

# Schizophrenia

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### **Purpose**

The purpose of this course is to describe schizophrenia, the symptoms, causes, co-morbid conditions, and treatment options.

### **Goals**

Define schizophrenia and explain 5 subtypes.  
Discuss at least 4 potential causes of schizophrenia.  
Describe the criteria for diagnosis of schizophrenia, including types of symptoms.  
Discuss the occurrence of schizophrenia in children.  
List and describe at least 3 co-morbidities of schizophrenia.  
Explain procedures for diagnosis.  
Explain the use of chemical restraint for acute psychotic episodes.  
List at least 3 types of drugs commonly used to treat schizophrenia.  
Discuss at least 3 types of other treatments used to help people to cope with schizophrenia.

### **Introduction: Two stories**

#### **A father's story:**

My son has schizophrenia. I don't know where he is now, but he'll show up at my doorstep in the next few years because that's what he does. He just shows up--dirty, hungry, teeth rotting, and usually half drunk. I spend months getting him cleaned up and treated. Then, he stops taking his medicine and hits the streets again for a few years until he comes back knocking at the door. It's just....hopeless.

#### **A patient's story:**

I was in and out of state mental institutions when I was in my 20s, and I could tell you horror stories about the treatment and shock therapy. But, the last time, I swore to do whatever it took to stay out. I've been on different medicines through the years, and they all have side effects, but I've taken them every day. I got a job doing bookkeeping because I could work alone, and I was able to support myself. I've had what I call "mini-breakdowns" when I can't leave the house or deal with people, and my hands shake, and I get depressed sometimes, but I've never had to go back to the hospital.

## What is schizophrenia?

Schizophrenia is a related group of chronic psychiatric disorders rather than one distinct psychiatric disease, affecting about 1% of the population. This disorder affects both males and females, but the peak onset is usually earlier in males (18-25 years) than females (26-45 years) and the course more severe in males, who often respond less well to drugs.

Schizophrenia is characterized by psychotic episodes, during which the individual is unable to differentiate between reality and fantasy or imagination, and may be extremely confused by disordered thoughts, images, or sounds. While some people have an acute onset, about half of the patients have a slow and insidious worsening of symptoms over a period of years. Those with gradual onset have a poorer prognosis than those with acute onset, perhaps because treatment is delayed. There are a number of different subtypes of schizophrenia:

- *Paranoid*: People believe they are being persecuted and are plagued by false beliefs although their ability to think, speak, and feel emotions may remain fairly intact.
- *Disorganized*: People may be extremely confused and incoherent with jumbled speech patterns and the inability to perform activities of daily living.
- *Catatonic*: People withdraw from the world and may be rigid and unmoving although some may exhibit unusual motor behavior, such as grimacing or posturing. They may not speak at all or may exhibit echolalia.
- *Undifferentiated*: People exhibit a mixture of symptoms with no clear pattern related to other types.
- *Residual*: People have usually received treatment or symptoms have receded. While they may still have hallucinations or other symptoms, they are less severe.

## What causes schizophrenia?

The cause of schizophrenia appears to be a combination of genetic and environmental factors:

- *Genetics*: A number of genes have been implicated as increasing the risk of schizophrenia.
- *Faulty brain chemistry*: There appears to be imbalance in neurotransmitters, such as dopamine and glutamate.
- *Brain abnormalities*: The brains of people with schizophrenia tend to have large ventricles, lower mass of gray matter, and less metabolic activity and some abnormalities in distribution of neurons. Studies of the brain indicate that sex hormones may affect how the brain develops during puberty in vulnerable children (primarily boys), accounting for the usual age of onset and brain abnormalities.
- *Environmental factors*: This may include exposure to viruses or malnutrition during fetal development and psychosocial factors. Studies have shown that children born to mothers who suffer severe stress during the first trimester (but not later trimesters) are at increased risk of

developing schizophrenia. If the mother suffers the death of a close relative, the increased risk is 67%.

## What are the symptoms of schizophrenia?

The *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)* outlines the criteria for a diagnosis of schizophrenia:

- **Symptoms** (*at least two*): *Positive symptoms*, such as delusions, hallucinations, disorganized or catatonic behavior, disorganized speech or *negative symptoms*, such as flat affect /decreased emotional range, social isolation, poverty of speech, lack of interest, and drive. If a symptom is exceptionally bizarre, such as having auditory hallucinations of one or more voices on an ongoing basis, only one symptom may be diagnostic.
- **Duration:** Symptoms must persist for at least 1 month during a 6-month period (unless medications relieve symptoms before 1 month).
- **Effect:** Condition interferes with social or occupational roles and functioning.

The criteria represent the classic picture of schizophrenia, but individuals may demonstrate a wide range of symptoms, depending upon the severity of the disorder. Some people have relatively mild symptoms and are able to function fairly well. Others must be institutionalized and under constant supervision as they are a threat to themselves or others. Some people have cognitive impairment and have problems paying attention, exercising executive functions, organizing, and abstracting. People with schizophrenia are usually oriented to person, place, and time, but they can be difficult to converse with because they often pause before responding or in the middle of a sentence and may speak at length without actually making rational statements because of disorganized thought processes.

Behavior may range from controlled to catatonic to wildly agitated and combative. People may exhibit unusual or atypical behavior, including hoarding of objects, poor hygiene, self-mutilation, excessive drinking of water (water intoxication), and disturbance of sleep and waking cycles. Some people may exhibit motor abnormalities, such as posturing or ritualistic behavior or unusual movements, such as rocking or pacing.

Some people may have urges to commit acts of violence, murder, or suicide, especially if they are prompted by “voices.” Between 20-40% of patients with schizophrenia attempt suicide at some point and 10% are successful. Most people with schizophrenia are unaware that they have a psychiatric illness and thus they are often non-compliant with treatment.

## How does schizophrenia affect children?

Schizophrenia is rare in children but can occur. The onset of symptoms in children tends to occur more slowly than in adults and may be preceded by delays in motor, speech, and language development. Children often exhibit poor

social skills and may have hallucinations or paranoid beliefs. They usually have flat affects and react inappropriately.

While the criteria for diagnosis of children is the same as for adults, misdiagnosis is common. Children are frequently diagnosed with autism; however, evidence of autism is usually clear by age 3, and schizophrenia occurs later, usually after age 7. Additionally, children with schizophrenia have persistent hallucinations and delusions. Children with bi-polar disease may have manic episodes with schizophrenic-like behavior. Children who have been abused and suffer from post-traumatic stress syndrome may also have flashbacks that can appear to be hallucinations or may believe they are hearing the abuser, so this must be differentiated. Children with schizophrenia typically have no interest in friends, so any attempt at making friends is usually an indication that the child does not have schizophrenia.

### **What are co-morbidities of schizophrenia?**

Alcohol and drug abuse are very common among people with schizophrenia, sometimes because of an unconscious attempt to self medicate. Most people (80-90%) are heavy smokers, an indication of an addictive personality. People with schizophrenia are at increased risk for the following:

- Obsessive-compulsive disorder.
- Depression.
- Panic disorders.
- Suicidal tendencies.

A major problem for people with schizophrenia is that they frequently have physical co-morbidities, such as heart disease and diabetes, which go undiagnosed and untreated. One research study that evaluated people with schizophrenia for diseases found the following were untreated:

- 40% of those with diabetes.
- 65% of those with hypertension
- 90% of those with high cholesterol.

### **How is schizophrenia diagnosed?**

There are other psychiatric disorders that share some of the positive symptoms of schizophrenia, such as the manic phase of bi-polar disease, so some people may initially be misdiagnosed, but over time the differences become more evident. Diagnostic testing includes:

- *Drug abuse screening and blood alcohol levels* should precede a tentative diagnosis of schizophrenia because certain illicit drugs can cause psychotic behavior.
- *Blood glucose* can determine if the patient is suffering a diabetic emergency with psychotic symptoms, such as an insulin reaction.
- *Electrolyte levels* may indicate hyponatremia related to water intoxication.
- *Psychiatric examination* should include mental status testing and interviews with the patient and family or associates if possible to gain an accurate picture of the onset and type of symptoms.

- *Imaging studies* have been used in research, as there are some typical brain abnormalities, such as enlarged ventricles and decreased brain size, but are not of practical value in diagnosing schizophrenia except to rule out other disorders, such as a brain tumor.

## What chemical restraints are used for acute psychotic episodes of schizophrenia?

Psychotic patients may be admitted to emergency departments with extreme agitation and uncontrollable behavior. Physical restraints may be needed, but they can cause injury and should be followed by chemical restraints in the form of rapid tranquilization:

- Mild agitation: Ativan® (lorazepam) 1-2 mg sublingually or by mouth.
- Moderate agitation: Ativan® 2 mg and Haldol® (haloperidol) 2-5 mg, OR Zyprexa® (olanzapine) 5-10mg.
- More severe agitation requires a combination of drugs and higher dosages:
  - Combination 1 mg Ativan® (lorazepam) and 5-10 mg Haldol® IM or IV with 1 mg Cogentin® (to counteract dystonia).
  - Repeat doses in 20-30 minutes as needed with Haldol doubled each time up to 20mg if severe agitation persists.
  - Inapsine® (droperidol) may be substituted in the same dosage as Haldol. It causes faster sedation, but can result in cardiac abnormalities at high doses (prolonged QT segment), so cardiac monitoring is advised.
  - Geodon® (ziprasidone) 10-20mg IM (usually 20mg) may be substituted for Haldol or Inapsine® if people are sensitive to those drugs. Ziprasidone is often used for younger patients because of lower likelihood of dystonia.

## What medications are used for schizophrenia?

Treatment does not cure schizophrenia, but it can help to make the condition manageable for many. It can be difficult and time consuming to find the right drug or combination of drugs, and patients must work closely with their physicians to establish the correct treatment. About 30% of patients do not show adequate response to medications. Medications must be taken for the rest of people's lives, and relapses most often relate to people's stopping medications because of side effects or the belief that they no longer need the drugs or the drugs aren't working:

- *Antipsychotic medications:* Older antipsychotic medications include Thorazine®, Haldol®, Etrafon®, and Prolixin®. These drugs may cause a variety of side effects, such as extrapyramidal symptoms, such as rigidity, muscle spasms, tremors, repetitive motions, and restlessness. However, recent studies by the National Institute of Health indicate these drugs may be just as effective as newer drugs and are less expensive.
- *Atypical Antipsychotics:* These drugs do not cause extrapyramidal side effects, but do have other untoward effects. They may cause drowsiness, dizziness, and postural hypotension, blurred vision, tachycardia,

photosensitivity, menstrual irregularities, and skin rashes during the first few days of treatment, but these symptoms usually subside:

- Clozaril® effectively treats psychotic symptoms that are non-responsive to other drugs but may result in agranulocytosis, so white blood counts must be monitored 2-4 times per month.
- Risperdal®, Zyprexa®, Seroquel®, Serdolect®, and Geodon® are effective but can result in weight gain and increased risk of diabetes and high cholesterol. Risperdal® has been approved for use with adolescents ages 13-17.
- Abillify® is a newer antipsychotic used for bi-polar disease and schizophrenia. Weight gain occurs in about 5% of patients. It has been approved for use in adolescents.
- *Antidepressants:* Prozac® and Zoloft® are commonly prescribed. People with schizophrenia often become depressed and benefit from antidepressants although they may become impatient because antidepressants don't work as rapidly as antipsychotics.

Currently, medications treat schizophrenia by targeting the neurotransmitter, dopamine, but a new drug (LY2140023) developed by Eli Lilly and Company targets glutamate. The results of the first human trials have been promising, although subsequent trials to validate early findings won't be completed until 2011. Another study of adolescents with beginning symptoms showed that treatment with Zyprexa® prevented more serious psychotic episodes in many of the patients, suggesting that early treatment should be used as a preventive measure although there are associated side effects, such as weight gain.

### **What other treatments are used for schizophrenia?**

In addition to medications, other supportive treatments may help people with schizophrenia to cope with the effects of the disease or treatment once their conditions have stabilized with antipsychotic medications:

- *Illness management:* This type of training teaches people about their disease and treatments and helps them to self-monitor for signs of relapse.
- *Integrated substance-abuse/schizophrenia treatment:* People with schizophrenia have special needs and respond better to programs tailored to their needs than to regular substance abuse treatment programs.
- *Rehabilitation:* Social and vocational training can include job training, money management counseling, and practical skills, such as using public transportation.
- *Family education:* Family members must know how to access support systems and solve problems in order to manage a person with schizophrenia.
- *Cognitive behavioral therapy (CBT):* Because some symptoms, such as hearing voices, may persist even with medications, CBT can help people learn to test the reality of their perceptions. CBT has been successful in reducing symptoms and decreasing relapses.
- *Self-help/support groups:* These groups can provide social support and networking for individuals with schizophrenia and their families.

- *Hospitalization:* In some cases, people may be so psychotic that they pose a threat to themselves or others and require temporary or permanent hospitalization.

The prognosis for schizophrenia varies, but early and consistent treatment, lack of brain abnormalities, and shorter duration of psychotic episodes correlate with better outcomes. While untreated schizophrenics may behave violently at times, people who are under treatment rarely pose any threat to others.

## Summary

Schizophrenia is a related group of chronic psychiatric disorders affecting about 1% of the population. Peak onset is earlier in males (18-25) than in females, and the course of the disease is more severe in males. There are a number of different subtypes of schizophrenia:

- Paranoid
- Disorganized
- Catatonic
- Undifferentiated
- Residual

A combination of genetic and environmental factors is implicated as causes, including genetic abnormalities, faulty brain chemistry, brain abnormalities, and environmental factors. There is a wide range of symptoms, ranging from controlled to wildly agitated and combative, but common symptoms are positive, such as hallucinations and delusions, and negative, such as lack of drive and flat affect. Symptoms must persist for at least 1 month in a 6-month period. Violent behavior is rare for those taking medications. Schizophrenia is rare in children but can occur and is often misdiagnosed as autism, which has an earlier onset.

Co-morbidities include obsessive-compulsive disorder, depression, panic disorders, suicidal tendencies, and substance abuse. People with schizophrenia frequently have physical co-morbid conditions, such as diabetes, hypertension, and high cholesterol, which go undiagnosed. Schizophrenia is diagnosed by psychiatric examination and tests to rule out other disorders. Chemical restraints, using primarily Ativan® and Haldol®, may be used to control acute psychotic episodes. Long-term medical treatment includes antipsychotics, atypical antipsychotics, and antidepressants. Other treatments include illness management, integrated substance-abuse/schizophrenia treatment, rehabilitation, family education, cognitive behavioral therapy, and self-help/support groups.

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