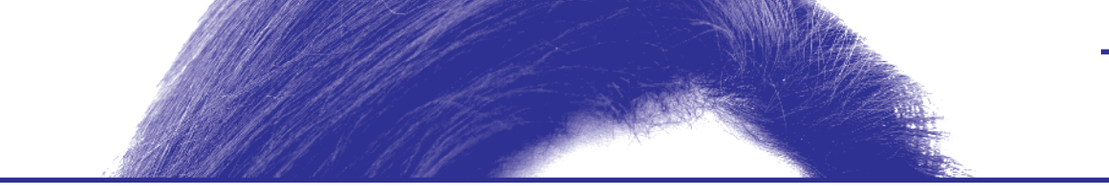
SCHIZOPHRENIA

National Institute of Mental Health



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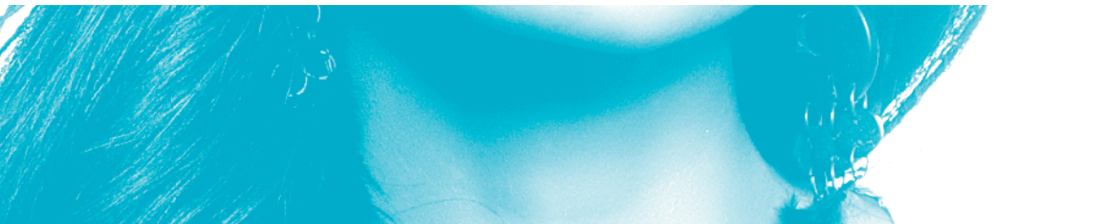

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What is schizophrenia?

Schizophrenia is a chronic and severe disorder that affects how a person thinks, feels, and acts. Although schizophrenia is not as common as other mental disorders, it can be very disabling. Approximately 7 or 8 individuals out of 1,000 will have schizophrenia in their lifetime.

People with the disorder may hear voices or see things that aren't there. They may believe other people are reading their minds, controlling their thoughts, or plotting to harm them. This can be scary and upsetting to people with the illness and make them withdrawn or extremely agitated. It can also be scary and upsetting to the people around them.

People with schizophrenia may sometimes talk about strange or unusual ideas, which can make it difficult to carry on a conversation. They may sit for hours without moving or talking. Sometimes people with schizophrenia seem perfectly fine until they talk about what they are really thinking.

Families and society are impacted by schizophrenia too. Many people with schizophrenia have difficulty holding a job or caring for themselves, so they may rely on others for help. Stigmatizing attitudes and beliefs about schizophrenia are common and sometimes interfere with people's willingness to talk about and get treatment for the disorder.

People with schizophrenia may cope with symptoms throughout their lives, but treatment helps many to recover and pursue their life goals. Researchers are developing more effective treatments and using new research tools to understand the causes of schizophrenia. In the years to come, this work may help prevent and better treat the illness.

What are the symptoms of schizophrenia?

The symptoms of schizophrenia fall into three broad categories: positive, negative, and cognitive symptoms.

POSITIVE SYMPTOMS

Positive symptoms are psychotic behaviors not generally seen in healthy people. People with positive symptoms may "lose touch" with some aspects of reality. For some people, these symptoms come and go. For others, they stay stable over time. Sometimes they are severe, and at other times hardly noticeable. The severity of positive symptoms may depend on whether the individual is receiving treatment. Positive symptoms include the following:

Hallucinations are sensory experiences that occur in the absence of a stimulus. These can occur in any of the five senses (vision, hearing, smell, taste, or touch). "Voices" (auditory hallucinations) are the most common type of hallucination in schizophrenia. Many people with the disorder hear voices. The voices can either be internal, seeming to come from within one's own mind, or they can be external, in which case they can seem to be as real as another person speaking. The voices may talk to the person about his or her behavior, command the person to do things, or warn the person of danger. Sometimes the voices talk to each other, and sometimes people with schizophrenia talk to the voices that they hear. People with schizophrenia may hear voices for a long time before family and friends notice the problem.

Other types of hallucinations include seeing people or objects that are not there, smelling odors that no one else detects, and feeling things like invisible fingers touching their bodies when no one is near.

Delusions are strongly held false beliefs that are not consistent with the person's culture. Delusions persist even when there is evidence that the beliefs are not true or logical. People with schizophrenia can have delusions that seem bizarre, such as believing that neighbors can control their behavior with magnetic waves. They may also believe that people on television are directing special messages to them, or that radio stations are broadcasting their thoughts aloud to others. These are called "delusions of reference."

Sometimes they believe they are someone else, such as a famous historical figure. They may have paranoid delusions and believe that others are trying to harm them, such as by cheating, harassing, poisoning, spying on, or plotting against them or the people they care about. These beliefs are called "persecutory delusions."

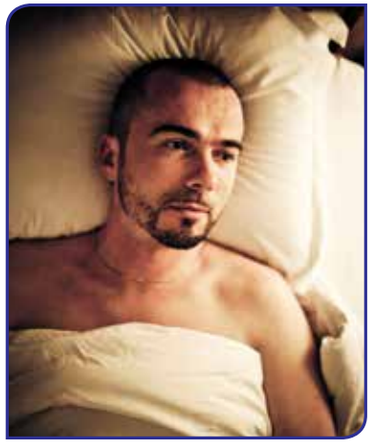
Thought disorders are unusual or dysfunctional ways of thinking. One form is called "disorganized thinking." This is when a person has trouble organizing his or her thoughts or connecting them logically. He or she may talk in a garbled way that is hard to understand. This is often called "word salad." Another form is called "thought blocking." This is when a person stops speaking abruptly in the middle of a thought. When asked why he or she stopped talking, the person may say that it felt as if the thought had been taken out of his or her head. Finally, a person with a thought disorder might make up meaningless words, or "neologisms."

Movement disorders may appear as agitated body movements. A person with a movement disorder may repeat certain motions over and over. In the other extreme, a person may become catatonic. Catatonia is a state in which a person does not move and does not respond to others. Catatonia is rare today, but it was more common when treatment for schizophrenia was not available.

NEGATIVE SYMPTOMS

Negative symptoms are associated with disruptions to normal emotions and behaviors. These symptoms are harder to recognize as part of the disorder and can be mistaken for depression or other conditions. These symptoms include the following:

- "Flat affect" (reduced expression of emotions via facial expression or voice tone)
- Reduced feelings of pleasure in everyday life
- Difficulty beginning and sustaining activities
- Reduced speaking



People with negative symptoms may need help with everyday tasks. They may neglect basic personal hygiene.

This may make them seem lazy or unwilling to help themselves, but the problems are symptoms caused by schizophrenia.

COGNITIVE SYMPTOMS

For some people, the cognitive symptoms of schizophrenia are subtle, but for others, they are more severe and patients may notice changes in their memory or other aspects of thinking. Similar to negative symptoms, cognitive symptoms may be difficult to recognize as part of the disorder. Often, they are detected only when specific tests are performed. Cognitive symptoms include the following:

- Poor "executive functioning" (the ability to understand information and use it to make decisions)
- Trouble focusing or paying attention
- Problems with "working memory" (the ability to use information immediately after learning it)

Poor cognition is related to worse employment and social outcomes and can be distressing to individuals with schizophrenia.

When does schizophrenia start, and who gets it?

Schizophrenia affects slightly more males than females. It occurs in all ethnic groups around the world. Symptoms such as hallucinations and delusions usually start between ages 16 and 30. Males tend to experience symptoms a little earlier than females. Most commonly, schizophrenia occurs in late adolescence and early adulthood. It is uncommon to be diagnosed with schizophrenia after age 45. Schizophrenia rarely occurs in children, but awareness of childhood-onset schizophrenia is increasing.

It can be difficult to diagnose schizophrenia in teens. This is because the first signs can include a change of friends, a drop in grades, sleep problems, and irritability—behaviors that are common among teens. A combination

of factors can predict schizophrenia in up to 80 percent of youth who are at high risk of developing the illness. These factors include isolating oneself and withdrawing from others, an increase in unusual thoughts and suspicions, and a family history of psychosis. This pre-psychotic stage of the disorder is called the "prodromal" period.

Are people with schizophrenia violent?

Most people with schizophrenia are not violent. In fact, most violent crimes are not committed by people with schizophrenia. People with schizophrenia are much more likely to harm themselves than others. Substance abuse may increase the chance a person will become violent. The risk of violence is greatest when psychosis is untreated and decreases substantially when treatment is in place.

Schizophrenia and suicide

Suicidal thoughts and behaviors are very common among people with schizophrenia. People with schizophrenia die earlier than people without a mental illness, partly because of the increased suicide risk.

It is hard to predict which people with schizophrenia are more likely to die by suicide, but actively treating any co-existing depressive symptoms and substance abuse may reduce suicide risk. People who take their antipsychotic medications as prescribed are less likely to attempt suicide than those who do not. If someone you know is talking about or has attempted suicide, help him or her find professional help right away or call 911.

Schizophrenia and substance use disorders

Substance use disorders occur when frequent use of alcohol and/or drugs interferes with a person's health, family, work, school, and social life. Substance use is the most common co-occurring disorder in people with schizophrenia, and the complex relationships between substance use disorders and schizophrenia have been extensively studied. Substance use disorders can make treatment for schizophrenia less effective, and individuals are also less likely to engage in treatment for their mental illness if they are abusing substances. It is commonly believed that people with schizophrenia who also abuse substances are trying to "self-medicate" their symptoms, but there is little evidence that people begin to abuse substances in response to symptoms or that abusing substances reduces symptoms.

Nicotine is the most common drug abused by people with schizophrenia. People with schizophrenia are much more likely to smoke than people without a mental illness, and researchers are exploring whether there is a biological basis for this. There is some evidence that nicotine may temporarily alleviate a subset of the cognitive deficits commonly observed in schizophrenia, but these benefits are outweighed by the detrimental effects of smoking on other aspects of cognition and general health. Bupropion has been found to be effective for smoking cessation in people with schizophrenia. Most studies find that reducing or stopping smoking does not make schizophrenia symptoms worse.

Cannabis (marijuana) is also frequently abused by people with schizophrenia, which can worsen health outcomes. Heavy cannabis use is associated

with more severe and earlier onset of schizophrenia symptoms, but research has not yet definitively determined whether cannabis directly causes schizophrenia.

Drug abuse can increase rates of other medical illnesses (such as hepatitis, heart disease, and infectious disease) as well as suicide, trauma, and homelessness in people with schizophrenia.

It is generally understood that schizophrenia and substance use disorders have strong genetic risk factors. While substance use disorder and a family history of psychosis have individually been identified as risk factors for schizophrenia, it is less well understood if and how these factors are related.

When people have both schizophrenia and a substance abuse disorder, their best chance for recovery is a treatment program that integrates the schizophrenia and substance abuse treatment.

What causes schizophrenia?

Research has identified several factors that contribute to the risk of developing schizophrenia.

GENES AND ENVIRONMENT

Scientists have long known that schizophrenia sometimes runs in families. The illness occurs in less than 1 percent of the general population, but it occurs in 10 percent of people who have a first-degree relative with the disorder, such as a parent, brother, or sister. People who have second-degree relatives (aunts, uncles, grandparents, or cousins) with the disease also develop schizophrenia more often than the general population. The risk is highest for an identical twin of a person with schizophrenia. He or she has a 40 to 65 percent chance of developing the disorder. Although these genetic relationships are strong, there are many people who have schizophrenia who don't have a family member with the disorder and, conversely, many people with one or more family members with the disorder who do not develop it themselves.

Scientists believe that many different genes contribute to an increased risk of schizophrenia, but that no single gene causes the disorder by itself. In fact, recent research has found that people with schizophrenia tend to have higher rates of rare genetic mutations. These genetic differences involve hundreds of different genes and probably disrupt brain development in diverse and subtle ways.

Research into various genes that are related to schizophrenia is ongoing, so it is not yet possible to use genetic information to predict who will develop the disease. Despite this, tests that scan a person's genes can be bought without a prescription or a health professional's advice. Ads for the tests suggest that with a saliva sample, a company can determine if a client is at risk for developing specific diseases, including schizophrenia. However, scientists don't yet know all of the gene variations that contribute to schizophrenia and those that are known raise the risk only by very small amounts. Therefore, these "genome scans" are unlikely to provide a complete picture of a person's risk for developing a mental disorder like schizophrenia.

In addition, it certainly takes more than genes to cause the disorder. Scientists think that interactions between genes and aspects of the individual's environment are necessary for schizophrenia to develop. Many environmental factors may be involved, such as exposure to viruses or malnutrition before birth, problems during birth, and other, not yet known, psychosocial factors.

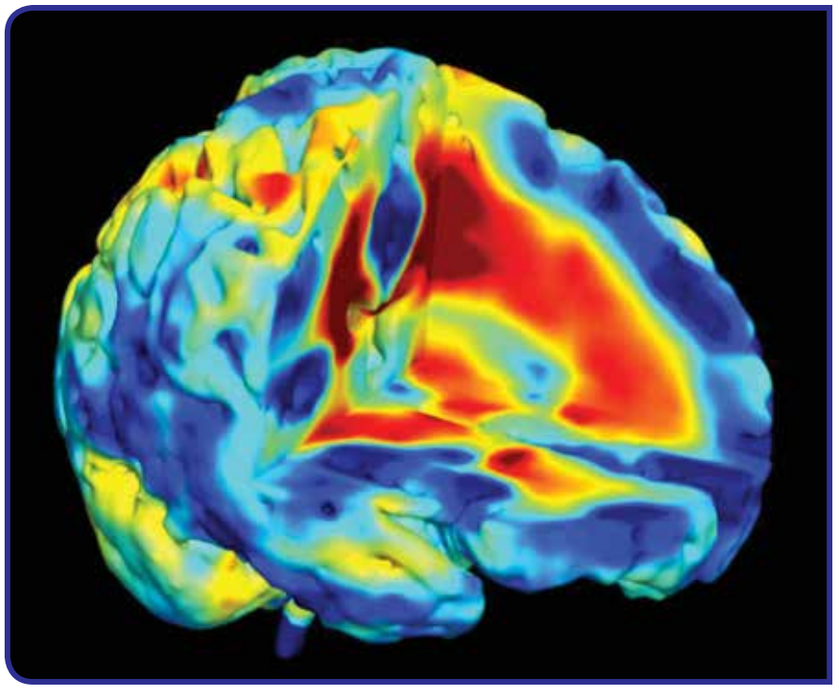
DIFFERENT BRAIN CHEMISTRY AND STRUCTURE

Scientists think that an imbalance in the complex, interrelated chemical reactions of the brain involving the neurotransmitters dopamine and glutamate, and possibly others, plays a role in schizophrenia. Neurotransmitters are substances that brain cells use to communicate with each other. Scientists are learning more about how brain chemistry is related to schizophrenia.

Also, the brain structures of some people with schizophrenia are slightly different than those of healthy people. For example, fluid-filled cavities at the center of the brain, called ventricles, are larger in some people with schizophrenia. The brains of people with the illness also tend to have less

gray matter, and some areas of the brain may have less or more activity. These differences are observed when brain scans from a group of people with schizophrenia are compared with those from a group of people without schizophrenia. However, the differences are not large enough to identify individuals with the disorder and are not currently used to diagnose schizophrenia.

Studies of brain tissue after death also have revealed differences in the brains of people with schizophrenia. Scientists have found small changes in the location or structure of brain cells that are formed before birth. Some experts think problems during brain development before birth may lead to faulty connections. The problem may not show up in a person until puberty. The brain undergoes major changes during puberty, and these changes could trigger psychotic symptoms in people who are vulnerable due to genetics or brain differences. Scientists have learned a lot about schizophrenia, but more research is needed to help explain how it develops.



How is schizophrenia treated?

Because the causes of schizophrenia are still unknown, treatments focus on eliminating the symptoms of the disease. Treatments include antipsychotic medications and various psychosocial treatments. Research on "coordinated specialty care," where a case manager, the patient, and a medication and psychosocial treatment team work together, has shown promising results for recovery.

ANTIPSYCHOTIC MEDICATIONS

Antipsychotic medications have been available since the mid-1950s. The older types are called conventional or *typical* antipsychotics.

In the 1990s, new antipsychotic medications were developed. These new medications are called second-generation or *atypical* antipsychotics.

WHAT ARE THE SIDE EFFECTS?

Some people have side effects when they start taking medications. Most side effects go away after a few days. Others are persistent but can often be managed successfully. People who are taking antipsychotic medications should not drive until they adjust to their new medication. Side effects of many antipsychotics include:

- Drowsiness
- Dizziness when changing positions
- Blurred vision
- Rapid heartbeat
- Sensitivity to the sun
- Skin rashes
- Menstrual problems for women

Atypical antipsychotic medications can cause major weight gain and changes in a person's metabolism. This may increase a person's risk of getting diabetes and high cholesterol. A doctor should monitor a person's weight, glucose levels, and lipid levels regularly while the individual is taking an atypical antipsychotic medication.

Typical antipsychotic medications can cause side effects related to physical movement, such as:

- Rigidity
- Persistent muscle spasms
- Tremors
- Restlessness

Doctors and individuals should work together to choose the right medication, medication dose, and treatment plan, which should be based on a person's individual needs and medical situation. Information about medications is frequently updated. Check the U.S. Food and Drug Administration (FDA) website **(http://www.fda.gov)** for the latest information on warnings, patient medication guides, or newly approved medications.

Long-term use of typical antipsychotic medications may lead to a condition called tardive dyskinesia (TD). TD causes muscle movements a person can't control. The movements commonly happen around the mouth. TD can range from mild to severe, and in some people the problem cannot be cured. Sometimes people with TD recover partially or fully after they stop taking the medication.

TD happens to fewer people who take the atypical antipsychotics, but some people may still get TD. People who think that they might have TD should check with their doctor before stopping their medication.

How are antipsychotic medications taken, and how do people respond to them?

Antipsychotic medications are usually taken daily in pill or liquid form. Some antipsychotics are injections that are given once or twice a month.

Symptoms of schizophrenia, such as feeling agitated and having hallucinations, usually improve within days after starting antipsychotic treatment. Symptoms like delusions usually improve within a few weeks. After about 6 weeks, many people will experience improvement in their symptoms. Some people will continue to have some symptoms, but usually medication helps to keep the symptoms from getting very intense.

However, people respond in different ways to antipsychotic medications, and no one can tell beforehand how a person will respond. Sometimes a person needs to try several medications before finding the right one. Doctors and patients can work together to find the best medication or medication combination, as well as the right dose.

Most people will have one or more periods of relapse—their symptoms come back or get worse. Usually, relapses happen when people stop taking their medication or when they take it less often than prescribed.

Some people stop taking the medication because they feel better or they may feel they don't need it anymore. But no one should stop taking an antipsychotic medication without first talking to his or her doctor. Medication should be gradually tapered off, never stopped suddenly.

HOW DO ANTIPSYCHOTIC MEDICATIONS INTERACT WITH OTHER MEDICATIONS?

Antipsychotic medications can produce unpleasant or dangerous side effects when taken with certain other medications. For this reason, all doctors treating a patient need to be aware of all the medications that person is taking. Doctors need to know about prescription and over-the-counter medicine, vitamins, minerals, and herbal supplements. People also need to discuss any alcohol or street drug use with their doctor.

PSYCHOSOCIAL TREATMENTS

Psychosocial treatments can help people with schizophrenia who are already stabilized. Psychosocial treatments help individuals deal with the everyday challenges of their illness, such as difficulty with communication, work, and forming and keeping relationships. Learning and using coping skills to address these problems helps people with schizophrenia to pursue their life goals, such as attending school or work. Individuals who participate in regular psychosocial treatment are less likely to have relapses or be hospitalized. For more information on psychosocial treatments, see the psychotherapies section on the National Institute of Mental Health (NIMH) website at **http://www.nimh.nih.gov/health/topics/psychotherapies/index.shtml**.

ILLNESS MANAGEMENT SKILLS

People with schizophrenia can take an active role in managing their own illness. Once they learn basic facts about schizophrenia and its treatment, they can make informed decisions about their care. If they know how to watch for the early warning signs of relapse and make a plan to respond, patients can learn to prevent relapses. Patients can also use coping skills to deal with persistent symptoms.

REHABILITATION

Rehabilitation emphasizes social and vocational training to help people with schizophrenia participate fully in their communities. Because schizophrenia usually develops during the critical career-development years (ages 18 to 35), the career and life trajectories for individuals with schizophrenia are usually interrupted and they need to learn new skills to get their work life back on track. Rehabilitation programs can include employment services, money management counseling, and skills training to maintain positive relationships.

FAMILY EDUCATION AND SUPPORT

Family education and support teaches relatives or interested individuals about schizophrenia and its treatment and strengthens their capacity to aid in their loved one's recovery.

COGNITIVE BEHAVIORAL THERAPY

Cognitive behavioral therapy (CBT) is a type of psychotherapy that focuses on changing unhelpful patterns of thinking and behavior. The CBT therapist teaches people with schizophrenia how to test the reality of their thoughts and perceptions, how to "not listen" to their voices, and how to manage their symptoms overall. CBT can help reduce the severity of symptoms and reduce the risk of relapse. CBT can be delivered individually or in groups.

SELF-HELP GROUPS

In self-help groups for people with schizophrenia, group members support and comfort each other and share information on helpful coping strategies and services. Professional therapists usually are not involved. People in self-help groups know that others are facing the same problems, which can help everyone feel less isolated and more connected.

How can you help a person with schizophrenia?

Family and friends can help their loved one with schizophrenia by supporting their engagement in treatment and pursuit of their recovery goals. Positive communication approaches will be most helpful. It can be difficult to know how to respond to someone with schizophrenia who makes strange or clearly false statements. Remember that these beliefs or hallucinations seem very real to the person. It is not helpful to say they are wrong or imaginary. But going along with the delusions is not helpful, either. Instead, calmly say that you see things differently. Tell them that you acknowledge that everyone has the right to see things his or her own way. In addition, it is important to understand that schizophrenia is a biological illness. Being respectful, supportive, and kind without tolerating dangerous or inappropriate behavior is the best way to approach people with this disorder.

What is the outlook for the future?

The outlook for people with schizophrenia continues to improve. Treatments that work well are available, and new ones are being developed. Many people with schizophrenia experience recovery and lead independent, satisfying lives.

Continued research and understanding in genetics, neuroscience, and behavioral science will help scientists and health professionals understand the causes of the disorder and how it may be predicted and prevented. This work will help experts develop better treatments to help people with schizophrenia achieve their full potential. In 2009, NIMH launched the Recovery After an Initial Schizophrenia Episode (RAISE) research project **(http://www.nimh.nih.gov/raise)**. RAISE seeks to fundamentally change the trajectory and prognosis of schizophrenia through coordinated treatment in the earliest stages of the disorder. RAISE is designed to reduce the likelihood of long-term disability that people with schizophrenia often experience and help people with this disorder lead productive, independent lives.

Families and individuals who are living with schizophrenia are encouraged to participate in clinical research. For up-to-date information about the latest NIMH-funded research in schizophrenia, see the NIMH website at **http://www.nimh.nih.gov**.

For more information on schizophrenia, visit the National Library of Medicine's MedlinePlus: **http://medlineplus.gov**
En Espanol: **http://medlineplus.gov/spanish**

For more information on clinical trials, visit:
ClinicalTrials.gov: **http://www.clinicaltrials.gov**

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