injectable medications may help with adherence, as they are more easily monitored with regard to dosage and adherence status. Additionally, medications can be taken consistently without the need for the patient to remember to take their daily pill. However, these strategies are not without challenges, because they present administrative and logistical issues that pertain to the injections. There are also limited choices with regard to current injectable antipsychotics, and clinicians and patients may have concerns about injectable psychotics, based on professional philosophies or perceived stigmas [Velligan DI, Weiden PJ, Sajatovic M, et al. *J Clin Psychiatry* 2009].

Psychosocial interventions also play a role in medication adherence. Cognitive behavior therapy (CBT), which focuses on symptoms rather than acceptance of diagnosis, may create a collaborative therapeutic environment and circumvent medication rejection that is based on unwillingness to accept a diagnostic label of schizophrenia [Rathod S et al. *Schizophr Res* 2005; Turkington D et al. *Am J Psychiatry* 2006]. When it comes to side effects and adherence, Dr. Weiden emphasized that it is more important to focus on the degree to which the side effect is distressing to the patient and others in his or her network than its actual medical severity. Additionally, family involvement in patient care may be a valuable resource when trying to achieve adherence.

Ultimately, medication adherence relies on matching individual patient factors with the treatment intervention. Using assessment tools and interview strategies, the clinician may be able to format a treatment plan based on potential adherence barriers in order to optimize adherence. The treatment of schizophrenia can be challenging, as it involves many factors and symptom manifestation may change over time. Early detection may help with the management of psychosis and minimize the worst aspects of illness progression. A clear understanding of adherence barriers and individual treatment goals are also vital components of psychosis treatment. The clinician is left with the responsibility of evaluating these factors and guiding treatment accordingly.

New Research: Study Shows Benefits in Flexible, Comprehensive Eating Disorder Treatment

Patients with eating disorders who underwent an integrated yet individualized treatment protocol significantly improved not only in the eating disorder illness (Figure 1), but across a range of areas, including decreases in depression and anxiety, according to research presented at the American Psychiatric Association's Annual Meeting in New Orleans.

Figure 1. Struggling with an Eating Disorder.

The study was conducted in a large integrated private group practice that addressed eating disorders and comorbid conditions simultaneously, using both verbal and non-verbal treatments such as art therapy in both outpatient and residential settings. A multidisciplinary team provided patients with integrated individual and group therapy, psychoeducuation, nutritional counseling, and medication.

The study integrated comprehensive initial and outcome assessments of eating disorder symptoms, anxiety and depression, life functioning, and eating behavior into private practice. The study participants showed significant improvement in eating disorder scales, significant decrease in anxiety and depression scores, and improvement in overall- and within-family-functioning. Dramatic improvements with the flexible treatment model were statistically and clinically significant across a range of psychosocial areas, the researchers concluded.

Researchers also identified variables that predict dropout risk, including the long duration of the eating disorder

illness and an external locus of control, or a belief that events in their lives are controlled by external forces. "The greatest potential to further increase patient benefit in the future will be realized by keeping dropouts in treatment," the researchers concluded. "There is reason for hope: eating disorders do actually respond to treatment, outcome benefits can be measured, as demonstrated in our study."

Psychotic and Mood Disorders – Pathophysiology and Imaging

Psychotic and mood disorders are often diagnostically complicated. They affect various regions of the brain, and diagnostic criteria can be inconsistent. Additionally, these disorders are often progressive in nature, so signs and symptoms may change over time. Stephen M. Lawrie, MD, University of Edinburgh, Edinburgh, Scotland, discussed the challenges and possible diagnostic strategies that are specifically related to schizophrenia and psychosis.

Psychotic symptoms are unreliably elicited and are diagnostically nonspecific. Therefore, the use of DSM-IV schizophrenia criteria alone is not always the most viable method of diagnosis. According to Dr. Lawrie, the "gold standard" of schizophrenia diagnosis needs to be augmented with more reliable clinical data. He suggests a variety of diagnostic aids to ensure consistency throughout the clinical community.

Creating a reliable clinical profile of psychosis should begin in the clinical trial environment. Studies should be designed and analyzed with the real world in mind. The study population should include cohorts that will appropriately translate into clinical practice. The trial setting also should be considered when reporting clinically relevant statistics, such as sensitivity and specificity, positive and negative predictive value, and effect size.

Developmental abnormalities may also assist clinicians in identifying patients with schizophrenia. Early social, sensory-motor, and intellectual deficits and anomalies may predict schizophrenia and merit further evaluation as diagnostic tools. However, it is important to note that they may simply be trait effects and that predictability may be age-dependent [Tarbox et al. *Psychol Bull* 2008; Lawrie SM et al. *B J Psych* 2001; Pukrop R et al. *Neurotox Res* 2010].

Using imaging as a diagnostic aid may be the most reliable tool to date. Structural imaging, functional imaging, and the identification of imaging biomarkers show promise as diagnostic tools. Advances are being made in this area of technology, making early detection of psychosis more attainable. However, Dr. Lawrie cautions that technology with higher sensitivity tends to be more expensive and technically demanding. Furthermore, as more biomarkers and disease-predicting genotypes become available, false negative results may also be introduced and tend to compound the diagnostic burden.

Stephen M. Strakowski, MD, University of Cincinnati, Cincinnati, OH, detailed various imaging approaches in bipolar disorder (BPD). Amygdala and striatal enlargement has been associated with BPD in several imaging studies. However, there is some inconsistency across studies with regard to the amygdala findings [Strakowski SM et al. *Mol Psychiatry* 2005; Noga et al. 2001; Altschuler L et al. *Arch Gen Psychiatry* 1998; DelBello et al. *Bipolar Disorders* 2004].

BPD is a progressive disorder, and structural changes within the anterior limbic network (ALN) of the brain have been suggested in relation to disease progression. In fact, frequent episodes may alter brain structure. However, there also appears to be a developmental component to these structural modifications [Strakowski SM et al. *Mol Psychiatry* 2005]. Some observed structural changes include decreased cerebellar vermis volume, occurring in patients who have experienced multiepisodes; age-related fluctuations in amygdala volume; and increased ventricular volume, correlating with the number of episodes [Delbello et al. 1999; Chen at al. 2004; Strakowski et al 2002; Brambilla et al. 2001; Strakowski SM et al. *Mol Psychiatry* 2005].

Aggressive psychopharmacological treatment may help prevent disease progression. The use of proton magnetic resonance spectoscopy (^{1}H-MRS) has elucidated some metabolic processes that are associated with drug treatment and suggests contributing factors in BPD, such as abnormalities in mitochondrial metabolism, membrane metabolism, and second messenger systems [Stork & Renshaw. *Mol Psychiatry* 2003]. Glutamatergic excitotoxicity may also contribute to observed progressive brain changes.

According to ^{1}H-MRS studies, there is considerable neurochemical variability that is associated with different drug therapies. For example, while lithium decreases glutamate, glutamine, and gamma-aminobutyric acid (Glx) concentration, valproate does not [Friedman SD et al. *Biol Psychiatry* 2004]. Lithium also increases N-acetyl-aspartate (NAA) in the brain [Moore GJ et al. *Biol Psychiatry* 2000]. These factors suggest that lithium may be neuroprotective. In an ^{1}H-MRS study by Delbello