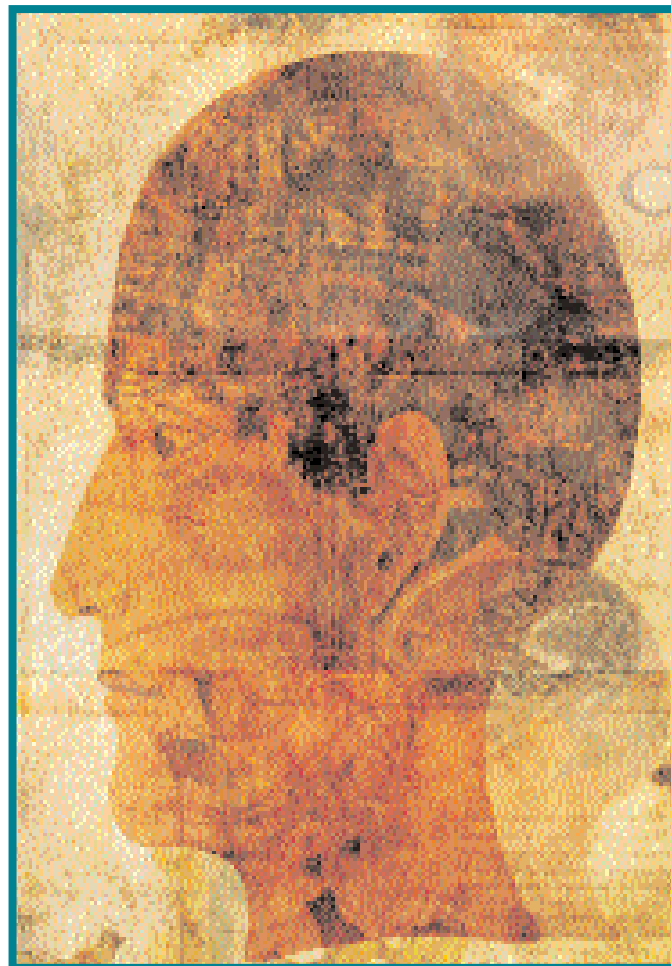


# **NARSAD** RESEARCH

*National Alliance for Research on Schizophrenia and Depression*

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## UNDERSTANDING SCHIZOPHRENIA

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**NARSAD**  
RESEARCH

*Providing Hope Through Research*

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## What is Schizophrenia?

**S**chizophrenia is a chronic and severe brain disorder. It is a disease that makes it difficult for a person to tell the difference between real and unreal experiences, to think logically, to have appropriate emotional responses to others, and to behave appropriately in social situations. People with schizophrenia may also have difficulty with some aspects of memory.

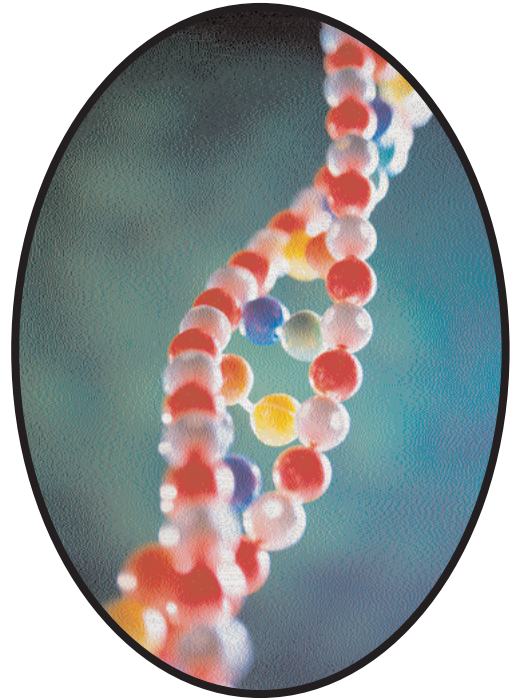
Schizophrenia can be very draining on those who have the disease and their families. People with schizophrenia often experience difficulties functioning in society. As a result, family members may assume new and unfamiliar roles, such as assisting with finances, ensuring medications are taken regularly, and helping with basic needs.

There are many myths surrounding the disease. Schizophrenia does not mean “split personality”. It is not caused by bad upbringing, personal weakness or laziness. Schizophrenia is an illness with a biological cause, like cancer or heart disease. Additionally, people with schizophrenia are not significantly more prone to violence than the average population.

There is currently no cure for schizophrenia, but with appropriate treatment the symptoms can usually be controlled and most people with schizophrenia can lead productive and fulfilling lives. The severity of schizophrenia is different in each person, and symptoms may vary over time. Some scientists believe schizophrenia is a single disorder, while others believe it is a group of different but related disorders.

## Who Gets Schizophrenia?

**S**chizophrenia is one of the most common mental illnesses – about 1 percent of the world population will develop it. In the United States, more than 2 million people suffer from this disease in a given year. Schizophrenia causes more hospitalizations than almost any other illness.



The disease generally begins between the ages of 15 and 25. Although men and women are affected equally, symptoms may appear later in women than in men. Very rarely, symptoms appear before the age of 12. Childhood schizophrenia has a more chronic disease course, and language development is often abnormal. Late-onset schizophrenia, which occurs when the disease is diagnosed after age 40, is also uncommon.

## What are the Symptoms?

People with schizophrenia can have a variety of symptoms. Sometimes these symptoms begin suddenly. Usually, though, the illness develops slowly over months or even years. At first, the symptoms may not be noticed or may be confused with those of other conditions. People in the early stages of schizophrenia may feel tense, anxious, depressed, moody, be unable to concentrate, or feel uneasy or suspicious. They often become increasingly isolated and withdrawn as symptoms progress. They may stop caring about the way they look, drop out of school or perform poorly at work.

The severity of symptoms varies from one person to another, with symptoms typically improving (remitting) and reappearing (relapsing) throughout the course of the illness. Symptoms of schizophrenia are often divided into **positive** and **negative** symptoms. Positive symptoms include delusions, hallucinations, disorganized thinking and markedly disorganized behavior. These positive symptoms are often labeled as “psychosis” or an acute psychotic episode. Negative symptoms include reduced emotional expression; social withdrawal; loss of pleasure; difficulty with concentration and/or thinking; and a lack of energy, spontaneity or initiative.

Hallucinations may occur with any of the senses, however, auditory hallucinations are most common. Some examples of hallucinations include hearing voices not heard by others, seeing objects or people that don't exist, smelling odors that are not present, or experiencing tastes or tactile feelings that are not real.

People experiencing delusions generally have false beliefs, which may result from perceptions or experiences that have been misinterpreted. Some examples of delusions are a feeling of being plotted against, believing news or other public occurrences are directly related to oneself or thinking one possesses special powers.

## COMMON SYMPTOMS OF SCHIZOPHRENIA

### POSITIVE

*(characterized by abnormal thoughts, perceptions, language and behavior)*

- **Delusions:** False beliefs or thoughts with no basis in reality.
- **Hallucinations:** Disturbances of sensory perception. For example, hearing, seeing, or feeling things that are not there.
- **Disorganized Thinking/Speech:** Jumping from topic to topic, slipping off topic, responding to questions with unrelated answers or speaking incoherently.
- **Disorganized Behavior:** Problems may occur in performing goal-directed, daily activities, such as meal planning and personal hygiene. Other forms of abnormal behavior may range from child-like actions to unprovoked agitation.
- **Catatonic Behavior:** Noticeable decrease in environmental awareness, possibly resulting in: complete unresponsiveness; rigid posture and resistance to movement or instructions; assuming inappropriate postures; or purposeless, excessive movements. (This is relatively uncommon.)

### NEGATIVE

*(characterized by restrictions in range and intensity of emotional expression, communication, body language and interest in normal activities)*

- **Blunted (or flat) Affect:** Decreased emotional expressiveness, unresponsive immobile facial appearance, reduced eye contact and body language.
- **Alogia:** Reduced speech. Responses are curt and detached; speech may be less fluid.
- **Avolition:** Lacking motivation, spontaneity, initiative. Examples are sitting for lengthy periods or ceasing to participate in work or daily activities.
- **Anhedonia:** Lacking pleasure or interest in activities that were once enjoyable.
- **Attention Deficit:** Difficulty in concentrating and screening outside stimuli.

## How is Schizophrenia Diagnosed?

**B**ecause other diseases can also cause symptoms of psychosis, psychiatrists (medical doctors who specialize in the treatment of mental illnesses) should make the final diagnosis. A physical exam should be conducted and a medical history taken to make sure there are no other possible causes of symptoms. The diagnosis is made based on a thorough psychiatric interview of the person and family members. Currently, there are no medical tests for schizophrenia – it is diagnosed by the existence and duration of signs/symptoms, and whether significant impairment exists in areas such as family/social relationships, employment and/or education.

There are other disorders that are similar to schizophrenia. These include schizotypal personality disorder (a milder disorder which shares some symptoms of schizophrenia); schizophreniform disorder, which is of a shorter duration; and schizoaffective disorder, in which symptoms of schizophrenia are accompanied by inappropriate “highs” (mania) and/or depression.

## Depression, Suicide, and Schizophrenia

**D**epression can be a real concern for people with schizophrenia. A person with this disease is prone to attacks of severe depression in the time between psychotic episodes.

Suicide is the number one cause of premature death for people with schizophrenia – approximately 10 percent commit suicide. Approximately 40 percent of people who have this disorder will attempt suicide at least once. Males with schizophrenia attempt suicide at a higher rate than females. In rare cases, people may act under the influence of delusions or hallucinations. However, more frequently, suicide is the result of depression or demoralization that occurs when people with schizophrenia are thinking relatively clearly and have an understanding of their illness.

## What Causes Schizophrenia?

**S**chizophrenia is a complex and puzzling illness—there is no one accepted cause. It is believed that some combination of genetic, biological, environmental or other factors contribute to schizophrenia. Some researchers are currently exploring critical periods of brain development, searching for gene variations, investigating various brain chemicals, and exploring other factors that may cause the disease.

### Heredity

One possible cause of schizophrenia may be heredity, or genetics. Adoption studies have shown that children born to a mother with schizophrenia, but raised in a non-schizophrenic adoptive home, develop schizophrenia at the same rate as those reared by the biological mother. These studies established that schizophrenia is genetically linked. However, the rate at which children of mothers with the disorder develop schizophrenia is only about 6 - 8 percent, indicating that many other factors, particularly environmental, play a role in this illness. Similar to certain other genetically transmitted disorders, the disease tends to appear in mid- or late-adolescence. More than one gene may predispose people to schizophrenia, but there is currently no reliable way to predict whether a person will develop the disease.

### CHANCES OF SCHIZOPHRENIA DEVELOPING

General population	0.6 - 1%
Brother or sister has schizophrenia	6%
One parent has schizophrenia	6 - 8%
Both parents have schizophrenia	39 - 46%
Fraternal twin has schizophrenia	10%
Identical twin has schizophrenia	50%
One grandparent has schizophrenia	4%

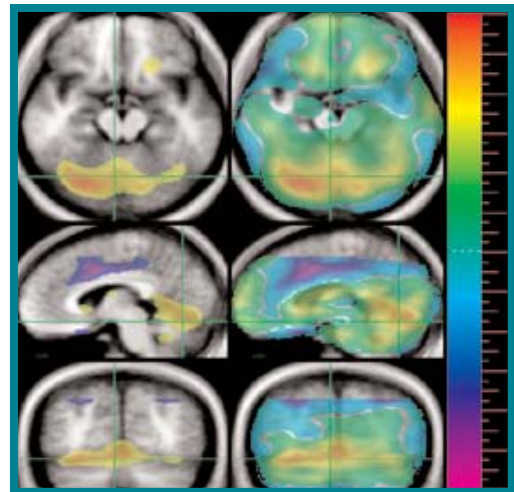
## Environment

Studies have shown that viral infections (either in the individual or during the mother's pregnancy), famine experienced by the mother during pregnancy, influenza during the second trimester of pregnancy, or complications experienced before, during, or after birth may slightly increase the risk that a person will later develop schizophrenia. Many researchers believe schizophrenia is likely caused by a complex combination of genetic and environmental factors. Certain people may be born with a genetic tendency to develop the disease; however, the disorder may only appear if these people are exposed to stress or trauma. Others believe the genes of a person with schizophrenia could pre-determine that a person's immune system might attack the brain in response to a viral infection. However, environmental effects can be individual, as evidenced by identical twin studies in which only 50 percent of both twins raised in the same environment develop the disorder, rather than 100 percent, as would be expected if the decisive factor were a single dominant gene that was fully expressed.

## What Occurs in the Brain of Someone with Schizophrenia?

People with schizophrenia may have a chemical imbalance in the brain. Brain chemicals called neurotransmitters allow nerve cells, or neurons, to send messages to each other. Researchers believe an imbalance of neurotransmitters may cause the symptoms of schizophrenia. There are many types of neurotransmitters in the brain. Two neurotransmitters, dopamine and serotonin, have been most often implicated as abnormal in schizophrenia, however, researchers now believe there may be significant abnormalities in other brain neurotransmitters such as glutamate and gamma-amino-butyric acid (GABA).

Recent advances in the ability to produce images of brain structure and function have shown differences in the size and shape of certain brain regions in many people with schizophrenia compared with those of mentally healthy people. For example, in some people with schizophrenia, there is enlargement of the fluid-filled cavities of the brain called ventricles. Similarly, there is often a decrease in the size of an area of the brain called the hippocampus. Other tests have shown that in the brains of many people with schizophrenia there is either abnormal activity, a decrease in size, or abnormal development in the prefrontal cortex, the part of the brain that governs planning, some aspects of thought, and some other higher mental functions. There are also changes in the number and complexity of connections between brain cells, called synapses, in people with schizophrenia. While structural and functional differences in the brain are identifiable in many patients with schizophrenia, they are subtle and may not be present in everyone. Not all people with schizophrenia exhibit these changes; additionally, the changes may have been present before the person developed schizophrenia.



*Both images depict the brain of a person with schizophrenia in which blood flow during visual attention tasks is significantly different. Images on left show significant differences with some areas of increased flow detected in yellow and red, and other areas of decreased flow indicated in blue. Images on right show all differences, including those not statistically significant.*

## How is Schizophrenia Treated?

Treatment is aimed at reducing symptoms and preventing psychotic relapses, as there is currently no cure for schizophrenia. Treatment is believed to be most effective when begun early in the course of the illness. Schizophrenia is usually treated with antipsychotic medication. Periods of hospitalization may be required in response to heightened symptoms or acute psychosis. Once acute symptoms have lessened, a combination of medication and psychosocial/rehabilitation interventions can be helpful.

### Antipsychotic Medications

Antipsychotic medications can be very effective in controlling the symptoms of schizophrenia. These medications first became available in the mid-1950s and have enabled many people with schizophrenia to live more independent lives.

Because each person with schizophrenia has a unique set of symptoms, no single medication works best for all individuals. A few people continue to have psychotic episodes even when they take medications; however, even then symptoms may be less severe. Increasing the dose of the medication may interrupt a relapse.

For many people, antipsychotic medications can reduce the severity of symptoms and decrease the risk that symptoms will return if a person has a relapse. Understanding the importance of medication and other options available to control schizophrenia is important for patients, family members and friends.

### Counseling and Rehabilitation

Psychosocial therapies, such as cognitive behavioral therapy (CBT), can be beneficial, particularly when combined with antipsychotic medication, in reducing relapse rates. However, effectiveness of these treatments may diminish during acute attacks. People with schizophrenia may have a hard time communicating and carrying out ordinary tasks, even when positive symptoms are reduced. Supportive, reality-oriented counseling and rehabilitation can help rebuild the functional and social skills needed to live more independently. Rehabilitation programs can help people develop skills needed for activities such as money management, cooking, and social interactions, and assist them in returning to work.

Self-help groups can provide family members, close friends and caregivers with a more thorough understanding of the disease, offer a forum for discussing experiences of care-giving/support and enable participants to share experiences with others involved in similar situations. Family therapy can provide an environment to process feelings, express concerns and cope with the realities of living with a person who has schizophrenia.



## How do Antipsychotic Medications Work?

Antipsychotic medications are thought to work by changing the balance or activity of chemicals that transmit messages in the brain (neurotransmitters). There are two major types: **traditional, or typical antipsychotics** and **newer, or atypical antipsychotics**. Overall, most antipsychotics control the positive symptoms of schizophrenia effectively. The atypical antipsychotics seem to be more helpful in addressing the negative symptoms. The primary differences between the two groups are the side effects each group may cause, and the symptoms they tend to address.

## What are the Side Effects?

### EXTRAPYRAMIDAL SYMPTOMS

The neurological side effects of antipsychotic medications are often considered the most troublesome. Although all antipsychotic agents may cause nervous-system side effects, each differs in severity. Extrapyramidal symptoms (EPS) are perhaps the most serious of the neurological side effects and can develop within weeks of starting treatment with older antipsychotic medications. These side effects can be so unpleasant that they diminish the chances of compliance or continuation with medication, thereby increasing the chances for the illness to recur. EPS can be either **chronic** or **acute**.

**Chronic symptoms** can occur after months or years of antipsychotic use, are not dose-dependent (related to the size of the dose of medication given) and may persist after medication is stopped. These symptoms include:

- **Tardive dyskinesia** (involuntary movements)
- **Parkinsonism** (tremors and rigidity)
- **Akathisia** (body restlessness)

**Acute symptoms** generally occur within the first few days or weeks of treatment and are dose-

dependent and reversible upon dose reduction or discontinuation. These symptoms include:

- **Acute dystonia** (muscle contractions/twitching)
- **Neuroleptic malignant syndrome** (muscle rigidity, fever, rapid heart rate and difficulty breathing)

**NOTE:** Both chronic and acute symptoms are described in more detail on the following pages.

Although EPS are always an issue to be aware of for anyone taking an antipsychotic medication, studies suggest nearly two-thirds of all people taking older medications will experience EPS. Research also suggests that newer antipsychotics generally offer a milder EPS side effect profile than the older medications.

### **Tardive Dyskinesia** (involuntary movements)

One of the most common, potentially severe neurological side effects is tardive dyskinesia (TD) which is characterized by involuntary movements, most often affecting the mouth, lips, and tongue, and sometimes the trunk or other parts of the body. This chronic, potentially debilitating and irreversible movement disorder affects approximately 300,000 individuals treated with antipsychotic medications in the United States annually.

While the specific causes of TD are still unknown, antipsychotic medications are widely believed to be the primary factor in the development of the disorder. The majority of individuals who develop TD have mild symptoms, but approximately 10 percent develop moderate or severe symptoms. Studies show the newer, atypical medications are 5-10 times less likely to cause TD than the older, typical antipsychotics. Additionally, schizophrenia itself may be associated with a risk of spontaneous TD. More research, however, is needed to fully understand the relationship between TD and antipsychotic medications.

A person may be more vulnerable to TD if he/she is older (particularly post-menopausal women), diagnosed with an affective disorder (particularly major depressive disorder), if there is a concurrent general medical disease or if high doses of antipsychotic medications are being taken. It is usually managed or minimized by reducing the amount of the dose or by changing medications, as determined by a person's doctor. Because TD is a chronic disorder, in some cases, symptoms can persist following discontinuation of medication. Regular evaluations are critical in the management of TD.

### **Parkinsonism** (*tremors and rigidity*)

Some individuals taking antipsychotics will experience symptoms that are characteristic of Parkinson's disease, including rigidity, tremors, temporary paralysis (akinesia) and extreme slowness of movement, including speech (bradykinesia). Up to 20 percent of those treated with antipsychotics experience these symptoms, which arise in the first few days or weeks of medication administration. It should be mentioned that akinesia and bradykinesia are features of medication-induced parkinsonism that have been noted alone or with other EPS in almost one-half of those treated with antipsychotics. Depressive symptoms can also be present in over 50 percent of persons with akinesia.

Generally, the symptoms of parkinsonism improve rather than worsen with a dose increase. This may be a result of an increase in the medication's effect on certain nerve cells and its ability to inhibit nerve impulses at higher doses. Medication-induced parkinsonism usually resolves after the medication is discontinued, although some cases of persisting symptoms have been reported. Symptoms of medication-induced parkinsonism may be indistinguishable from the negative symptoms of schizophrenia.

### **Akathisia** (*body restlessness*)

Akathisia is a chronic EPS characterized by restlessness of the body and occurs in 20 to 25 percent of those taking antipsychotic medications. Those experiencing akathisia suffer from an inner sensation of restlessness and an irresistible urge to move various parts of their bodies. The most common form of akathisia involves pacing and an inability to sit still. This side effect is often extremely distressing and can lead to noncompliance with medication.

Akathisia is less responsive to treatment than parkinsonism or dystonia. A first step that may improve symptoms can be a slow reduction of medication dose. Doctors often treat akathisia, particularly if another EPS is present, with other types of medications, although these medications have limited efficacy.

### **Acute dystonia** (*muscle contractions/twitching*)

Acute dystonia is characterized by the spastic contraction of muscle groups. These often painful reactions occur in up to 10 percent of those taking antipsychotic medications. Risk factors include age (youth), gender (males), use of high-potency medications (if a drug is high potency, less of it is needed to relieve symptoms), high doses of medications and intramuscular administration of the drug. Up to 90 percent of all dystonic reactions occur within the first three days of treatment. Reactions can occur in various body regions, but most commonly affect the neck, eyes and torso. These reactions occur suddenly, are dramatic in appearance, and can cause great distress. Acute dystonia can be effectively and rapidly treated with medication.

### **Neuroleptic malignant syndrome** (*changes in breathing and heart rate*)

Neuroleptic malignant syndrome, is characterized by rigidity, elevated body temperature and auto-

nomic instability (abnormalities in heart rate, blood pressure, breathing or digestion). This condition can be sudden and unpredictable in its onset, is frequently misdiagnosed, and can be fatal if untreated. Neuroleptic malignant syndrome usually occurs early in the course of treatment, often within the first week after treatment is begun or the dose is increased. Risk factors include age (youth), gender (males), pre-existing neurological disability, physical illness, dehydration, rapid escalation of dose, use of high-potency medications and use of intramuscular injections.

### *Anticholinergic Effects*

Drugs that block the action of the neurotransmitter acetylcholine have anticholinergic effects. Most of these drugs aren't designed to block acetylcholine; therefore, their anticholinergic effects are considered side effects. The most common include dry mouth, blurred vision, constipation, dizziness, an inability to urinate or loss of bladder control.

### *Sedation*

Sedation (drowsiness) is the single most common side effect of antipsychotic medications. Sedation occurs to some extent with all antipsychotics, but is usually experienced with low-potency agents. (If a drug is low potency, more of it is needed to relieve symptoms.) It can have therapeutic benefits for patients who experience agitation, but can be problematic if it causes extreme daytime drowsiness. Lowering the daily dose, consolidating divided doses into one evening dose, or changing to a less sedating medication can be helpful in these cases.

Sedation is most pronounced during the initial phases of treatment; most people develop some tolerance as they continue taking a medication.

### *Seizures*

Brain cells communicate by means of electric signals. Occasionally, there is an abnormal electrical

discharge from a group of cells, and the result is a seizure. Antipsychotic medications can lower a person's seizure threshold. Higher doses of medication are associated with a greater risk. Seizure rates are below 1 percent for most antipsychotic medications when taken within usual dose ranges, although those with a history of seizures have an increased risk. However, an exception is the atypical antipsychotic clozapine which has been associated with a significantly greater risk of seizure. Prescription anticonvulsant medications can help to control many seizure problems associated with the newer, atypical medications.

### *Weight Gain*

Many commonly prescribed antipsychotics can cause weight gain. Nutritional counseling, appropriate diet, and exercise can help patients to keep weight gain to a minimum. It is advisable to consult with a physician before starting a new exercise or diet regimen.

### *Elevation of Prolactin*

Most, but not all, antipsychotic drugs increase the secretion of the hormone prolactin. In women, elevated prolactin levels may be associated with milk production, amenorrhea (suppression or absence of menses) and may affect interest in and enjoyment of sex. Men may also have diminished interest in sex and may experience impotence if prolactin levels are raised. However, increases in prolactin levels related to antipsychotic medications are much smaller in men than in women.

Additionally, high prolactin levels may cause osteoporosis (a condition of brittle bones which sometimes leads to fractures).

*If you believe you are suffering from any of these side effects, please see your doctor.*

## Typical Antipsychotics

17 **T**ypical antipsychotic medications can control the positive symptoms (hallucinations, delusions, disordered thinking) of schizophrenia very effectively. Researchers believe this effect may be explained by how these medications affect the brain chemical dopamine. Some believe the positive symptoms of schizophrenia may be caused by too much dopamine in the brain, or by very sensitive dopamine receptors. One way of reversing the excess dopamine is to block the dopamine receptor, a protein on brain cells that signals the cell when dopamine is present. There are different subtypes of dopamine receptors that control normal brain functions, such as movement, emotions, behavior or appetite. Typical antipsychotics seem to block a type of dopamine receptor called the type 2 receptor, which is important for movement and behavior. However, because typical antipsychotics are not as selective as atypical antipsychotics in blocking other types of receptors, they may interfere more significantly with normal functions, resulting in increased side effects.

Typical antipsychotics may minimally improve the negative symptoms of schizophrenia, such as depression and lack of motivation. This may be because brain chemicals other than dopamine control the negative symptoms. Most typical antipsychotics appear to cause an elevation of prolactin, EPS, and anticholinergic effects. Some examples of typical antipsychotics are haloperidol (Haldol) and chlorpromazine (Thorazine).

## Atypical Antipsychotics

**W**hile the typical and atypical antipsychotics both treat the positive symptoms of schizophrenia, the atypical antipsychotics are better at treating the negative symptoms. Generally these medications have milder side effects and are better tolerated than the older medicines. These medications block the neurotransmitters dopamine and serotonin. They are more selective than typical antipsychotics, working mainly on the part of the brain that causes psychotic symptoms but not the part that causes normal muscle movement.

**Clozapine (Clozaril)** is one of the atypical antipsychotics. It is more selective for serotonin receptors, and has a lower effect on the dopamine type 2 receptors that are involved in brain functions such as movement. Therefore, clozapine is very effective in treating psychotic symptoms without causing EPS, and does not appear to increase prolactin levels. However, because it blocks many receptors in the brain in addition to dopamine and serotonin receptors, clozapine tends to cause other side effects, such as sedation and anticholinergic effects. In a small number of people, clozapine also causes significant weight gain, and can lead to seizures or drooling. Clozapine has also been known to cause a significant reduction in the number of infection-fighting white cells in the blood (a condition called agranulocytosis). Because of this potentially dangerous complication, clozapine is typically reserved for individuals who have not responded to other types of antipsychotic medications, and requires that people taking this medication have blood tests at regular intervals.

Another atypical antipsychotic is **risperidone (Risperdal)**. It is believed to block both dopamine and serotonin receptors. Like clozapine, risperidone is more selective for certain subtypes of receptors, and therefore has a reduced risk of EPS, anticholinergic effects, and sedation. It is safer than

clozapine but tends to cause EPS at higher doses. Commonly experienced side effects may include anxiety, elevated prolactin levels and nausea.

**Olanzapine (Zyprexa)** is similar to clozapine and has a low risk of EPS. Olanzapine can cause some sedation, anticholinergic effects, and weight gain. It has been associated with only a small or temporary rise in prolactin levels. Like clozapine, olanzapine blocks many receptors in the brain in addition to dopamine and serotonin.

**Quetiapine (Seroquel)** also blocks a variety of receptors but is more selective for serotonin receptors than dopamine receptors. It is more selective for receptors in the part of the brain responsible for psychotic symptoms and has minimal effect on muscle tone. Quetiapine appears to have a very low risk of EPS and a low risk of elevating prolactin levels. Side effects may include dizziness, postural hypotension, dry mouth, dyspepsia and sedation.

**Ziprasidone (Geodon)** is a dopamine and serotonin antagonist (a drug that binds to a receptor and produces an action) with the highest effect on serotonin receptors compared with dopamine receptors. The drug is also a moderate inhibitor of norepinephrine and serotonin reuptake, which increases these chemicals in the brain. These qualities are associated with a low risk of EPS and improvement in depressive symptoms. Ziprasidone does not seem to affect weight levels, but can occasionally cause heart rhythm abnormalities. People should discuss this possibility with a doctor before starting treatment.

**Aripiprazole (Abilify)** affects different subtypes of serotonin and dopamine receptors. The medication aims to reduce hyperactive dopamine neurons that mediate psychosis while at the same time enhancing underactive dopamine neurons that have an effect on negative and cognitive symptoms. The most commonly reported side effects are anxiety, insomnia, nausea, and mild akathisia.

## Talk with Your Doctor

Different antipsychotic medications — both typical and atypical drugs — have different side effects. The team of clinicians involved with a person and his/her long-term care has an obligation to discuss the treatment plan and side effects associated with the medication with the individual. Because each person is different, it is important to understand each side effect so the individual and the care team can determine which antipsychotic medication is best. The adverse consequences of antipsychotic therapy must be considered in the overall rehabilitation, reintegration and recovery of those living with schizophrenia. Active involvement in the treatment plan is a vital part of this process. Research and medicine now provide those living with schizophrenia with more treatment options than ever before. It is not advisable to discontinue treatment without consulting a doctor.

## When can Medications be Stopped?

Schizophrenia is usually a life-long disease, like diabetes or high blood pressure. Most people with schizophrenia will probably need special medical care and medication for the rest of their lives. Antipsychotic medications do not cure schizophrenia — they only control the symptoms of the disease. If a person with schizophrenia



stops taking antipsychotic medication, he/she may experience a relapse. Most people who stop taking medication relapse within one year. It is very important that people with schizophrenia continue medication to prevent new attacks.

## *How can Relapses be Prevented?*

The best way to prevent relapse is to take the prescribed medication. It is important to understand why a person with schizophrenia might stop taking his/her medication. Unpleasant side effects are difficult to endure, especially when symptoms have decreased. Therefore, it is very important to find the most effective medication and proper dosage to control symptoms while minimizing side effects. Convenience is also important, as some medications need to be taken many times a day versus once a day. If medication compliance is a problem, it may be possible for an individual to receive monthly injections of long-lasting medication, which is referred to as depot medication.

## *What is the Outlook?*

Advances in treatments and rehabilitation over the last several decades have improved the outlook significantly for people with schizophrenia. Currently, important breakthroughs are leading the way to a better understanding of the brain as scientists continue to search for the biological origins of brain disorders. Research is crucial in furthering these advances. Additionally, public education is imperative, as it serves to combat stigma and preconceived notions about the disease. Through research and education, **NARSAD** continues to offer hope by providing insight into potential causes, improved treatments and an eventual cure for schizophrenia.

**NARSAD** is a national, not-for-profit organization whose primary objective is to raise funds for research to find the causes, cures, better treatments, and ways to prevent the severe mental illnesses.

Founded in 1986, **NARSAD** represents a unified commitment for the support of research by the members of the country's largest mental health organizations: National Alliance for the Mentally Ill, National Mental Health Association, National Depression and Manic Depressive Association, and the Schizophrenia Research Foundation.

*Schizophrenia research will continue to elucidate the causes and develop better treatments for this serious brain disorder. For further information, to make a donation, or to subscribe to our quarterly Research Newsletter please call 1-800-829-8289 or visit our Web site at [www.narsad.org](http://www.narsad.org).*