacturers have Patient -Assistance Programs designed to serve patients who have no insurance or personal resources and have exhausted other options to cover the cost of medications. These programs are available by most large pharmaceutical companies and are available to qualified adults of all ages. In all cases the physician must verify that the patient needs the prescribed medication.

### Psychosocial Interventions

Family interventions. Over two-thirds of persons diagnosed with schizophrenia have been found to have some ongoing contact with their families (Lehman, Steinwachs et al., 1998b). Families are often the greatest source of support (emotional and financial) for their loved one and many provide case management and advocacy as well. They often control whether treatment is carried out; however, family members often have limited access to the information and resources that they need for the roles they find themselves in (Dixon et al., 2001).

The effectiveness of family intervention in preventing relapses has been established (Dixon et al., 2001; Lam et al., 1993; Lehman, Steinwachs, et al., 1998a; Pitschel-Walz et al., 2001). Based on their extensive review and analysis of scientific studies, the Patient Outcomes Research Team (PORT) for schizophrenia concluded that “family interventions that provide some combination of illness education, support, problem solving training, and crisis intervention, in combination with appropriate pharmacotherapy, reduce 1-year relapse rates from a 40 to 53 percent range to a 2 to 23 percentage range” (Lehman, Steinwachs, et al., 1998a, p. 8).

For people with schizophrenia who reside with other family members, family therapy has resulted in decreased symptoms, decreased rate of relapse/hospitalization, and increased social and vocational functioning. Minimal differences were found between multiple versus single-family therapy and different theoretical orientations (Huxley, Rendall, & Sederer, 2000). At one year follow up, multiple-family groups (including 5-8 families and consumers) in addition to standard care, resulted in decreased hospitalization and decreased use of crisis services compared to standard care (Dyck, Hendryx, Short, Voss, & McFarlane, 2002).

Family therapy has been shown to result in better outcomes than individual therapy for people with schizophrenia. (Huxley et al., 2000). Family therapy plus outpatient care, compared to outpatient care alone in first episode psychosis, resulted in decreased hospital admission rates (Marshall & Lockwood, 2003). In a systematic review of 28 randomized or quasi-randomized control trials, family intervention consisting of greater than five sessions, compared to standard care, may reduce relapse,

encourage medication adherence, improve general social functioning, and reduce family stress/burden (Pharoah, Rathbone, Mari, & Streiner, 2003).

Psychoeducation, including family members and persons with schizophrenia, has improved medication adherence and significantly decreased relapse or hospital readmission rates compared with standard care (Pekkala & Merinder, 2002). Family psychoeducation has been identified as an evidence-based practice that has been shown to reduce relapse rates and facilitate recovery of persons with serious mental illness (Dixon et al., 2001; McFarlane, Dixon, Lukens, & Lucksted, 2002). Core characteristics of effective family psychoeducation programs includes provision of emotional support, education, resources especially in times of crisis, and problem solving skills (Dixon et al., 2001). McFarlane (2000) described the powerful effect of psychoeducational multi-family groups (incorporating principles of crisis intervention, assertive community treatment, and vocational rehabilitation) on reducing relapse and helping to improve the quality of life of persons with mental illness and their family members. Refer to Appendix H for principles of collaborative treatment and management and Appendix I for information on therapeutic partnerships. A reference list of resources for families is found in Appendix J.

Although the effectiveness of family interventions is based on sound scientific evidence, fewer than half of affected families have been found to receive such interventions (Lehman et al., 1998b; Dixon et al., 1999). Aspects of the health care system and professional practice models can act as barriers to providing family care as well as the tenets of the current health care environment. Additionally, the everyday realities of the lives of potential participants can hinder participation in family psychoeducation programs. Thus, implementation strategies must gain the support of the consumer and family members, the clinicians and program administrators, and the mental health authorities and government (Dixon et al., 2001).

Assertive community treatment. In a systematic review of literature comparing assertive community treatment (ACT) to standard community care, clients in ACT were more likely to remain in contact with services, less likely to be admitted to inpatient care, and spent less time in hospital (Marshall & Lockwood, 1998). A positive difference also was demonstrated in employment status and client satisfaction; although, there were no differences found in mental status and social functioning. The authors concluded that, if correctly targeted to high users of inpatient care, ACT is a clinically effective intervention for people with serious mental illness in the community, and is associated with decreased cost of hospitalization (Marshall & Lockwood, 1998). Similarly, ACT and Intensive Case Management (ICM) have been associated with decreased hospitalization and improved housing stability especially among high service users (Mueser, Bond, Drake, & Resnick, 1998). ACT and ICM had a moderate effect on improved symptoms and quality of life but little effect on social functioning, arrests/time in jail, or vocational functioning (Mueser et al.). In a meta-analysis conducted by Ziguras and Stuart (2000), both ACT and traditional case management resulted in small to moderate improvements in the effectiveness of mental health services.

ACT was significantly more effective in reducing hospitalization while the two approaches had similar outcomes related to clinical symptoms, patient and family satisfaction, and the client's level of social functioning. These results are contradictory to the findings of Marshall and Lockwood (1998), who concluded that traditional case management (with the exception of strengths-based case management) is of questionable value in enhancing social functioning, mental state, or quality of life.

Skills training. Findings regarding the effectiveness of social skills training for people with schizophrenia are variable. Social skills training has shown some success in helping to address functional impairment. Key elements of effective social skills training include behavioral instruction, modeling, corrective feedback, and contingent social reinforcement (APA, 2004; Mueser et al., 2002). In some cases, social skills training may increase communication skills; but this may not generalize to increased social functioning in the community. However, specific broad-based training programs (e.g. UCLA SILS modules) have been shown to increase skill knowledge, which may in turn generalize to increased social functioning (Huxley, Rendall, & Sederer, 2000). Pilling et al. (2002) found that social skills training was not significantly more effective in preventing relapse, enhancing treatment compliance, adjustment, quality of life, or social functioning compared to standard treatment, although small sample sizes (471 clients in 9 RCTs) may have contributed to lack of significant findings.

Cognitive-behavioral training. Given the severity and prevalence of cognitive impairment in schizophrenia and the fact that global cognitive functioning is the best predictor of all aspects of functional status, efforts to increase cognitive functioning have been the focus for intervention in recent years (Harvey & Bowie, 2003). Cognitive behavioral therapy in addition to routine care compared with other interventions yielded large clinical effects in measures of positive and negative symptoms of schizophrenia (Rector & Beck, 2001). Other systematic reviews of literature have been inconclusive about the effects of cognitive behavioral therapy and cognitive rehabilitation on positive outcomes in schizophrenia (Hayes & McGrath, 2000; Jones, Cormac, Silveira da Mota, Neto, & Campbell, 2004).

Mueser et al. (2002) concluded that “illness management” strategies conceptualized as a group of specific cognitive-behavioral interventions designed to help people cope with symptoms of mental illness, constitute evidence-based practice. These interventions include behavioral tailoring, motivational interviewing, and techniques to enhance coping, all of which have been shown to reduce severity of psychotic symptoms as well as in some cases increase treatment adherence, decrease relapse, and increase social functioning.

Supported employment. Crowther and colleagues (2001) assessed the effects of pre-vocational training (including the Clubhouse model) and supported employment (on the job support) compared to each other and to standard care in 18 RCTs. Supported employment was significantly more effective than pre-vocational training in helping people obtain competitive employment, earn more money, and work more hours. Pre-vocational training was no more effective than standard care in helping people obtain competitive employment (Crowther et al., 2001). Elements of supported employment that have been found effective include services focused specifically on competitive employment, client choice, rapid job search, and individualized support (APA, 2004).

### Evidence-Based Practice and the Recovery Model

It has been suggested that “evidence-based practice” and the recovery model are based on very different values (Freese, Stanley, Kress, & Vogel-Scibilia, 2001). Evidence-based practice is based on the medical model with maintenance (decreased symptoms, medication compliance) as the desired outcomes (Fisher & Ahern, 2002). Freese and colleagues suggested that evidence-based practice is most appropriate for consumers who are most impaired especially in the ability to make decisions for themselves. As people get better, the recovery model, which emphasizes responsibility for and control of the recovery process, autonomy and self-responsibility, may be more appropriate.

Fisher and Ahern (2002) contended that the recovery model is evidence-based practice (see Ahern & Fisher, 2001; DeSisto, Harding, & McCormick, 1995; Mosher, 1999), with community integration as the desired outcome measure. Freese et al. (2001) asserted that consumer involvement is needed in developing evidence-based practice initiatives. This perspective is consistent with the assertion that evidence-based practice must include client preferences, values, and concerns (Melnik & Fineout-Overholt, 2005).

## Evaluation

Health care delivery for primary mental health within managed care settings is of concern to four stakeholder groups (consumers, families, providers, and payers). To evaluate programs, make informed decisions about the effectiveness of the programs and services, make informed decisions about the best health care plan, and have a common basis from which partnerships can be developed in monitoring care, the stakeholder groups need information about the quality of programs (access, appropriateness, outcomes, and prevention) across the spectrum of clinical processes (assessment, treatment, rehabilitation, and support). Each stakeholder group has responsibility to ensure that the quality concerns, across the spectrum of clinical interventions, are considered in the evaluation (Chisholm et al., 1997).

The quality of implementation of illness management programs strongly influences patient outcomes. Efforts to promote evidence-based practice therefore, must include fidelity measures and self-correcting feedback mechanisms (Torrey et al., 2001). In addition to initial clinical training, ongoing weekly supervision by an expert to provide feedback on implementation and outcomes will facilitate promotion of consistent delivery of effective services and identify areas that may need revision.

Illness management of schizophrenia is a process that includes interventions that minimize the individual's symptoms and relapses and helps in the enhancement of skills to cope with symptoms and the stresses of daily life. Outcomes should not focus exclusively on traditional outcomes such as adherence with treatment and relapse and rehospitalization prevention, but should be broadened to include consumer-oriented outcomes such as the attainment of independent living, employment, satisfying relationships and improved quality of life (Drake et al., 2000). Chisholm and colleagues (1997) recommend that, for mental health clients, the minimum data that should be gathered include functional improvement, symptom reduction, and satisfaction. Inclusion of families in all phases of the treatment and rehabilitation process, from planning through treatment and evaluation, should also be evaluated.

In a literature review, followed by a consensus conference of schizophrenia researchers, four components of clinical effectiveness have been identified for a comprehensive evaluation of treatment: symptoms of diseases, treatment burden, disease burden, and health and wellness (Nasrallah, Targum, Tandon, Jeffrey, & Ross, 2005). Nasrallah and colleagues suggest that an assessment of symptoms must include data about all four domains. The treatment burden, or subjective distress due to side effects of the medications, will effect adherence to treatment, thus must be monitored and adjustments be made as indicated. They further suggest that effective treatment will decrease the burden of the disease on the patient, families, friends, health care



systems, and society. Health and wellness improvement is indicated not only by physical health, but such factors as independent living, attainment of realistic vocational and educational goals, social integration and a satisfactory quality of life. A clinical instrument (Global Outcome Assessment of Life in Schizophrenia) to measure outcomes for these four domains has been constructed and is in the process of field testing (Nasrallah et al.).

Assessing the outcomes of programs designed to manage the illness of persons with schizophrenia is complex because of the multiple domains, different stakeholders, limitations of self-report and various other methodological problems. Many instruments have been developed to assess clinical outcomes and all have their limitations. To be effective, key performance indicators need to be selected for their ability to measure improvement over time and be integrated into an analysis of how care is delivered. In addition to the reliability and validity of the measurement tools, one needs to consider the need to minimize the cost and the effort of data collection. Each clinical site needs to evaluate the potential utility of any measurement in terms of the specific question being asked and in terms of how the outcomes will be used (Dickerson, 1997).

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**Appendix A: Evidence Based Practice**

TABLE 1. Rating System for the Hierarchy of Evidence

Level I:	Evidence from a systematic review or meta-analysis of all relevant randomized controlled trials (RCTs), or evidence-based clinical practice guidelines based on systematic reviews of RCTs
Level II:	Evidence obtained from at least one well-designed RCT
Level III:	Evidence obtained from well-designed controlled trials without randomization
Level IV:	Evidence from well-designed case-control and cohort studies
Level V:	Evidence from systematic reviews of descriptive and qualitative studies.
Level VI:	Evidence from a single descriptive or qualitative study
Level VII:	Evidence from the opinion of authorities and/or reports of expert committees

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## Appendix B: Web Sites

*Achieving the Promise: Transforming Mental Health Care in America (2003)* Full report of the New Freedom Commission on Mental Health, established by President Bush in 2001  
<http://www.Mental-HealthCommission.gov>

*American Association of Suicidology* Addresses suicide in conjunction with severe mental illness, including schizophrenia. Goal is to understand and prevent suicide.  
<http://www.suicidology.org>

*American Psychiatric Association* To access the [Practice Guideline for Treatment of Patients with Schizophrenia](#) (2004), back issues of [Psychiatric Research Report](#), etc.  
<http://www.psych.org/research/>

*Assertive Community Treatment Association.* Promotes, develops, and supports high-quality assertive community treatment services. Paid membership allows conferences and training registration at reduced rates. <http://www.actassociation.org/>

*Bazelon Center for Mental Health Law* National legal advocate for people with mental illness and mental retardation. <http://www.bazelon.org>

*Center for Reintegration* Provides resources to patients with psychotic disorders to help them with issues of employment, education, and independent living. Includes practical advice. Variety of articles, essays, and workbooks that can be downloaded for free.  
<http://www.reintegration.com>

*Clinical Antipsychotic Trials of Intervention Effectiveness (CATIE)* University of North Carolina project to evaluate the clinical effectiveness of atypical antipsychotics in the treatment of schizophrenia. <http://www.catie.unc.edu>

*Cochrane Database of Systematic Reviews* Excellent resource for evidence-based practice. An online, subscription-based service that is regularly updated with new information from clinical trials and other interventions. <http://www.cochrane.org/index2.htm>

*Expert Consensus Guidelines* Guidelines for the treatment of schizophrenia and other disorders.  
<http://www.psychguides.com>

*Federal Drug Administration (FDA) Medwatch* Updates regarding warnings on atypical antipsychotics (such as clozapine, quetiapine, aripiprazole, and olanzapine).  
<http://www.fda.gov/medwatch/safety.htm>  
[http://www.fda.gov/medwatch/safety/2004/deardoc\\_4-22-2004update.pdf](http://www.fda.gov/medwatch/safety/2004/deardoc_4-22-2004update.pdf)

*Health Links* An evidence-based-practice search engine at the University of Washington.  
<http://healthlinks.washington.edu/ebp>

*International Association of Psychosocial Rehabilitation Services* Association to help advance the role, scope, and quality of services designed to facilitate the community readjustment of people with psychiatric disabilities. <http://www.iapsrs.org>

*Mental Health Statistics Improvement Program* Provides uniform, comparable statistical information about mental health services to enable broad-based research on systems of care and models for service delivery. <http://www.mhsip.org>

*National Alliance for Research on Schizophrenia and Depression (NARSAD)* Research for latest advances in schizophrenia and depression. Publishes *NARSAD Research Newsletter* (free); selected articles available on Web site. <http://www.mhsourc.com/narsad.htm>.

*National Alliance for the Mentally Ill* Information, support, and advocacy. Site is accessible in Spanish as well as English. Publishes *Understanding Schizophrenia: What you Need to know about this Medical Illness* (free). <http://www.nami.org>

*National EBP Demonstration Project and The National Registry for Effective Practices (NREP)* The federal government is launching numerous federal initiatives to bring evidence based practice (EBP) to a reality. <http://www.SAMHSA.gov>

*National Institute of Mental Health* Information Resources and Inquiries Branch for information on research into the brain, behavior, and mental disorders. <http://www.nimh.nih.gov> (publications on schizophrenia: <http://www.nimh.nih.gov/publicat/schizoph.cfm> )

*National Mental Health Association Information Center.* Information, support, and advocacy <http://www.nmha.org> and mental wellness <http://www.mentalwellness.com>

*National Mental Health Self-help* Clearing house for consumer mental health information.. <http://www.mhselfhelp.org>

*New York State Office of Mental Health* Several useful links – of special interest is the link to Evidence Based Practice. <http://www.omh.state.ny.us>

*Open the Doors* Designed to counter the stigma and distorted facts surrounding schizophrenia. The “Families and Friends” section provides several essays useful for family members and patients newly diagnosed with schizophrenia. <http://www.openthedoors.com/>

*Physicians Post graduate Press, Inc.* Publishes *The Expert Consensus Guideline Series: Treatment of Schizophrenia* <http://www.psychguides.com>

*Psychiatric Research Center, New Hampshire-Dartmouth* For information about a national strategy to address issues related to supported employment programs for people with severe mental illness. <http://www.mentalhealthpractices.org/se.html>

*Psychopharmacology Algorithm Project* (Harvard Medical School Department of Psychiatry) Algorithms to guide medication treatment of schizophrenia, depression and other illnesses. <http://mhc.com/Algorithms>

*Schizophrenia* Site that contains valuable information for consumers and their families and a periodic online newsletter <http://www.schizophrenia.com>

*Substance Abuse and Mental Health Services Administration (SAMHSA)* Currently developing six Evidence Based Toolkits:

- Illness Management and Recovery
- Medication Management Approaches in Psychiatry
- Assertive community Treatment
- Family Psycho-education
- Supported Employment
- Co-occurring Disorders: Integrated Dual/Diagnosis Treatment

<http://mentalhealth.samhsa.gov/cmhs/communitysupport/toolkits/default.asp>

*Texas Medication Algorithm Project (TMAP)* Algorithms to guide medication treatment of schizophrenia, depression, and other illnesses.

<http://www.dshs.state.tx.us/mhprograms/TMAP.shtm>

*Veterans Affairs* <http://www.va.gov> Mental Illness Research, Education and Clinical Centers:

<http://www.mirecc.med.va.gov>

*World Fellowship for Schizophrenia and Allied Disorders* Detailed information on psychotic disorders, depression, and bipolar disorder, including statistics on the lifetime course. Includes links to further information from various texts that are all available free for download. Some documents in Spanish and Russian as well as English

<http://www.world-schizophrenia.org>

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## Appendix C: DSM-IV Diagnostic Criteria

### A. Subtypes of Schizophrenia

#### 1. Disorganized Type: 295.10

Essential features include:

- a. Disorganized speech. May be accompanied by silliness and laughter not closely related to the content of speech.
- b. Disorganized behavior – Lack of goal orientation.
- c. Flat or inappropriate affect.
- d. Delusions or hallucinations. If present are fragmentary and not organized into a coherent theme.
- e. Associated features include grimacing, mannerisms, and other oddities of behavior.
- f. Associated with poor premorbid personality, early and insidious onset, and continuous course without significant remissions.

#### 2. Catatonic Type: 295.20

Essential features include:

- a. Marked psychomotor disturbance – Motoric immobility (catalepsy, waxy flexibility, or stupor).
- b. Excessive motor activity (purposeless motor activity not influenced by external stimuli).
- c. Extreme negativism (manifested by maintenance of rigid posture against attempts to be moved or resistance to all instructions).
- d. Mutism.
- e. Peculiarities of voluntary (voluntary assumption of inappropriate or bizarre postures or by prominent grimacing).
- f. Echolalia (parrot like, senseless, repetition of a word or phrase just spoken by another person).
- g. Echopraxia (repetitive imitation of the movements of another person).
- h. Additional features include: stereotypes, mannerisms, automatic obedience, or mimicry.
- i. High risk during catatonic stupor or excitement for self-harm or injury – requires close and careful supervision.
- j. Potential risk for malnutrition, exhaustion, and hyperpyrexia.

3. Undifferentiated Type: 295.90

Essential features include:

- a. Presence of symptoms that meet criteria for schizophrenia (hallucinations, delusions, disorganized thinking, grossly disorganized behavior, and the negative symptoms of schizophrenia but that do not meet criteria for the diagnosis of paranoid, disorganized, or catatonic type).

4. Residual Type: 295.60

Essential features include:

- a. There has been at least one episode of schizophrenia, but the current clinical presentation is without prominent positive psychotic symptoms (delusions, hallucinations, disorganized speech, or behavior).
- b. There is continuing evidence of the disturbance as indicated by the presence of negative symptoms (flat affect, poverty of speech, or avolition) OR
- c. Two or more attenuated positive symptoms (eccentric behavior, mildly disorganized speech, or odd beliefs).
- d. If delusions or hallucinations are present, they are not prominent and are not accompanied by strong affect.
- e. Course of residual type may be time limited and represent a transition between a full-blown episode and complete remission.
- f. It may also be continuously present for many years with or without acute exacerbations.

5. Paranoid Type: 295.30

Essential features include:

- a. Presence of prominent delusions or auditory hallucinations.
- b. Delusions are typically persecutory, grandiose, or both. Delusions with other themes (e.g., jealousy, religiosity, or somatization) may also occur.
- c. Delusions may be multiple but are usually organized around a coherent theme.
- d. Hallucinations are typically related to the content of the delusional theme.
- e. Associated features include: anxiety, anger, aloofness, and being argumentative.
- f. Persecutory themes may predispose the individual to suicidal behavior.
- g. A combination of persecutory and grandiose delusions with anger may predispose individual to violence.

## B. Other Schizophrenia Spectrum Disorders

### A. Schizoaffective Disorder: 295.70

1. An uninterrupted period of illness during which, at some time, there is a depressive, manic, or mixed episode concurrent with symptoms that meet criteria (positive and negative symptoms) of Schizophrenia.
2. During the same period of illness, there have been delusions or hallucinations for at least two weeks in the absence of prominent mood symptoms.
3. The mood symptoms are present for a substantial portion of the total duration of the illness.
4. The symptoms must not be due to the direct physiological effects of a substance or a general medical condition.
5. The essential features must occur within a single uninterrupted period of illness during which the individual continues to display active or residual symptoms of psychotic illness.
6. For some individuals, this period of illness may last for years or even decades.

## B. Two Types of Schizoaffective Disorder

### A. Bipolar Type: If a Manic Episode or Mixed Episode is present

1. Depressive Type: If only Major Depressive Episode is present

The typical age at onset of Schizoaffective Disorder is early adulthood, but onset can occur anywhere from adolescence to late in life. The prognosis for Schizoaffective Disorder is somewhat better than that for schizophrenia but worse than the prognosis for Mood Disorders.

Substantial occupational and social dysfunction are common. The presence of precipitating events or stressors is associated with a prognosis.

2. Schizotypal Personality Disorder: A person with schizotypal personality disorder has a difficult time with close relationships with other people and may hold beliefs not shared by others.



**Appendix D: Physical and Laboratory Assessment (APA, 2004)**

Assessment	Initial/baseline	Follow-up
Vital Signs	Pulse, BP, temperature	As clinically indicated, particularly as medication doses are titrated
Body Weight/Height	Body weight/height, body mass index	Every six months and at least quarterly thereafter
Hematology	CBC	If clinically indicated , including assessment of patients treated with clozapine
Blood Chemistries	Electrolytes, Renal Function tests(BUN, creatinine ratio) liver function tests, thyroid function tests	Annually and as clinically indicated
Infectious Diseases	Test for syphilis, hepatitis C and HIV, if clinically indicated	
Pregnancy	Consider pregnancy test for women of childbearing potential	
Toxicology	Drug toxicology screen, heavy metal screen	If clinically indicated
Imaging/EEG	EEG, brain imaging, (CT or MRI, with MRI being preferred)	If clinically indicated

<b>Assessments Related to Side Effects</b>	<b>Initial/baseline</b>	<b>Follow-up</b>
<b>Diabetes</b>	Screening for diabetes risk factors, fasting blood glucose	Fasting blood glucose or hemoglobin ATc at 4 months after initiating a new treatment and annually thereafter
<b>Hyperlipidemia QTc Prolongation</b>	Lipid Panel ECG and serum potassium before treatment with thioridazine, mesoridazine or pimozide; ECG before treatment with ziprasidone in the presence of cardiac risk factors	At least every five years. ECG with significant change in dose of thioridazine, mesoridazine, pimozide and in the presence of cardiac risk factors, ziprasidone or addition of other medications that can affect OTc interval
<b>Hyperprolactinemia</b>	Screening for symptoms of hyperprolactinemia. Prolactin level, if indicated on the basis of clinical history  Prolactin level, if indicated on the basis of clinical history	Screening for symptoms of hyperprolactinemia at each visit until stable, then yearly if treated with an antipsychotic known to increase prolactin
<b>Extrapyramidal Side Effects, including Akathisia</b>	Clinical assessment of extrapyramidal side effects	Clinical assessment of extrapyramidal side effects weekly during acute treatment until antipsychotic dose is stable for at least 2 weeks, then at each clinical visit during stable phase

**Appendix E: Recommended Dose Range for Commonly Used Antipsychotic Medications. (Albers, Hahn, Reist, 2004, pp.35-51)**

**I. Typical Antipsychotics**

Medication	Initial Dose	Titrate To	Acute Agitation	Maintenance Dose	Major Safety Concerns/Clinical Considerations
Chlorpromazine (Thorazine)	10-50 mg bid-qid	200-800 mg/day in divided doses (maximum 2000mg /day)	25-50mg <b>IM</b> q4-6 hours	200-800mg/day	Higher risk than most other typical antipsychotics for seizures, jaundice, photosensitivity, skin discoloration (bluish) and granular deposits in lens and cornea. Prolongation of QT and PR intervals, blunting of T-waves, ST segment depression can occur. Associated with a high incidence of hypotensive and anticholinergic side effects. Chlorpromazine has slighter risk than many other antipsychotic medications for life-threatening agranulocytosis. Use Chlorpromazine with caution in patients with a history of cardiovascular, liver or renal disease. Avoid use in pregnancy especially in the first trimester.
Trifluoperazine (Stelazine)	2-5mg bid-tid	20-40 mg/day (maximum 60mg/day)	5mg <b>IM</b> q4h prn (maximum dose 20mg/day)	5-20 mg/day	Associated with ECG changes
Fluphenazine (Prolixin)	2.5-10mg/day	40 mg/day	2.5-5mg <b>IM</b> (not to exceed 10mg/day)	10-20 mg/day	Use of anticholinergic medication for extrapyramidal symptoms is common. Non-compliance may change to the decanoate formulation.
Haloperidol (Haldol)	5-10 mg/day	Must be titrated based upon patient response	5-10 mg <b>IM</b> , not to exceed daily dose of 20 mg	5- 20 mg/day	High incidence of extrapyramidal symptoms. May possibly lower seizure threshold in patients with a history of seizures. Non-compliance use decanoate

<b>Medication</b>	<b>Initial Dose</b>	<b>Titrate To</b>	<b>Acute Agitation</b>	<b>Maintenance Dose</b>	<b>Major Safety Concerns</b>
Thioridazine (Mellaril)	25-100 mg tid	100-400 mg bid (maximum 800mg/day)	No IM available	200-800 mg/day, never exceed 800 mg/day	Because of this medication's association with significant QT prolongation and subsequent increased risk for fatal arrhythmias, it is used with patients who have not responded to other antipsychotic medications. Permanent pigmentation of retina and potential blindness occurs with doses above 800 mg/day. Life threatening agranulocytosis rarely occurs. Retrograde ejaculation occurs more frequently with this medication.
Thiothixene (Navane)	2-5mg bid-tid	20-40 mg/day (maximum 60 mg/day)	5 mg IM q4hour prn	5-20 mg/day	May produce ocular pigmentary changes. Periodic ophthalmological examination is recommended
Loxapine (Loxitane)	10 mg bid	Maximum of 250 mg/day in divided doses	12.5-50 mg IM q4-6 hours prn	50-100 mg/day	May be associated with a higher risk of seizures than other high and mid potency antipsychotics
Perphenazine (Trilafon)	4-8 mg tid	8-16 mg bid-tid (maximum 64 mg/day)	5-10 mg IM q6 hours prn (maximum 30 mg/day )	4-40 mg/day	Should not be given to patients with a history of breast cancer. Stimulates the production of hormones that promote the growth of certain types of tumors.

## II. Atypical Antipsychotics

Medication	Clinical Indications	Preparation	Initial Dose	Maintenance Dose	Major Safety Concerns Clinical Considerations
Aripiprazole (Abilify)	Use for patients who have had metabolic side effects from other antipsychotic medications. It is also indicated for patients with tardive dyskinesia	Tablets  <b>NO IM AVAILABLE</b>	10-15 mg qam Increase to 20-30 mg/day after 2-4 weeks if needed. Clinical trials have not found greater efficacy for doses above 10-15mg	10-30 mg/day	Usually given in the morning due to lack of sedation as compared to other medications.
Clozapine (Clozaril)	Does not cause tardive dyskinesia or neuroleptic malignant syndrome. Often effective against symptoms that are resistant to typical medications. May decrease the risk of suicide in schizophrenia and a FDA advisory panel has recommended expanding the indications to include suicide prevention	Tablets  <b>NO IM AVAILABLE</b>	25 mg bid Increase by 25-50 mg every 2-3 days to achieve total daily dose of between 300-600 mg. May need to give tid if side effects occur.	400-600 mg/day, some patients may require higher doses , but rarely more than 900mg/day	Has a 1-2% incidence of agranulocytosis. Patients should be instructed to report the onset of fever, sore throat, weakness or other signs of infection. Discontinue if the WBC drops below 3,000/mcL. Or 50% of patient's normal count, or if granulocyte count drops below 1,500/mcL. Once the WBC normalizes, the patient may be rechallenged. This should not occur if WBC falls below 2,000/mcL. or granulocyte count falls below 1,000/mcL. WBC should be monitored weekly for the first 3 months of treatment. Thereafter, monitoring can be decreased to every 2 weeks. A 5% incidence of seizure

Medication	Clinical Indications	Preparation	Initial Dose	Maintenance Dose	Major Safety Concerns Clinical Considerations
Clozapine (cont'd)					has been noted in patients taking more than 600 mg/day. Use with caution and at low doses in patients with hepatic or renal disease. Monitor patients for hypotension and tachycardia. When discontinuing, the dosage should be tapered over two weeks as cholinergic rebound may occur.
Risperidone (Risperdal)	Psychotic disorders including schizophrenia, schizoaffective disorder, brief psychotic disorders and psychotic symptoms associated with mood disorders.	Tablets  <b>LONG-ACTING IM</b>	1 mg bid, then increase by 1 mg every 2-3 days to 2-3 mg bid  25-50 mg /month <b>IM</b>	2-8 mg bid	Can cause weight gain and increased prolactin levels and may prolong QT interval .
Olanzapine (Zyprexa, Zydis)	Psychotic disorders	Tablets Oral disintegrating tablets  <b>IM (ACUTE USE)</b>	10 mg/day  5-10 mg q2h <b>IM</b> (maximum dose not determined)	5-20 mg/day Some patients may require higher doses	Weight gain can occur and increases in lipids and blood glucose are also observed. There are reports of new onset diabetes and diabetic ketoacidosis. Patients should be monitored for Type II diabetes and hyperlipidemia and other metabolic side effects.

<b>Medication</b>	<b>Clinical Indications</b>	<b>Preparation</b>	<b>Initial Dose</b>	<b>Maintenance Dose</b>	<b>Major Safety Concerns Clinical Considerations</b>
Quetiapine (Seroquel)	May be effective for primary negative symptoms of schizophrenia	Tablets  <b>NO IM AVAILABLE</b>	25-50 mg bid Increase by 25-50 mg every 1-3 days, total daily dose of 400-600 mg.	150-750 mg daily	There are reports of new onset diabetes and diabetic ketoacidosis. Patients should be monitored for type II diabetes, hyperlipidemia and other metabolic side effects.
Ziprasidone (Geodon)	Psychotic disorders	Tablets  <b>IM (ACUTE USE)</b>	IM dose -10 mg IM every 2 hours or 20 mg IM every 4 hours, maximum daily dose 40mg .	40-80 mg bid	The incidence of weight gain, lipid abnormalities, and glucose intolerance appears to be lower than other atypical antipsychotics. Can increase QT interval. While there are no reports linking this medication to cardiac arrhythmias, caution should be exercised in patients with pre-existing increased QT interval. These patients should have a baseline ECG.

**Appendix F: Recommended Dose Range for Commonly Used Antipsychotic Medications  
for Children (Trigoboff, Wilson, Shannon & Stang, 2005, Pages 216-265)**

**I. Typical Antipsychotics**

<b>Medication</b>	<b>Initial Dose</b>	<b>Titrate To</b>	<b>Acute Agitation</b>	<b>Maintenance Dose</b>	<b>Major Safety Concerns/Clinical Considerations</b>
Chlorpromazine (Thorazine)	PO > 6 months 0.55mg/kg of body weight q4-6 hr prn up to 500mg/d  PR>6 mo, 1.1 mg/kg q6-8 hr	maximum 500 mg /day	IM/IV>6 mo, 0.55 mg/kg q6-8hr		Higher risk than most other typical antipsychotics for seizures, jaundice, photosensitivity, skin discoloration (bluish) and granular deposits in lens and cornea. Prolongation of QT and PR intervals, blunting of T-waves, ST segment depression can occur. Associated with a high incidence of hypotensive and anticholinergic side effects. Chlorpromazine has slighter risk than many other antipsychotic medications for life-threatening agranulocytosis. Use Chlorpromazine with caution in patients with a history of cardiovascular, liver or renal disease
Trifluoperazine (Stelazine)	PO 6-12 years 1 mg 1-2 times/d	May increase up to 15 mg/d in hospitalized patients	IM 6-12 yrs, 1 mg 1-2 times/d	May increase up to 15 mg/d	Associated with ECG changes
Fluphenazine (Prolixin)	Parental form not recommended for children under 12 years.				



Haloperidol (Haldol)	Safety and efficacy in children under 3 years are not established.	May be increased by 0.5 mg q5-7 d to 0.05-0.15 mg/kg/d	High incidence of extrapyramidal symptoms. May possibly lower seizure threshold in patients with a history of seizures.
	PO >3years, 0.5 mg/d in 2-3 divided doses		
Thioridazine (Mellaril)	<b>Information not provided.</b>		
Thiothixene (Navane)	Safety and efficacy in children are not established.		
Loxapine (Loxitane)	Safety and efficacy in children are not established.		
Perphenazine (Trilafon)	Safety and efficacy in children are not established.		

## II. Atypical Antipsychotics

<b>Medication</b>	<b>Clinical Indications</b>	<b>Preparation</b>	<b>Initial Dose</b>	<b>Maintenance Dose</b>	<b>Major Safety Concerns Clinical Considerations</b>
Aripiprazole (Abilify)	Safety and efficacy in children are not established.				
Clozapine (Clozaril)	Safety and efficacy in children are not established.				
Risperidone (Risperdal)	Safety and efficacy in children are not established.				
Olanzapine (Zyprexa, Zydys)	Safety and efficacy in children under 18 years are not established.				
Quetiapine (Seroquel)	Safety and efficacy in children are not established.				
Ziprasidone (Geodon)	Safety and efficacy in children are not established.				

**Appendix G: Elderly: Recommended Dose Range for Commonly Used Antipsychotic Medications  
(Trigoboff, Wilson, Shannon & Stang, 2005, Pages 216-265)**

**I. Typical Antipsychotics**

<b>Medication</b>	<b>Initial Dose</b>	<b>Titrate To</b>	<b>Acute Agitation</b>	<b>Maintenance Dose</b>	<b>Major Safety Concerns/Clinical Considerations</b>
Chlorpromazine (Thorazine)	PO Initial 10-25 mg 1-2 times/day	May increase q4-7 days by 10- 25mg/day (maximum 800 mg /day)			Higher risk than most other typical antipsychotics for seizures, jaundice, photosensitivity, skin discoloration (bluish) and granular deposits in lens and cornea. Prolongation of QT and PR intervals, blunting of T-waves, ST segment depression can occur. Associated with a high incidence of hypotensive and anticholinergic side effects. Chlorpromazine has slighter risk than many other antipsychotic medications for life-threatening agranulocytosis. Use Chlorpromazine with caution in patients with a history of cardiovascular, liver or renal disease.
Trifluoperazine (Stelazine)	PO 0.5-1mg 1-2 times/day	May increase q4-7 days (max 40mg in divided doses)	IM 1mg q4-6hr (max 6 mg/day)		Associated with ECG changes
Fluphenazine (Prolixin)	PO 1-2.5 mg/day	May increase every 4-7 days by 1- 2.5 mg/day40 mg/day		Max 20 mg/day in 2-3 divided doses	

<b>Medication</b>	<b>Initial Dose</b>	<b>Titrate To</b>	<b>Acute Agitation</b>	<b>Maintenance Dose</b>	<b>Major Safety Concerns</b>
Haloperidol (Haldol)	PO 0.25 – 0.5 mg 1-2 times daily	May increase every 4-7 days		Max 4 mg/day in 2-3 divided doses	High incidence of extrapyramidal symptoms. May possibly lower seizure threshold in patients with a history of seizures.
Thioridazine (Mellaril)	<b>No information provided for elderly use of this med.</b>				
Thiothixene (Navane)	<b>No information provided for elderly use of this med.</b>				
Loxapine (Loxitane)	PO Start with 5-10 mg 1-2 times/day	May increase q4-7 days  Maximum of 125 mg/day in divided doses			May be associated with a higher risk of seizures than other high and mid potency antipsychotics
Perphenazine (Trilafon)	<b>No information provided for elderly use of this med.</b>				

## II. Atypical Antipsychotics

Medication	Clinical Indications	Preparation	Initial Dose	Maintenance Dose	Major Safety Concerns Clinical Considerations
Aripiprazole (Abilify)	Psychotic disorders		<b>No information provided for elderly use of this med.</b>		
Clozapine (Clozaril)	Psychotic disorders		<b>No information provided for elderly use of this med.</b>		
Risperidone (Risperdal)	Psychotic disorders including schizophrenia, schizoaffective disorder, brief psychotic disorders and psychotic symptoms associated with mood disorders.	Tablets	Start with 0.5 mg b.i.d and increase by 0.5 mg b.i.d. daily to an initial target of 1.5 mg b.i.d.	Target of 1.5 mg b.i.d.  Max 4 mg /day	Can cause weight gain and increased prolactin levels and may prolong QT interval .
Olanzapine (Zyprexa, Zydis)	Psychotic disorders	Tablets Oral disintegrating tablets	PO Start with 5 mg once a day	5-20 mg/day Some patients may require higher doses	Weight gain can occur and increases in lipids and blood glucose are also observed. There are reports of new onset diabetes and diabetic ketoacidosis. Patients should be monitored for Type II diabetes and hyperlipidemia and other metabolic side effects.

Quetiapine  
(Seroquel)

May be effective for  
primary negative  
symptoms of  
schizophrenia

Tablets

25 mg bid; Titrate  
more slowly than  
adult patients

Target range  
150-200 mg/day  
in divided doses.

There are reports of new onset  
diabetes and diabetic ketoacidosis.  
Patients should be monitored for  
type II diabetes, hyperlipidemia  
and other metabolic side effects.

Reports of use in  
geriatrics up to  
900 mg/day are  
showing safety  
and good  
tolerability.

Ziprasidone  
(Geodon)

Psychotic disorders

**No information  
provided for  
elderly use of this  
med.**

## **Appendix H: Principles of Collaborative Treatment and Management of Schizophrenia**

- Coordinate all elements of treatment and rehabilitation to ensure that everyone is working toward the same goals in a collaborative, supportive relationship.
- Pay attention to both the social and the clinical needs of the consumer.
- Provide optimum medication management.
- Listen to families' concerns and involve them as equal partners in the planning and delivery of treatment.
- Explore family members' expectations of the treatment program and expectations for the consumer.
- Assess the strengths and limitations of the family's ability to support the consumer.
- Help resolve family conflict by responding sensitively to emotional distress.
- Address feelings of loss.
- Provide relevant information for the consumer and his or her family at appropriate times.
- Provide an explicit crisis plan and professional response.
- Help improve communication among family members.
- Provide training for the family in structured problem-solving techniques.
- Encourage family members to expand their social support networks – for example, to participate in family support organizations such as NAMI.
- Be flexible in meeting the needs of the family.
- Provide the family with easy access to another professional in the event that the current work with the family ceases. (Dixon et al., 2001, p. 904)

## **Appendix I: Therapeutic Partnership**

Nurses are in the position to help families and their recovering relative learn to live with mental illness and move away from a focus on management of deficits, symptoms, and problems towards the development of interventions that build on strengths and resources (Tweedell et al., 2004). An innovative approach to respond to the needs of families has been developed by an interdisciplinary team at McMaster University Medical Center (Hamilton, Wilson & Hobbs, 1999). Using a model of therapeutic partnership, family educators provide information and support to family members. Assistance is aimed at:

- Providing a consistent person for family contact
- Developing a working partnership with the client and family
- Reinforcing and enhancing family strengths, healthy coping, resources
- Helping family members learn as much as possible about the illness, its symptoms, and treatments.
- Providing crisis support and practical education
- Offering equal access to team resources during all phases of the illness
- Interpreting appropriate expectations for the various phases of recovery
- Referring families to community-based supports

This is accomplished through an information exchange with family members being given opportunities to share their observations, insights, anxieties, and concerns. Misperceptions about mental illness are discussed and correct information given. Family members are included in discussion about the diagnosis and the development of treatment recommendations. This collaborative approach requires shared problem identification, consensual decision making, and shared responsibility. Ongoing support is provided to family members through role modeling effective approaches and providing assistance in generating alternative solutions. In addition to problem solving, families are helped with stress management, conflict resolution, and enhancement of coping skills (Hamilton, Wilson, & Hobbs, 1999).



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